

CARDIFF UNIVERSITY

**Childbearing preferences and behaviour: Where are all
the men?**

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I dedicate this thesis to my parents

Stephanie & Simon Harrison

and my partner

Tom Rawles

DECLARATION

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Thesis summary

Research shows a predominantly female orientated approach to the study of fertility and childbearing. Prior to the 1990s men were missing from this research by design. Women were asked to report their partner's childbearing preferences and behaviours and thus the true attitudes and opinions of men were largely unknown. Although men are no longer missing from this research, their participation rates are disproportionately low compared to women. The aims of the studies to be presented in this thesis were to better understand the childbearing preferences and behaviours of men, establish reasons for why men have disproportionately low participation rates in the research on childbearing, identify who and what could be a target of behaviour change interventions aimed to increase participation in childbearing research and identify whether the implementation of such interventions increase male participation.

The work presented in this thesis demonstrates that, as with women, a number of factors influence whether and when men begin parenthood. However, there is diversity between men and women in terms of what factors they consider to be important and influential in the preconception decision-making process. Men overall wanted to be fathers but did not want to be involved beyond being the breadwinner of the family. Therefore results highlight the need to consider the childbearing preferences and behaviours of men in order to understand contemporary fertility trends and identify unmet needs in policy and research that concern men. Notwithstanding this, the disproportionately low participation rates of men in the research on childbearing ultimately means that the research base is not providing a good account of male attitudes towards whether and when to have children.

When given the opportunity to participate in childbearing research men participate significantly less than women actively excluding themselves from the research as a result of less favourable attitudes towards the behaviour. The modification of attitudes is thus identified to be the mechanism that would most likely elicit intention (and potentially behaviour) change. The implementation of persuasive messages aimed to modify attitudes towards participation in childbearing research increased the perceived relevance of the behaviour but had little effect on attitude, intention and research behaviour. Overall, the work presented in this thesis demonstrates that raising public awareness that childbearing is an issue that affects men as well as women is likely to be key to integrating men into family life and increasing their participation in childbearing research.

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Glossary of abbreviations

ASSIA.....	Applied Social Sciences Index and Abstracts
CFI.....	Comparative Fit Index
DARE.....	Database of Abstracts of Reviews of Effectiveness
EBM.....	Evidence Based Medicine Reviews
ELM.....	Elaboration Likelihood Model
EMS.....	Experiment Management System
ESHRE.....	European Society of Human Reproduction and Embryology
HIV.....	Human Immunodeficiency Virus
HMIC.....	Health Management Information Centre
ICPD.....	International Conference on Population and Development
IFDMS.....	International Fertility Decision Making Study
INSEE.....	Institut National de la Statistique et des Etudes Economiques
ISSP.....	International Social Survey Programme
IVF.....	<i>in vitro</i> Fertilisation treatment
ML.....	Maximum Likelihood
NICE.....	National Institute for Health and Clinical Excellence
NSFH.....	National Survey of Families and Households
ONS.....	Office of National Statistics
PRS.....	Participation in Research Survey
PSIN.....	Panel Study on Social Integration in the Netherlands
RMSEA.....	Root Mean Square Error of Approximation
SEM.....	Structural Equation modeling

SURE.....	Search Unit for Research Evidence
TLI.....	Tucker Lewis Index
TPB.....	Theory of Planned Behaviour
TRA.....	Theory of Reasoned Action
UN.....	United Nations
UNPF.....	United Nations Population Fund
WHO.....	World Health Organisation

Chapter 1: General introduction and thesis overview

General introduction

The experience of parenthood is considered to be central to individual identity and to the life plan of the majority of people in most societies (Whiteford & Gonzalez, 1995). Until recently there was little variation in the path taken to start a family and therefore little need for research into preconception decision-making. However, epidemiological and population data show childbearing behaviour is changing. Childbearing trends show fluctuating fertility rates that are below projected population rates (Frejka & Sobotka, 2008; Ovseiko, 2007), declining family size (Office of National Statistics (ONS), 2006), increasing parental age at first birth (ONS, 2010) and more recently, a greater number of voluntarily childless people (Berrington, 2004; Frejka & Sobotka, 2008). These childbearing trends indicate that a number of diverse factors may have an influence on whether, when and how many children couples have.

Traditionally, little attention has been given to men and the role they play in childbearing decision-making (Green, Mahta, Pulerwitz, Wulf, Bankhole & Singh, 2006). Prior to the 1990s men were missing from the research on childbearing by design. Issues of male involvement were examined indirectly by asking women about their partner's attitudes and opinions (e.g., Morgan, 1985). Consequently, male fertility choices were virtually unaccounted for. Recent international recognition of the importance of including men in reproductive health research and services (International Conference on Population Development (ICPD) United Nations, 1995; The Alan Guttmacher Institute, 2002) has however had a positive effect on the investigation of male childbearing preferences and

behaviours. A number of researchers have now begun to examine the factors that drive men towards or away from parenthood (e.g., Agadjanian, 2002; Jamieson, Milburn, Simpson & Wasoff, 2010; Kaufman, 1997; Puur, Olah, Tazi-Prev & Dorbritx, 2008; Von der Lippe & Fuhler, 2004). Further, in 1998 the journal *Demography* published a special issue on the topic of male reproduction and in the year 2000 a paper that evaluated current research on male reproduction appeared in the journal *Population and Development Review* (Green & Biddlecom, 2000). This research has reiterated the importance of the male perspective, recommending researchers to give men a larger profile in the research. Although providing important insight into male childbearing preferences and behaviours, the research including men has been primarily demographic and policy based with an overall focus on sexual health rather than childbearing. Consequently, the childbearing preferences and behaviours of men from a psychological perspective remain virtually unaccounted for (Roberts, Metcalf, Jack & Tough, 2011).

Moreover, a new challenge for incorporating a gender perspective into this specific field of health research has arisen. Although men are no longer 'missing' from the research on childbearing, their participation rates in this research are consistently lower than those of women (e.g., O'laughlin & Anderson, 2001; Tough, Benzies, Fraser-Lee & Newburn-Cook, 2007). Therefore, in addition to the predominantly female orientated approach to the study of childbearing, the gender asymmetry in participation rates adds to the portrayal of men to be underrepresented in the research. Past research suggests that men tend to be reluctant to participate in survey research in general (Jokela, Kivimaki, Elovainio & Keltikangas-Järvinen, 2009; Rogelberg, Conway, Sederburg, Spitzmuller, Aziz & Knight, 2003). However, the causes and impacts of the gender asymmetry in participation rates are unknown. With regards to male participation in childbearing research, it is not known whether lack of participation is governed by social

change (e.g., contraception being predominantly female methods) or researcher exclusion (e.g., fewer opportunities for men to participate in research). Conversely, it is not known whether the lack of male participation in childbearing research has prevented the initiation of research focusing on men. This thesis, therefore aimed to gain a clearer understanding of the childbearing preferences and behaviours of men, examine the representation and inclusion of men in the research on childbearing and establish effective ways of incorporating a gender perspective into this specific field of health research. Specifically, the childbearing preferences and behaviours of men were examined through way of a systematic review of the preconception decision-making literature published between 1990 and 2011 (Chapter 2) in addition to analysis of archival data drawn from the International Decision Making Study (IFDMS; Bunting, Tsbulski & Boivin, 2012; Chapter 3). Chapter 2 and 3 also provided important insight into the representation and inclusion of men in the childbearing research base. The representation and inclusion of men in childbearing research was further examined empirically in Chapters 4 and 5. Chapter 4 employed the Theory of Planned Behaviour (TPB) to identify why men have lower participation rates in the research on childbearing compared to women and what could be done to increase participation while Chapter 5 employed the Elaboration Likelihood Model (ELM; Petty and Cacioppo, 1980) of persuasion to experimentally examine ways to increase participation in childbearing research. Although male participation rates have been shown to be disproportionately low (compared to those of women) in other areas of research (e.g., depression, Siegel et al., 2012), the current thesis was interested in male participation in childbearing research specifically and thus a literature review of male participation in research in general was not conducted. A conceptual issue throughout the thesis is the way in which the word ‘childbearing’ is defined. Popular definitions of childbearing focus on birth act (Treffry, 2001) but

researchers define it as a series of decisions that unfold over a long period of time until the moment at which the behaviour becomes successful i.e., a child is born (e.g., Barber, 2001). In addition to the variations in how childbearing is defined, a number of different terms have also been used to describe the childbearing process, such as fertility and reproduction (e.g., Hendershot & Placek, 1981). These broad terms are typically found in demographic research and have been used to conceptualise the popular definition of childbearing (e.g., Bargozi & Van Loo, 1978) in addition to the more encompassing definition i.e., the decision-making processes that leads up to the birth of a child (e.g., Buhler & Fratzak, 2005). Based on what is customarily used in psychological research, in this thesis childbearing is conceptualised as the decisions surrounding and the action of trying to conceive, achieve a pregnancy or father a child. The word childbearing is additionally used in conjunction with the words fertility and reproduction in some of the proceeding chapters. For all words, when conceptualised in terms of the main aims of the chapter, the same meaning (as childbearing) is attached.

Thesis overview

Male childbearing preferences and behaviour (Chapter 2)

There is a considerable amount of research examining the factors that drive individuals towards or away from parenthood. However, these studies tend to be primarily demographic, focused on the impact the changes in industrialisation and gender equity have had on the childbearing preferences and behaviours of women. Little research, either empirical or theoretical has examined the childbearing preferences and behaviours of men, particularly at the individual level (Kaufman, 1997). Consequently,

there is a lack of clarity about what the key influencing factors in the childbearing decision-making process are for men.

Relatively recently there has been an increased emphasis on the need to understand the reproductive behaviour of men (Becker, 1996; Lloyd, 1996). This emphasis has however been primarily problem orientated, characterised by an overall focus on sexual health rather than childbearing. Studies have in particular highlighted the important role played by men in decisions concerning contraceptive use, calling for their incorporation into family planning programmes (Bankhole & Singh, 1998; Biddlecom & Fapohunda, 1997; Bongaarts & Blake, 1995; Dodoo, 1995). Although research concerning contraceptive use is important, men have also been shown to play important roles in other areas of childbearing (e.g., pregnancy, childbirth and parenting; Katz-Wise, Priess & Hyde, 2010; Singley & Hynes, 2005). Further, the available research pertaining to men has shown men to want more inclusion in the decisions of whether and when to begin parenthood (Lindberg & Sonnerstein, 2000) and has highlighted men to have important influences on their partners childbearing decisions (Isiugo-Abanihe, 1994; Sonnerstein, 2000). Thus, the problem orientated approach to the study of male reproductive behaviour is not providing an all encompassing picture of the childbearing preferences and behaviours of men (Roberts et al., 2011). Identifying and understanding the childbearing attitudes, opinions and behaviour of men is therefore imperative in order to generate up-to-date knowledge concerning contemporary fertility trends and the meaning of fatherhood and motherhood in the 21st Century.

Consequently, the aim of Chapter 2 was to examine the potential factors that influence childbearing decision-making and the associative outcomes (e.g., first birth). Specifically, Chapter 2 aimed to provide clarity regarding what the key determinants in the facilitation or hindrance of childbearing are for men. This was achieved through way

of a systematic review of the preconception decision-making literature. This allowed a clearer understanding of the processes surrounding the decisions of whether and when to have a first birth to be obtained in addition to providing important insight into the representation and inclusion of men in the childbearing research base.

Nesting before trying to conceive (Chapter 3)

There is ample evidence to show that the value of children is changing. Parenthood is still a desired goal of many, with research finding approximately 95% of women and men surveyed intending to have a child in the future (Kemkes-Grottenthaler, 2003). However, increased opportunities for women (e.g., labour force participation), more widely accessible contraception and alternative family lifestyles (e.g., decline in marriage) have resulted in childbearing becoming more of a personal choice rather than a biological given (Radecki & Beckman, 1992; Seecombe, 1991). As such, past research has found that people prepare for parenthood (so called nesting) and that men and women have specific preconditions they want to meet before beginning parenthood.

The International Fertility Decision Making Study (IFDMS; Bunting, Tsibulsky & Boivin, 2012) sought to understand the decision-making process behind having a child and of what to do if natural attempts were unsuccessful. In the first IFDMS paper, Boivin, Bunting, Tsibulsky, Kalebic & Harrison (2010) showed that being ready to conceive was associated with the subjective sense of economic (e.g., employment), personal, relational (e.g., relationship happiness) and physical health (e.g., personal health) stability. Results thus point to the decision to enter parenthood occurring only once these preconditions have been fulfilled. Understanding to whom these preconditions are important and why is central to our understanding of contemporary childbearing behaviour and to ensuring the

parenthood goals of men and women are not jeopardised. Deeming the fulfilment of parenthood preconditions to be important before beginning parenthood may make people delay parenthood which can cause possible implications to the well-being of both parent and child. For example, delayed childbearing is associated with lower fertility, higher incidence of miscarriage, gestational and labour complications, poorer perinatal outcomes (ESHRE Capri Workshop Group, 2005) and greater maternal depression in mothers of young children (Boivin, Rice, Hay, Harold, Lewis, van den Bree & Thapar, 2009). Consequently, establishing the factors that make the preconditions of parenthood important to men and women will not only contribute to our understanding of the preconception decisional process but may also help couples be more realistic about the time and effort needed to prepare the nest for the arrival of a child. Therefore, the aims of Chapter 3 were to examine the correlates of the preconditions of parenthood and whether they differed according to precondition and gender. The aims of Chapter 3 were achieved through analysis of archival data from the International Decision Making Study (IFDMS). This allowed a contemporary picture of the importance of the preconditions of parenthood to be achieved which in turn provides more insight into the childbearing preferences and behaviours of men.

Male participation in childbearing research (Chapter 4)

The rates of male participation in childbearing research are disproportionately low compared to those of women. This means that the research base is not providing a good account of male attitudes towards whether, when and how many children to have. The gender asymmetry in childbearing research makes clear the urgent need to increase the rate of male participation. Increasing male participation would result in a clearer, more reliable understanding of the childbearing preferences and behaviours of men. This in

turn would identify the male contribution to contemporary fertility trends (Thompson & Lee, 2011) and ensure male opinions were taken into account at the individual level and not only because of their association with women as their sexual partners (The Alan Guttmacher Institute, 2002). Furthermore, understanding the childbearing preferences and behaviour of men is important for the development of childbearing policies. The lower rate of male participation and the historically female orientated approach to the study of childbearing may mean that the research on childbearing is reflecting the attitudes, opinions and behaviour of women. Thus, with conclusions drawn from such research having the ability to inform policy, policies are likely to have been developed primarily for women. As Green et al. (2006) posits: ‘the little attention paid to men in the field of population resulted in a population policy implemented almost exclusively through basic family programmes serving women’ (Green et al., 2006, p. 4). Gaining a clearer understanding of the childbearing preferences and behaviours of men is therefore imperative. However, before this can be achieved it is important to identify the reasons why men have disproportionately low participation rates in this specific field of health research and what could potentially be done to increase their participation.

The aim of Chapter 4 was therefore to generate foundational research for the development of behavioural interventions aimed to increase the participation of men in childbearing research. In order to achieve the aims of Chapter 4, the Theory of Planned Behaviour (TPB; Ajzen, 1991) was employed. The TPB is the most commonly employed theory for the study of behaviour and meta-analyses provide a great amount of support for its ability to predict and explain a wide range of behaviours (Armitage, 2005; Norman, Connor & Bell, 1999). Furthermore, employment of the TPB in research has been shown to enable the identification of the construct/s that need to be targeted by interventions in order to elicit behaviour change (Ajzen, 1991). Thus, with little empirical research

looking at male participation in childbearing research, particularly from a theoretical perspective, the TPB was employed to provide fundamental, foundational advances on previous research and identify the target/s for behaviour change interventions aimed to increase participation in childbearing research. Chapter 4 is presented in two parts. Part I examines the possible reasons for why men have lower participation rates in childbearing research compared to women and whether the Theory of Planned Behaviour can account for this variation in research participation. Part II examines whether the inclusion of distal factors (i.e., variables not specified by the TPB) can increase the efficiency of the TPB in predicting intentions and whether a profile of individuals, who would most respond to behaviour change interventions aimed to increase participation, can be ascertained.

The effect of persuasive messages on attitudes, intentions and behavioural participation in childbearing research (Chapter 5)

There is a large amount of literature on methods to increase cooperation in surveys. However, much of this literature has focused on increasing cooperation in surveys implemented via post, telephone or on a face-to-face basis (i.e., interviews). Only relatively recently has research been carried out on the possible methods of increasing cooperation in surveys on the internet (e.g., Bosnjak, Tuten & Wittmann, 2005). Lack of cooperation in surveys is generally known as nonresponse (Bradburn, 1992; Goyder, 1987; Hox, de Leeuw & Vorst, 1995). Nonresponse has been described in terms of whether people respond to a survey request and in terms of whether respondents choose not to answer survey questions (i.e., unit nonresponse).

The available research on what influences or determines response rate has found that surveys sent via post are most likely to elicit a response if they include personalised information, personalised requests to participate (Dillman, 1978; 2000) or payment incentives (Chromy &

Horvitz, 1978; Church, 1993; Dillman, Gollegos & Frey, 1976). Factors associated with the mode of delivery or the materials themselves are however not the only determinants of survey response. Respondent factors such as level of education, socio-economic status and gender (Rogelberg et al., 2003) have also been shown to be important in identifying, explaining and predicting (non)response. For example, respondents have been shown to be more highly educated and of higher socioeconomic status than nonrespondents (Liefbroer, 2005; Myers, 1997) and men have been shown to have higher drop-out rates than women (Jokela, et al., 2009). This research provides important insight into the survey participation of men and women.

There is additionally a large literature base on methods to increase co-operation in surveys. For example, the provision of token incentives (e.g., payment) for potential participants along with invitations to participate have been found to be more effective than the promise of a reward upon completion of the survey (Dillman, 2000). Further, letters sent in advance of the questionnaire (Martin, Bennett, Freeth & White, 1997) and interview scripts that are persuasive (Couper & Groves, 1991) have also been found to be effective in terms of increasing co-operation. This literature has however, rarely been guided by a set of theoretical principles (e.g., Couper & Groves, 1991; Williams, Entwistle, Haddow & Wells, 2008). Thus, based on previous research on persuasion and the findings from Chapter 4, the aim of Chapter 5 was to develop and test a persuasive message about the benefits of participation in childbearing research. Specifically, the aim of Chapter 5 was to assess whether the implementation of the persuasive message developed in line with the recommendations of the Elaboration Likelihood model (Petty & Cacioppo, 1980) would increase favourable attitudes, intentions and actual behavioural participation in childbearing research. The ELM was employed in Chapter 5 because although the TPB has been shown to be effective in terms of its ability to identify the target/s of behaviour change, it is limited as it does not delineate exactly how to elicit behaviour change. The ELM is a process approach to persuasion which provides researchers with a means of predicting and explaining how the target/s of behaviour change (identified by the TPB) are formed and changed based on the amount and nature of thinking a person does in response to a persuasive message.

Therefore, the ELM delineates exactly how to manipulate the target/s of behaviour change in addition to providing more insight about elaboration and the cognitive processing that occur in response to persuasion compared to the variable approach.

General discussion and conclusions (Chapter 6)

The final chapter will focus on the overall aims of the thesis presenting the main findings for the studies conducted. Further, study limitations, theoretical considerations, directions for future research and the implications of the findings will be discussed.

Chapter 2: Male childbearing preferences and behaviour: A systematic review

Introduction

In the last decade considerable changes in childbearing decision-making have been observed which in turn has impacted childbearing trends in many countries (Ovseiko, 2007; Sobotka, 2004). The experience of parenthood is considered to be central to individual identity and to the life plan of the majority of individuals in most societies (Katz-Wise, Priess & Hyde, 2010; Kemkes-Grottenthaler, 2003). However, in contemporary society the decision of whether or not to have children has become more of a personal choice rather than an instinctual compulsion or biological given (Miller, 1981; Radecki & Beckman, 1992).

Numerous studies have investigated the potential factors that may influence, moderate and or mediate the preconception decision-making processes. However, previous research, across many disciplines, has been carried out primarily on women (Green & Biddlecom, 2000; Goldscheider & Kaufman, 1996). This has resulted in a difficulty in achieving clarity about what the key influencing factors for men are. The lack of clarity has impeded progress toward more explanatory research of why factors have the influence they have because research remains at the descriptive level in most disciplines. Furthermore, although macro and micro level influences on childbearing decision-making have been identified, a systematic review of the antecedents of childbearing decision-making has not yet been reported.

The aim of the present study was therefore, to conduct a systematic review of the preconception, childbearing decision-making literature to provide a more in-depth understanding of the childbearing preferences and behaviours of men. This aim was achieved by: 1) creating an evidence map of available literature pertaining to factors associated with decision-making about childbearing in men, 2) performing a review of associations between the identified factors and indicators of contemporary childbearing trends (e.g., desire for a child, timing of first birth, voluntary childlessness), 3) examining moderation by gender and 4) providing a systematic overview of the methodology used by the identified studies.

Problem context

During the last 50 years human reproduction has changed from a socially and biologically driven phenomenon to a matter of individual choice. While human reproduction has been a target of both demographic and sociological research, only recently has it become an interesting area of research for psychologists. Additionally, the empirical and theoretical literature examining decision-making about childbearing focuses primarily on women and couples (Greene & Biddlecom, 2000). Although there has been a growing emphasis to understand the childbearing preferences and behaviours of men (Becker, 1996; Green, Cohen & Belhadj-el Ghouayel, 1995; United Nations, 1994; Lloyd, 1996; Lockwood, 1996; Watkins, 1993) research including men tends to be biased towards women in terms of the presentation and discussion of the topic (e.g., Berrington, 2004) and only a very small proportion of research is directed solely at men (e.g., Kaufman, 1997; Lunneborg, 1999).

Research on childbearing began in the 1950s and 1960s and was based on the biological realities of fertility in addition to the social norms of the time. As such,

childbearing research emphasised the exclusive involvement of women in childbearing and childrearing (Presser, 1997). Most of the data gathered from childbearing research referred to married women due to the high proportion of births occurring in wedlock during this time (Goldschieder & Kaufman, 1996) and although men were regarded as important economically, they were viewed as typically uninvolved in childbearing after conception. However, since the demise of the male breadwinner as well as the female housewife model of family life (Jamieson, Milburn, Simpson & Wasoff, 2010), reproduction has been recognised as being socially and individually determined. Over the last 50 years, dramatic changes have been observed in gender equity. Women are now able to participate in the labour markets as equals to men and the rate of female employment has radically increased. The rate of women aged 20–64 years old who were employed in 2010 was 67.9%, a rise of 22% from 1965 (Office of National Statistics (ONS), 2011). This rise has largely been due to women being educated and socialised to expect to have a role beyond the family (McDonald, 2000). There have also been significant changes in family formation and childbearing. Marriage has declined as an institution for childbearing, the rate of cohabitation has increased and there is a higher rate of children being born into non-marital cohabitations and outside of unions all together (Jamieson et al., 2010; Van de Kaar, 1987; Finch, 2002). This has led to an increase in studies examining how social change and variation in marital context has influenced childbearing and men have been recognised as being an important part of this process (Green & Biddlecom, 2000).

The fact that men were of little interest for such a long time has resulted in an abundance of fertility research on women that has developed in complexity and covers many disciplines. Consequently, although research on men is increasing it remains modest in comparison to what is available for women. Where there is research on men it

is largely demographic and policy based, with primary focus on the roles and responsibilities of men in terms of sexual health. Insufficient emphasis has been placed on the thoughts and feelings of men towards the decision of whether and when to begin childbearing (Edwards, 1994). The omission of men in research on childbearing, and hence lack of psychological knowledge of men's childbearing preferences and behaviour, can in part be attributed to a number of social and political changes that have occurred since the 1950s and 1960s.

The development of effective contraception in the 1960s brought with it a newfound autonomy for women. Women now have the ability to choose and plan the course that their reproductive lives will take independent of men if so desired (Belfield, 2009; Edwards, 1994; McDonald, 1996). The development of modern contraceptive methods has thus led to an increasing dominance of individual choice over chance as a determinant of childbearing related behaviour. According to the ONS (2003), 75% of women aged between 16 and 49 use some form of contraception, while in the 1960s this figure was less than 10% (Belfield, 2009). There is now a vast array of female-controlled contraception available to women, including hormonal contraceptives (e.g., the pill) and contraceptive devices such as intrauterine devices that are placed in the womb. Abortion may also be considered a way in which individuals choose to control their reproduction. Since abortion became a constitutionally protected right of women in 1967 the number of abortions carried out each year has also been rising steadily. In 2006, 193,700 abortions were carried out in England and Wales compared with 186,400 in 2005, a rise of 3.9% (ONS, 2007). Further, with the introduction of over-the-counter emergency contraception, there is now a considerable amount of choice available to people (in particular women) wishing to control and shape their reproductive careers.

The development of effective contraception, although emancipating women from their traditional roles, has impacted men very differently. Men generally have limited opportunities to contemplate their right to choose whether or not to parent (Edwards, 1994) particularly if women choose to exclude them from the decision-making process. Additionally, with the majority of reproductive health services (e.g., family planning) and research on childbearing giving primary focus to women, men have fewer opportunities to advertise their positions on whether and when to have children (Edwards, 1994; Holmes, 2004). Consequently, reproduction has been socially constructed to be the woman's issue and responsibility and men are likely to feel as though many or all aspects of the reproductive realm are not relevant to them (Marsiglio, 1991). This social construction has impacted the communication and help-seeking behaviour of men. Men have been found to experience internal and external barriers when it comes to attending sexual health services to discuss reproductive and childbearing issues. Lindberg, Lewis-Spruill and Crownover (2006) found that in a sample of male youths, attendance at sexual health services was accompanied by fear of loss of social status, shame and embarrassment. Furthermore, the youths expressed the challenges involved in accessing and negotiating the healthcare system (Lindberg et al., 2006). For example, Lindberg et al. (2006) found that the youth felt stigmatised by the clinic personnel and by peers, with one 16 year old stating:

“Last time I went to ___ [a local clinic], I was treated like I had an STD, even though I didn't. I told them [the clinic personnel] I didn't have an STD—I wanted a physical. They still acted like I had an STD”.

(Lindberg et al., 2006, p83-84)

Empirical and theoretical research on women and childbearing decision-making has hypothesised that increased gender equality in educational and labour contexts has resulted in women facing tough decisions in the trade off between childbearing and economic factors such as paid work (Barber, 2001; Hakim, 2003; McDonald, 2000). These hypotheses are reinforced by results that show women are reconciling such lifestyle conflicts by either postponing entry into parenthood (i.e., first birth) or choosing to remain childfree as a result of the perceived incompatibility between economic factors and family formation (Engelhardt & Prskawetz, 2004; Gonzalez & Jurado-Guerrero, 2006; Hank, 2003; Hobson & Olah, 2006; Rindfuss, Philip & Gray, 1988; Sobotka, 2004). However, little research has focused on the potential impact such social changes have had on male childbearing choices and behaviour (McDonald, 2000). This may be due to research on childbearing typically proposing that the historical and social changes (e.g., increased participation in labour force) that have occurred for women have led to changes in childbearing trends (e.g., postponement of first birth). However, contemporary childbearing trends may be a result of women choosing to postpone the birth of their first child, or having fewer children in order to increase their economic opportunities, not necessarily because these changes have already occurred (McDonald, 2000). If this is to be considered as true, the childbearing choices made by women would undoubtedly have an impact on the lives and childbearing choices of men. Therefore, it is of increased importance that a better understanding of the male perspective is obtained. Further, with women in the majority of cases controlling contraception it is important to gain a clearer understanding of how men react to and/or influence the childbearing decisions made by women.

Previous research does show that men have important influences on their partner's childbearing choices and behaviour (Bankhole & Singh, 1998; Danielson, Macy,

Plunkett, Wiest & Greenlick, 1990; Isiugo-Abanihe, 1994; Sonnerstein, 2000). Women regard their spouse as being the most important person with whom the decision of whether or not to have an abortion is discussed (Miller, 1992b) and one of the most frequently stated reasons for terminating a pregnancy is related to the partner (Holmgren, 1994; Johanasson, Nguyen & Tran, 1998; Skjeldestad, 1994; Soderberg, Andersson, Janzon & Slosberg, 1997; Tornborn, Tornborn, Lila, Moller & Svanberg, 1994; Torres & Forrest, 1988). Accordingly, it would seem that the childbearing preferences and behaviours of men would be of great interest to psychologists and social scientists. However, men have had, and continue to have, a low profile as participants in research on childbearing. Until a clearer understanding of the role played by men in childbearing decision-making is obtained, only inferences about the influence men have (whether positive or negative) in the childbearing decision-making process and to current childbearing trends can be made.

Childbearing theories

The question of what drives people to want children (i.e., what motivates them towards or away from having children) has been of central interest in the research aiming to understand decision-making about childbearing and current childbearing trends. Accordingly, a number of different theories have been developed and tested to try and uncover the underlying factors that influence childbearing thoughts, feelings and behaviour. Decision-making about childbearing has thus been examined from the demographic, economic, social and psychological perspectives (Table 2.1).

The determinants of childbearing preferences and behaviour have been of most interest to demographers, and have been largely investigated through empirical studies that seek correlates of childbearing. Demographers typically emphasise the facilitation or

constraining effect of the environment on childbearing, a similar position to both economists and sociologists. While demographers concentrate on industrialisation and the changes in the labour force participation of women (e.g., Hakim, 2003; Lesthaeghe, 1983), economists primary focus is the household (e.g., Becker, 1960) and sociologists, the potential influence social interaction and society can have on the formation of attitudinal dispositions (Bandura, 1986; Rogers, 1983, 2003, 2004). Typically, demographic, economic and sociological perspectives have been employed to explain changes in childbearing trends – in particular increased age at first birth and declining family size (Sobotka, 2004) – not the hypothetical processes that underlie decision-making about childbearing. Consequently, these perspectives are examples of situational determinism, maintaining and reinforcing human reproduction to be a social phenomenon rather than product of individual choice.

Psychologists have typically focused on the underlying processes that determine decision-making about childbearing. This research conceptualises childbearing decision-making as a result of individual needs, motivations and the appraisal of the specific consequences of having and not having children (Miller, 1995). Individual appraisals have been formulated as attitudes (Ajzen, 1988; Bankhole & Singh, 1998; Barber, 2001; Festinger, 1957), costs and benefits (Seecombe, 1991) advantages and disadvantages (Connidis & McMullin, 1999) and reasons for and against parenthood (Langdridge, Connolly & Sheeran, 2005). Psychological approaches such as these examine the desire and motivational forces behind childbearing in terms of childbearing intentions, timing of childbearing, the likelihood of a first birth and the likelihood of remaining childless.

The use of psychological theory is rare, but when it has been used the primary theoretical influence has been the Theory of Planned Behaviour (TPB, Ajzen & Fishbein, 1980). The TPB is an extension of the Theory of Reasoned Action (TRA) and is one of

the most widely used frameworks for relating attitudes to behaviour. In its traditional form the TPB proposes that the proximal determinant of behaviour is the intention to engage in the behaviour. However, the strength of intention is determined by three principal constructs: attitudes, subjective norms and perceived behavioural control. As such, intention is influenced by beliefs about the behaviour (i.e., attitudes), perceptions of social pressure to perform the behaviour (i.e., subjective norms) and perceived ability to perform the behaviour (i.e., perceived behavioural control). Thus, in terms of childbearing, positive attitudes towards having children increase the intention to have and the likelihood of experiencing a birth. Although positive attitudes towards childbearing may increase childbearing intentions, the intention to begin childbearing is limited or affected by structural or environmental factors that are likely to be important in determining whether individuals choose to achieve their goals (Ajzen, 1988). It is expected that an individual will only realise an intention when it is sufficiently strong and when they perceive they have social support (i.e., subjective norms) and a sufficient degree of control over the behaviour (i.e., perceived behavioural control). As such the TPB incorporates both psychological and social constructs attempting to address both the underlying individual processes that influence behaviour and the wider effects of the social and environmental context.

The TPB has been adapted over the years (see Table, 2.1), however only a few authors have adapted the theory specifically to childbearing behaviour (e.g., Barber, 2001; Miller, 1992b, 1994). Miller's (1992b, 1994) theory of childbearing accommodates, integrates and compliments the TPB. Both the TPB and Miller's (1992b, 1994) theory of childbearing provide individualistic theoretical approaches to predict and understand the motivational influences on childbearing behaviour. In line with the TPB, Miller (1992b, 1994) identified a general sequence of childbearing behaviour. However, contrary to the

TPB, Miller's sequence of childbearing behaviour is underpinned by biological and developmental experiences (Figure 2.1). Miller (1992b, 1994) proposed four steps to the sequence of childbearing behaviour: 1) the formation of traits or motivation, 2) the activation of these traits to form desires, 3) the translation of desire into intentions and 4) the implementation of intentions in the form of behaviour. According to Miller (1992b) traits are dispositions that people have to react in specific ways under certain conditions. Biological organisms acquire these traits through growth, development and life experiences acting in conjunction with biological characteristics to form learned dispositions. When activated these latent dispositions (traits) are integrated into conscious desires. Like the Model of Goal Directed Behaviour (Perugini & Bagozzi, 2001), desires are wishes and do not usually lead directly to action, rather, they are firstly translated into intentions which are conscious commitments to act in a certain way or to try and achieve a certain goal in the future. During the process of intentions changing into behavioural engagement, the desires and attitudes of significant others along with situational factors that may prevent an individual doing what they desire are considered (Miller, 1994). In much the same way as the TPB, when the attitudes and desires of significant others and situational factors are favourable, intentions generate instrumental behaviours (e.g., childbearing).

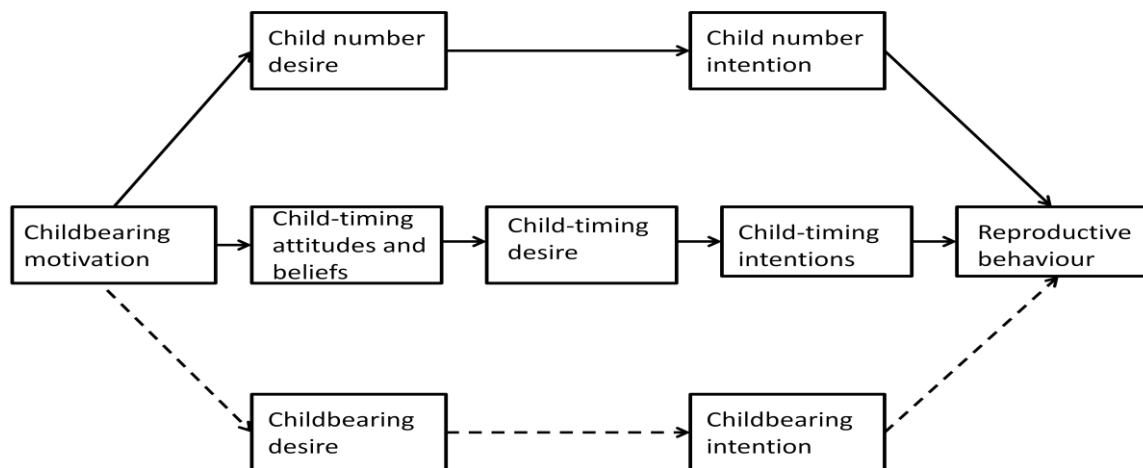


Figure 2.1. Pathways between childbearing motivation, desires, intentions and behaviour.

Adapted from Miller, W. B. (1992b). Personality traits and developmental experiences as antecedents of childbearing motivation. *Demography*, 29(2), 265-285.

In addition to motivation, Miller and Pasta (1993) also identified a number of non-motivational factors (see Figure 2.2) that were considered to be important in terms of their association with desires (Miller & Pasta, 1993). Non-motivation antecedents of desire contribute to an individual's disposition or compatibility towards having and raising children. For example, nurturance and affiliative personality traits are hypothesised to facilitate childbearing desire due to disposing an individual positively toward other people, particularly those in need of love and caretaking (Miller & Pasta, 1993). Motivation, non-motivational factors and desire are not included in the TPB model. However, these distal factors (i.e., factors beyond those specified by the TPB), are acknowledged by the TPB as potentially contributing to whether or not a given behaviour is carried out. Nonetheless, their influence is thought to be primarily indirect, operating through the three principal constructs attitudes, subjective norms and perceived behavioural control (Fishbein, 2000). As such, their potential influence on intentions and

behaviour is proposed to be cancelled out (i.e., fully mediated) once the principal constructs are taken into account. Although the TPB proposes that distal factors work indirectly, their potential direct association with childbearing intentions and behaviour (e.g., postponement of first birth, voluntary childlessness) has been examined by a number of researchers (Barber, 2001; Liefbroer, 2005; Mahaffy & Ward, 2002) interested in the antecedents of childbearing decision-making. For example, research examining the intentions of childless individuals has found religious affiliation to be an important determinant of childbearing intentions (Rovi, 1994). Specifically, being catholic or protestant compared to having no religious affiliation was positively associated with childbearing intentions. On the other hand, having no religious affiliation was associated with intentions to remain childless (Rovi, 1994). Family background factors have also been found to be important in terms of their association with childbearing. Rijken & Liefbroer (2009) found that the more siblings an individual had the younger they were when they began parenthood. Consequently, distal factors have been demonstrated to be important when examining and explaining childbearing preferences and behaviour.

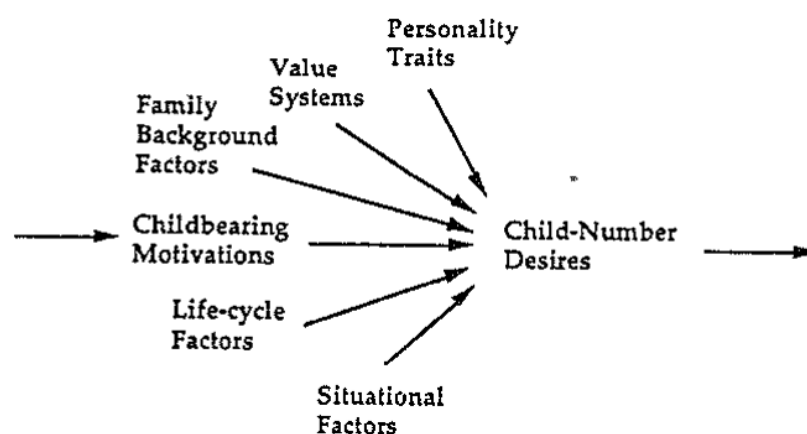


Figure 2.2. Motivational and non-motivational determinants of childbearing preferences and behaviour. Adapted from Miller, W. B., & Pasta, D. J. (1993). Motivational and non-motivational determinants of child number desires. *Population and Environment*, 15(2), 113-138

Table 2.1

Description of the theoretical frameworks and their constructs that have been employed for research on decision-making about childbearing

Theory and Constructs	Description of Construct
Demographic theories	
Demographic transition theory (Lesthaeghe, 1983)	
Social	Urbanisation and industrialisation
Economic	Modernisation, individualism and self-fulfilment
Wealth Flows Theory (Caldwell, 1982)	
Social organisation	Values and costs of children , economic modernisation
Family structure	Wealth flows between parents and children, present and anticipated
Economic Theories	
New Home Economics (Becker 1960)	
Quality and quantity of children	Quality of children is flexible with respect to income, quantity is not
Demand for children	Costs of children to income, labour force participation, consumption
A Theory of the Value of Children (Friedman, Hecter & Kanazawa, 1994)	
Motivation	The satisfaction, economic and noneconomic costs of children
Uncertainly reduction	Having children reduces uncertainty
Sociological theories	
Social Cognitive Theory (Bandura, 1986)	
Environmental factors	Environmental influences
Behavioural attitudes	Anticipation of outcome of behaviour,
Personal Factors	Strategies used to deal with emotionally challenging thoughts, events and experiences.
Self efficacy	Belief in ability to perform the behaviour and an incentive to do so

Table 2.1

Description of the theoretical frameworks and their constructs that have been employed for research on decision-making about childbearing

(continued)

Theory and Constructs	Description of Construct
Diffusion of Innovations Theory (Rogers, 1983)	
Normative, social and cultural factors	Knowledge, exposure and persuasion to a new idea
Behavioural attitude	Engaging in an activity, adapting or rejecting the new idea
Behavioural intention	Putting the new idea into use and seeking reinforcement
Psychological theories	
Theory of Planned Behaviour (Ajzen & Fishbein, 1975)	
Behavioural attitude	Evaluations of the behaviour
Subjective norms & motivation to comply	Persons belief about whether significant others think he or she should engage in the behaviour
Perceived behavioural control	Individual's perception of the extent to which the behaviour is easy or difficult to perform
Behavioural intention	Intentions to perform the behaviour
Behaviour	Whether behaviour is performed
Adoptions of the Theory of Planned Behaviour	
Childbearing motivations desires and intentions (Miller, 1994)	
Traits	Individual dispositions to act in certain ways
Desires	Psychological states representing wishes that derive from traits
Intentions	Psychological state representing an individual's conscious commitments to act in a certain way
Behaviour	Instrumental behaviour
Integrated Model of Behaviour Prediction (Fishbein, 2000)	
External variables	Origins of beliefs (e.g., demographic variables, personality traits)
Behavioural attitude	Evaluations of the behaviour
Subjective norms & motivation to comply	Persons belief about whether significant others think he or she should engage in the behaviour
Perceived behavioural control	Individual's perception of the extent to which the behaviour is easy or difficult to perform

Table 2.1

Description of the theoretical frameworks and their constructs that have been employed for research on decision-making about childbearing

(continued).

Theory and Constructs	Description of Construct
Behavioural intention	Intentions to perform the behaviour
Behaviour	Whether behaviour is performed
Skills	Skills needed to perform the behaviour
Environmental constraints	Actual environmental constraints that impact on the initiation of behaviour
Attitudes towards childbearing and competing alternatives (Barber, 2001)	
Behavioural attitude	Evaluations of the behaviour
Attitudes towards competing alternatives	Attitudes towards behaviours that would compete with childbearing (e.g., employment, education)
Subjective norms & motivation to comply	Persons belief about whether significant others think he or she should engage in the behaviour
Perceived behavioural control	Individual's perception of the extent to which the behaviour is easy or difficult to perform
Behavioural intention	Intentions to perform the behaviour
Behaviour	Whether behaviour is performed
Model of Goal Directed Behaviour (Perugini & Bagozzi, 2001)	
Attitudes	Disposition to respond favourably or unfavourably
Anticipated emotions	Personal goals, cognitive processes that take into account judged consequences of goal achievement /failure
Desires	Motivational context to induce intention to act
Subjective norms & motivations to comply	Persons belief about whether significant others think he or she should engage in the behaviour
Perceived behavioural control	Individual's perception of the extent to which the behaviour is easy or difficult to perform
Intention	Intention to perform the behaviour
Frequency of past behaviour	Predictor of desire, intention & behaviour, automatic aspects of goal directed behaviour
Regency of past behaviour	Predictor of behaviour automatic aspects of goal directed behaviour

The present study

The aim of the present study was to determine the drivers that underlie the childbearing decision-making processes and behaviours of men and women. The extent to which different factors drive men and women towards or away from starting a family was examined by way of a systematic literature review of 12 databases, using a variety of search terms in order to identify the literature pertaining to childbearing decision-making. From the studies identified, multiple childbearing outcomes and the drivers behind them were examined in order to explore which drivers have been investigated and the nature of their effect on the childbearing preferences and behaviours of men and women.

Methods and materials

Eligibility criteria

The studies included in the systematic review were published from 1990 to 2011 and examined a relationship between drivers and childbearing outcomes. A driver was defined as any factor that may have an association with childbearing decision-making (e.g., age, employment status, personality). By association is meant whether the factor statistically facilitates or hinders childbearing. Drivers could be hypothetical (e.g., childbearing may cause problems between me and my partner) concrete (e.g., age, gender) or aspirational (e.g., educational expectation) in nature and could symbolise internal (e.g., personality traits) and external (e.g., provision of child care) influences on childbearing preferences and behaviours. The outcomes examined were the antecedents of a first birth, such as childbearing intention, the likelihood or occurrence of a first birth,

timing of first birth, postponement of first birth and voluntary childlessness. Outcomes did not have to be mutually exclusive to one paper.

Only studies on humans (aged 16 years of age or older) that contained quantitative data from a study with a longitudinal or cross sectional design were included. Further, quantitative studies had to include statistical tests of significance. Therefore, studies including only descriptive statistics (e.g., percentages; Jamieson, Milburn, Simpson & Wasoff, 2010) were excluded. Only studies that included men and carried out gender analysis were included. Only studies concerned with a first birth were included because determinants of family size (e.g., Morgan & Rachin, 2010), fertility rates, birth spacing and desire for more children differ from those of first births and this literature was too large to review simultaneously (Weightman, Mann, Sander & Turley, 2004). Where mixed samples (i.e., those with and without children) were included in the studies, the results for childless (parity 0) respondents had to be presented separately so these results could be isolated. Studies concerned with teenage or unwanted pregnancy (e.g., abortion) or childbearing after the diagnosis of infertility/infertility treatment were excluded. These exclusions allowed the focus of the review to remain on the preconception decision-making processes of presumed fertile individuals. Qualitative studies (unless alongside quantitative data) were not included because methods for qualitative meta-synthesis differ from those of quantitative systematic reviews. Secondary reports (e.g. theories, summaries, chapters) were not included unless they contained primary data. No restriction was applied to sample size, country or language. If the study met inclusion criteria it was considered eligible and no judgement was made about the quality of the study. This was to ensure that all the relevant, available literature on the decision of whether and when to have a first birth was included in the review (see Appendix A for full table of exclusion, inclusion criteria).

Search strategy

A systematic computerised search of the literature was performed to identify studies investigating childbearing preferences and behaviours. Twelve electronic databases were searched: Medline, Medline in Process, all Evidence Based Medicine Reviews (EBM) (which included Cochrane Database of Systematic reviews, CENTRAL, Database of Abstracts of Reviews of Effectiveness (DARE), ACP), Psychinfo, Applied Social Sciences Index and Abstracts (ASSIA), British Humanities Index, Sociological Abstracts, Social Services Abstracts, Health Management Information Centre (HMIC), System for Information on Grey Literature in Europe Archive (OpenSIGLE), Psych Articles and Studies in Women and Gender Abstracts. In all databases, with the exception of HMIC and Open SIGLE, exclusion criteria were applied that limited the searches to articles published since 1990 on human populations but included all languages, all countries and all publication types.

The initial search strategy was developed with assistance from the Search Unit for Research Evidence (SURE), who specialise in Cochrane and the National Institute for Health and Clinical Excellence (NICE) systematic reviews. Search terms (Appendix B) and limitations were firstly decided upon and were then expanded in line with SURE approaches to systematic reviews. This initial strategy was then tested extensively on Medline. The strategy consisted of a variety of search terms (e.g. parenthood, reproduction, values, and perceptions), keywords and MeSH vocabulary that were then adapted so they could be applied to each of the other databases and capture variances across fields (all search strategies along with modifications for each database in Appendix C). Two searches were carried out; one in February 2009 and another in November 2011 in order to update the search. The results from the two searches were downloaded to Reference Manager (Version 12) and duplications were eliminated. Reference sections of

the studies that met the inclusion criteria were manually checked for further relevant studies.

Data collection process

A 30 item critical appraisal and data extraction form was developed in accordance with the *Cochrane Handbook for Systematic Reviews* (Weightman et al., 2004; Weightman, Urquhartt, Spinkt & Thomas, 2008) and included information about: (1) characteristics of each study (e.g., the aims, outcomes, predictors, population studied and the design), (2) results and analysis (e.g., type of analysis employed, direction of effect and significance level) and (3) quality of the study (e.g., analysis of the methods used, bias, quality of results and generalisability of results).

Two independent researchers from the Fertility Studies at Cardiff Research Group (C Harrison & N Kalebic) performed the data extraction to assess the methodological quality of each included study. Researchers independently extracted the data from the included studies and cross-referenced their extractions in order to analyse agreement. Agreement for each study was examined according to the three aspects of the data extraction and critical appraisal form (i.e., study characteristics, results and critical appraisal). Agreement was coded as a yes (1) or a no (0) response to each of the three sections and inter coder reliability was calculated using Cohen's Kappa (K; Cohen, 1960; Landis & Koch, 1977). Cohen's kappa is a measurement of agreement between two reviewers with scores being classified as follows: $K \leq 0$ no agreement, $K = 0 - .20$ slight agreement, $K = .21 - .40$ fair agreement, $K = .41 - .60$ moderate agreement, $K = .62 - .80$ substantial agreement and $K = .81 - 1.0$ almost perfect agreement (Cohen, 1960). Analysis revealed that agreement levels were high for each of the three sections with study characteristics yielding agreement of $K = .89$, results yielding $K = .91$ and critical appraisal

yielding $K=.81$. Any disagreement was resolved by consensus (see Appendix D for an example critical appraisal and data extraction form).

Methods of analysis

Identified outcomes were coded according to type (i.e., childbearing desire, childbearing contemplation, intention to have a first birth, likelihood of first birth, timing of first birth, likelihood of postponement or likelihood of voluntarily childlessness) and the driver(s) were coded according to operational definition (e.g., all drivers representing age were assigned the same code). Additionally, drivers were coded for effect, that is, whether the driver *facilitated* (had a positive effect) childbearing (i.e., more childbearing desire, greater intention to have a first birth, lower likelihood of postponement), *hindered* (had a negative effect) childbearing (i.e., reverse effect; less childbearing desire, lower intention to have a first birth, higher likelihood of postponement) or had a neutral effect on childbearing (no effect).

The identified drivers were independently categorised into 26 categories according to type (e.g., education, relationship status, area of residence, childbearing desire) by three researchers from the Fertility Studies at Cardiff Research Group. Due to the large number of drivers identified, the 26 categories were further refined and independently categorised by the three researchers into 10 broader categories (encompassing the 26 sub-categories). The 10 categories were adapted from Miller and Pasta's (1993) non-motivational antecedents of childbearing desire. Kappa inter-rater reliability analysis (Cohen, 1960; Landis & Koch, 1977) was performed against rater one's (Harrison) classification for both categorising processes.

The results from the included studies were extracted and compiled into an evidence table that documented the study characteristics, drivers, outcomes and results

(Appendix E). These results were then further reduced into synthesis tables, showing all the drivers across all the identified outcomes. The synthesis tables included details such as direction of relationship between the driver and the outcome, the number of studies and country (Appendix F).

Results

Overview

Results are presented in six sections. Section I shows the study selection. Section II shows the characteristics of the included studies. Section III shows the evidence map of the available literature pertaining to childbearing decision-making and the drivers identified from the cross sectional and longitudinal studies. Section IV presents the characteristics of the longitudinal studies. Section V presents the significant associations between the drivers and the outcomes examined in the longitudinal studies in addition to gender differences. Section VI presents the methodology of the included studies and the potential threats to study validity.

Section I: Study selection

Figure 2.3 shows the study flow diagram for study selection. A total of 31,506 items were extracted from the 12 electronic databases. Of these 8,568 duplicates were removed. A further 10,019 papers were removed due to containing information about unrelated topics (e.g., fertile soil, animal breeding, British Telecom networks for families). The final database of articles included 12,919 hits. Of these 11,246 were excluded because they did not meet the inclusion/exclusion criteria. The remaining 1,673 papers appeared to be of high priority for the topic and were used to generate the database

of papers. Each of the 1,673 abstracts were examined fully in an unblinded standardised manner by two researchers (Harrison & Kalebic) to check relevance. Those deemed irrelevant to the current project were omitted, leaving a final number of 559 abstracts. These abstracts were then analysed further by the two researchers (Harrison & Kalebic) resulting in 238 papers meeting criteria. The 238 papers that met the inclusion criteria were obtained in hard copy format. After the researcher independently inspected the 238 papers, 201 were excluded and 37 papers were deemed to have fulfilled the eligibility criteria and were included in the review (Figure 2.3). The 37 papers were then manually checked for relevant references. A total of 143 references were identified as potentially relevant for the current review. After examination of the full texts 141 were excluded and two were deemed to have full eligibility criteria and were included in the review. Therefore, the total number of eligible texts after exclusion and the manual reference check was 39 (Figure 2.3).

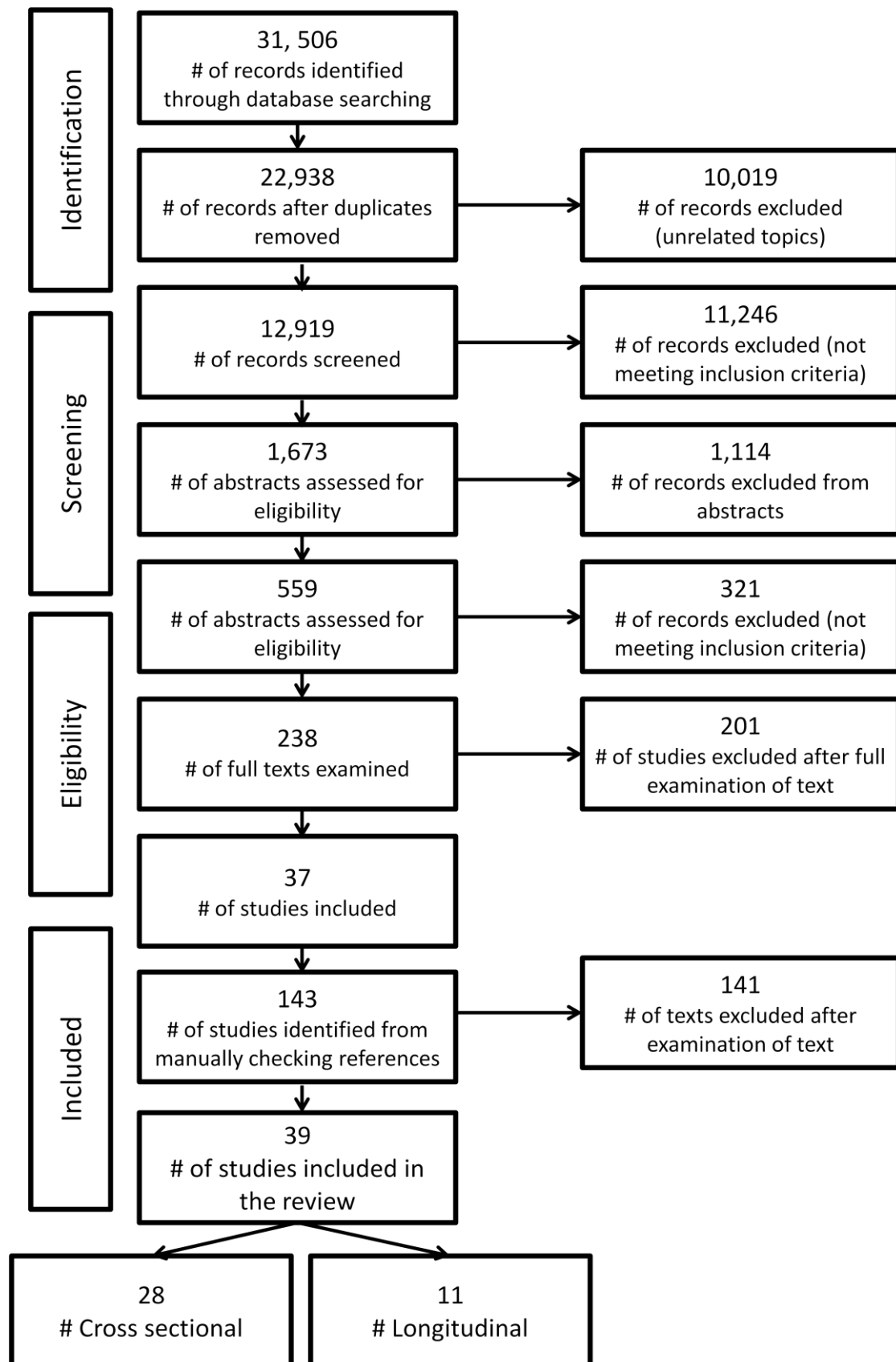


Figure 2.3. Study flow diagram of study selection

Section II: Study characteristics

The 39 identified studies were from 26 journals covering demography, medicine, health, sociology and psychology (Table 2.2). The studies were conducted in a number of countries (the majority being carried out in the United States of America) and varied according to population and sample size (Table 2.3). Just two of the included studies were conducted with exclusively male respondents.

From the 39 included studies, six childbearing decision-making outcomes were identified: childbearing desire and parenthood contemplation (e.g., costs and benefits), childbearing motivation, intention to have a first birth, postponement of first birth, first birth, and voluntary childlessness. These outcomes were not mutually exclusive to one paper.

Table 2.2

Included studies by discipline and Journal

Discipline	Journal	No. Of studies
Demography (<i>n</i> =18)	Demography,	1
	Demographic research (working paper),	1
	Population research and Policy review,	1
	Journal of population studies,	1
	Yearbook of population research in Finland,	3
	Vienna yearbook of population research	1
	European journal of population	4
	Canadian journal of ageing	2
	Journal of marriage and the family	3
	Population and development review	1
Psychology (<i>n</i> =9)	Genetic social and general psychology monographs	1
	Journal of applied social psychology	2
	Journal of genetic psychology	1
	Journal of reproduction and infant psychology	1
	Journal of psychology	1
	Social Psychology Quarterly	1
	Personality and Individual differences	1
	Journal of Personality and Social Psychology	1
Sociology (<i>n</i> =7)	Journal of biosocial science	2
	Journal of Social Biology	1
	Sex Roles	1
	Journal of family issues	1
	Social Forces	2
Health (<i>n</i> =1)	Maternal Child Health Journal	1
Medical (<i>n</i> =4)	Journal of human reproduction	3
	Journal of gender and medicine	1

Table 2.3

Characteristics of the 39 included studies

Characteristic	Number of studies (percentage)
<i>Country</i>	
USA	13 (33.3%)
Netherlands	7 (17.9%)
Finland	4 (10.3%)
Canada	4 (10.3%)
Bulgaria	2 (5.1%)
Germany	2 (5.1%)
Sweden	2 (5.1%)
<i>Countries with only 1 study</i>	
United Kingdom, France, Poland, Iran.	5 (12.8%)
<i>Sample size</i>	
< 1000	18 (46.2%)
≥1000- 5000	19 (48.7%)
>5000	2 (5.1%)
<i>Gender composition</i>	
Men and women	37 (94.9%)
Men only	2 (5.1%)
<i>Marital status</i>	
Couples	2 (5.1%)
Never married/in first marriage	2 (5.1%)
Married & Unmarried	1 (2.6%)
Married/cohabiting	11 (28.2%)
Mixed marital status or no specification of marital status	23 (58.9%)

Section III: Drivers of childbearing decision-making

From the 39 included studies a total of 410 drivers were identified that had previously been examined as potentially having an influence on the childbearing preferences and behaviours of men and women. The identified drivers covered individual (e.g. personality) environmental (e.g. rural area of residence) and psychosocial (e.g.

intention for a child, parents favour having children) influences and were hypothetical, concrete, or aspirational in nature. The individual drivers symbolised concrete, internal and external factors and were conceptualised in the studies as potential negative (i.e., hindrance), positive (i.e., facilitation) and neutral (i.e., no effect) influences on childbearing preferences and behaviour.

The 410 individual drivers were independently grouped into 26 agreed categories and inter-rater reliability analysis yielded kappa scores of $K=.72$, $K=.65$ and $K=.59$ between the three raters from the Fertility Studies at Cardiff Research Group (Cohen, 1960; Landis & Koch, 1977). Kappa scores exemplified considerable overlap in the categorisation of certain drivers. The majority of the disagreement between the raters was found in two of the 26 categories (i.e., negatives and positives of parenthood) due to their homogeneous nature. The 26 agreed categories were then categorised further into 10 broader categories based on Miller and Pasta's (1993) non-motivational antecedents of childbearing desire, i.e., demographic (e.g., characteristics of the aggregate population), socio-economic (e.g., economic position based on education employment income), relational (e.g., romantic relationship status), life cycle (e.g., fertility experiences), family of origin (e.g., family dynamics), contextual (e.g., psychological and environmental situation), intentions and desires (e.g., to have or not to have a child), personal values (e.g., principles or ideals), personality (e.g., traits), socio-cultural (e.g., social relationships). The 10 categories encompassed the 26 sub-categories yielded inter-rater reliability scores of $K=.68$, $K=.77$, and $K=.88$. Tables 2.4 to 2.13 illustrate the 10 categories, their sub-categories, the drivers and the studies examining them.

Table 2.4

Number of demographic drivers by sub-category according to study

Demographic drivers (N=15)	Driver and study reference number ^a
Age (n=7)	Birth cohort ^{13, 19} , Age in years/categories ^{3,4, 5, 6, 7, 9, 10,11,12, 15, 16, 18, 19, 21, 22, 24, 25, 26, 27, 28, 31, 32, 33, 35, 37, 38} Wife's age ^{2, 20} Year of birth ³⁰ Age at start first union ¹⁰ Expected age at first birth ¹⁴ Age at marriage ^{18, 28, 29}
Gender (n=2)	Gender ^{1,2, 3,4, 5, 6, 7, 8, 9, 10, 11, 12, 13 14, 15,16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27,28,29,30,31,32,33, 34, 35, 36, 37, 38,39,}
Race and Ethnicity (n=6)	Black ^{7, 8, 9, 14, 20, 35} White/non hispanic ^{8, 35} Other ^{8, 14, 31} Hispanic white ^{9, 14, 20} Caucasian ^{27, 31} Non- Caucasian ²⁷

Note. ^a superscript refers to study reference number: ¹ Barber (2001), ²Buhler & Fratzckm, (2005), ³Connidis & McMullen 1996, ⁴Connidis & McMullen 1999, ⁵Corijn, Liefbroer & Gierveld (1996), ⁶Gerson, Berman & Morris (1991), ⁷Heaton, Jacobson & Holland (1999), ⁸Jacobson & Heaton (1991), ⁹Kaufman (1997), ¹⁰Keizer, Dykstra & Jansen (2007), ¹¹Lampic, Skoog Svanberg, karlstrom & Tyden (2005), ¹²Langdrige, Connolly & Sheeran (2005), ¹³Liefbroer (2005), ¹⁴Mahaffy & Ward (2002), ¹⁵Miettinen & Paajanen (2003), ¹⁶Miettinen & Paajanen (2003), ¹⁸Miller & Pasta (1995), ¹⁹Mulder (2003), ²⁰Myers (1997), ²¹Prezeshki, Zeighami & Miller (2005), ²²Seecombe (1991), ²⁴Stobel-richter, Beutel, Finch & Brahler (2005), ²⁵Testa & Toulemon (2006), ²⁶Taris (1998), ²⁷Tough, Benzies, Fraser-Lee, Newburn-Cook, Tough (2007), ²⁸Miller and pasta (1994), ³⁰Rijken & Liefbroer (2009), ³¹Roberts, Metcalfe, Jack & Tough (2011), ³²Billari, Philipov & Testa (2009), ³³Miettinen (2010), ³⁵Schoen, Astone, Kim & Nathanson, (2009), ³⁶Barber (2000), ³⁷Jokela, Kivimaki, Elovainio & Keltikangas-Järvinen (2009), ³⁸ Philipov (2009), ³⁹ Reis, Dornte & Von de Lippe (2011).

Table 2.5

Number of socio-economic drivers by sub-category according to study

Socio-economic drivers (N=79)	Driver and study reference number ^a
Educational (n=40)	Education ^{7, 8, 9, 12, 18, 28, 31, 34, 37, 39} In education ^{1, 12, 19, 25, 32, 34, 38} Not enrolled in education ²⁵ Higher level education ^{13, 25, 33} Medium education ^{13, 25, 33} Low education ^{25, 33} Wife's education ² Husband's education ² Couples education ²⁰ Proportion of grades that were A and B in final semester of high school ^{1, 36} Academic achievement ¹⁴ Accumulated years of schooling ¹ Grade point average ²⁹ Both [members of partnership] low education ⁵ Female high, male low education ⁵ Male high, female low education ⁵ Both high education ⁵ Primary education ¹⁹ Secondary education ^{19, 32, 38} Below secondary education ^{32, 38} Above secondary education ^{32, 38} High school education ²⁷ Less than high school education ^{27, 35} No vocational education, vocational school specialised vocational certificate ¹⁶ Vocational degree ¹⁹ University degree ¹⁹ Did not complete elementary school ¹⁰ Postgraduate education ^{10, 27} Catholic school ¹⁴ Private school ¹⁴ University or college education ^{16, 35} Some college education ³⁵ 12 years of education or General Equivalency Diplom ³⁵ Post secondary education ²⁷ School curriculum ²⁹ Parents educational expectation ²⁹ Intentions to study ³⁸ Educational expectation ^{1, 36} Educational aspirations ¹⁴ Not studying and not intending to ³⁸ Perceived teachers expectations ¹⁴
Occupational (n=33)	Working/employed ^{9, 13, 15, 16, 25, 27, 33, 38} Working full time ^{1, 7, 12, 34, 35} Not working full time ³⁵ Working part time ^{1, 7, 12, 34} Not working/unemployed ^{1, 8, 12, 13, 15, 16, 22, 25, 33, 34} Does not work nor study ^{32, 38} Intends to work ³⁸ Main activity is working for profit ³¹ Unemployment rate ¹⁴ Retired ¹² Other (retired, caring for family, volunteer work, looking for work, disability) ²⁷ Homemaker/House wife/ house husband ^{12, 22} Student ^{16, 27, 33, 34} Both husband and wife are working ² Hours employed ^{9, 22} Desired hours of work ^{7, 8, 22} Professional ⁸ Managerial ⁸ Sales/clerical ⁸ Craft ⁸ Operations, service, labour ⁸ Works in private sector ³² Time and energy for career ⁷ Uninterrupted occupational career ¹⁰ Satisfaction in job ¹⁵ Successful in work ¹⁵ Enough money ¹⁵ Individualistic values ¹⁵ Occupation ^{18, 28, 29} Occupational prestige ²²

Table 2.5

Number of socio-economic drivers by sub-category according to study (continued)

Socio-economic drivers (N=79)	Driver and study reference number ^a
Financial status (n=6)	Spouse occupational prestige ²² Income (continuous/categories) ^{3,4, 7, 15, 16, 17, 18, 20, 25, 27, 28, 29, 31, 32, 33, 35, 38} Wife's income contributions ²⁰ Home owner ^{9,31} Dwelling size ³² Average socioeconomic status ¹⁴ Socioeconomic status ¹⁹

Note. ^a superscript refers to study reference number: ¹ Barber (2001), ² Buhler & Fratczkm, (2005), ³ Connidis & McMullen 1996, ⁴ Connidis & McMullen 1999, ⁵ Corijn, Liefbroer & Gierveld (1996), ⁷ Heaton, Jacobson & Holland (1999), ⁸ Jacobson & Heaton (1991), ⁹ Kaufman (1997), ¹⁰ Keizer, Dykstra & Jansen (2007), ¹² Langdridge, Connolly & Sheeran (2005), ¹³ Liefbroer (2005), ¹⁴ Mahaffy & Ward (2002), ¹⁵ Miettinen & Paajanen (2003), ¹⁶ Miettinen & Paajanen (2003), ¹⁷ Miller (1995), ¹⁸ Miller & Pasta (1995), ¹⁹ Mulder (2003), ²⁰ Myers (1997), ²² Seecombe (1991), ²⁵ Testa & Toulemon (2006), ²⁷ Tough, Benzies, Fraser-Lee, Newburn-Cook (2007), ²⁸ Miller & pasta (1994), ²⁹ Miller (1992), ³¹ Roberts, Metcalfe, Jack & Tough (2011), ³² Billari, Philipov & Testa (2009), (2009), ³³ Miettinen (2010), ³⁴ Liefbroer & Corijn (1999), ³⁵ Schoen, Astone, Kim & Nathanson (2009), ³⁶ Barber (2000), ³⁷ Jokela, Kivimaki, Elovainio & Keltikangas-Järvinen (2009), ³⁸ Philipov (2009), ³⁹ Reis, Dornte & Von de Lippe (2011).

Table 2.6

Number of relational drivers by sub-category according to study

Relational drivers (N=36)	Driver and study reference number ^a
Relationship status (n=31)	Marital status ^{15, 37} Married ^{1, 3,4, 7, 13, 16, 19, 25, 27, 31, 35, 37, 38, 39} Cohabiting ^{1, 7, 16, 19, 32, 37, 38, 39} In consensual union ^{13, 33} Common law ³¹ Steady dating ¹³ Does not have a partner/Single ^{3,4, 16, 19, 25, 31,32, 35, 38, 39} Widowed ^{6, 7} Divorced/separated ^{3,4, 8, 18} Accumulated years of marriage/duration ^{1, 12, 17, 20, 25, 26, 28, 29} Accumulated years of cohabitation ¹ Cohabited unmarried ⁵ Married directly (no previous cohabitation) ⁵ Began cohabiting ⁷ Got married ⁷ First marriage ⁸ Second or higher order marriage ⁸ Years without a union ¹⁰ Marital well being important ¹⁶ Marital well being less important ¹⁶ Married directly from parental home ¹⁹ Married after living alone ¹⁹ Cohabiting directly from the parental ¹⁹ Cohabiting after living alone ¹⁹ Marital happiness ²⁰ Marital problems ²⁸ Marital discord ²⁹ Marital stability ⁷ Divorce proneness ²⁰ Couple multi strandedness [refers to a measure of spousal dependence on each other] ²⁰ Marriage age preference ³⁶
Past relationship experience (n=5)	Went steady before 18 ^{1, 5, 36} Ever married ¹⁰ Remarried ²⁰ Never married and age ⁸ Number of unions in fertile years ¹⁰

Note. ^a superscript refers to study reference number: ¹ Barber (2001), ³ Connidis & McMullen 1996, ⁴ Connidis & McMullen (1999), ⁵ Corijn, Liefbroer & Gierveld (1996), ⁶ Gerson, Berman & Morris (1991), ⁷ Heaton, Jacobson & Holland (1999), ⁸ Jacobson & Heaton (1991), ¹⁰ Keizer, Dykstra & Jansen (2007), ¹² Landridge, Connolly & Sheeran (2005), ¹³ Liefbroer (2005), ¹⁶ Miettinen & Paajanen (2003), ¹⁷ Miller (1995), ¹⁸ Miller & Pasta (1995), ¹⁹ Mulder (2003), ²⁰ Myers (1997), ²⁵ Testa & Toulemon (2006), ²⁶ Taris (1998), ²⁷ Tough, Benzies, Fraser-Lee, Newburn-Cook (2007), ²⁸ Miller and pasta (1994), ²⁹ Miller (1992), ³¹ Roberts, Metcalfe, Jack & Tough (2011), ³² Billari, Philipov & Testa (2009), ³³ Miettinen (2010), ³⁵ Schoen, Astone, Kim & Nathanson (2009), ³⁶ Barber (2000), ³⁷ Jokela, Kivimaki, Elovainio & Keltikangas-Järvinen (2009), ³⁸ Philipov (2009), ³⁹ Reis, Dornte & Von de Lippe (2011).

Table 2.7

Number of life cycle drivers by sub-category

Life cycle drivers (N=13)	Driver and study reference number^a
Fertility history (n=5)	Perceived fecundity/likelihood of success ^{18,26} No fecundity impairments ²⁵ , Fecundity impairments ²⁵ , Past experience of pregnancy loss ²⁷ Past experience with infertility ²⁷
Childlessness (n=8)	Evaluation of current state of childlessness ²⁶ Childless due to Physiological factors ³ Childless due to Fate ³ Childless because of Spouse ³ Childless because of Practical reasons ³ Childless because of Other factors ³ Childless as a result of Choice ⁴ Childless as a result of Circumstance ⁴

Note. ^a superscript refers to study reference number: ³Connidis & McMullen 1996, ⁴Connidis & McMullen (1999), ¹⁸Miller & Pasta (1995), ²⁵Testa & Toulemon (2006), ²⁶Taris (1998), ²⁷Tough, Benzies, Fraser-Lee, Newburn-Cook (2007).

Table 2.8

Number of family of origin drivers by sub-category according to study

Family of origin drivers (N=44)	Driver and study reference number ^a
Family structure (n=7)	Mother never divorced ¹ Parents divorced ^{13, 33, 34} Mother divorced and remarried ^{1, 36} Mother divorced and not remarried ^{1, 36} Family structure (single parent, other) ¹⁴ Parents divorced before respondents left parental home/age 16 ^{30, 31, 35} Lived in a blended family at any time ³¹
Parental influences (n=37)	Mothers total number of children ^{1, 36} Number of siblings ^{13, 14, 21, 29, 30, 32, 33, 38, 39} Mothers age at first birth ^{2, 30, 36} Fathers age at first birth ³⁰ Family socio-economic status ¹⁴ Average early family income (in \$1000s) ^{1, 36} Average later family income (in \$1000s) ^{1, 36} Family income declined ^{1, 36} Family financial assets (in \$100s) ^{1, 36} Religiosity of parents ^{13, 30, 34} Family religiosity ²⁹ Mother catholic ^{2, 36} Conflict between parents ³⁰ Average parents education ^{2, 36} Educational attainment of father ^{13, 14, 30, 33, 34} Educational attainment of mother ^{13, 14, 30, 33, 34, 35} Fathers job status ³⁰ Fathers occupation ²⁹ Mother employed ²¹ Mothers employment status ³⁰ Mothers occupation ²⁹ Mothers employment pattern ²⁹ Mother worked outside the home at child aged 15 ³⁶ Mother worked outside home*daugeter ³⁶ Contact with extended family members ³⁰ Close family relationships less important ¹⁶ Close family relationships important ¹⁶ Current relationship with parents ²⁹ Parents have life of their own ³² Positive mothering ²⁹ Positive fathering ²⁹ Fathers care pattern ²⁹ Parental supervision ¹⁴ Mothers family size preference for child ³⁶ Mother minimum education preference for child ³⁶ Mothers marriage age preference for child ³⁶ Mothers career preference for child ³⁶

Note. ^a superscript refers to study reference number: ¹ Barber (2001), ² Buhler & Fratzckm, (2005), ¹³ Liefbroer (2005),

¹⁴ Mahaffy & Ward (2002), ¹⁶ Miettinen & Paajanen (2003), ²¹ Prezeshki, Zeighami & Miller (2005), ²⁹ Miller (1992),

³⁰ Rijken & Liefbroer (2009), ³¹ Roberts, Metcalfe, Jack & Tough (2011), ³² Billari, Philipov & Testa (2009), ³³ Miettinen (2010), ³⁵ Schoen, Astone, Kim & Nathanson, (2009), ³⁶ Barber (2000), ³⁸ Philipov (2009), ³⁹ Reis, Dornte & Von de Lippe (2011)

Table 2.9

Number of contextual drivers by sub-category according to study

Contextual drivers (N=15)	Driver and study reference number^a
Psychological /physiological health (n=3)	Psychological well being ^{22, 32} Smoker/smoking status ^{27, 31} Alcohol frequency ^{20, 27, 31}
Negative life experiences (n=1)	Discipline problems at school ¹⁴
Area of residence (n=11)	Urban ^{14, 16, 21, 33, 37} Rural area ^{16, 21, 33, 37} Remote rural ³⁷ Rural area or small city ² Suburban community ^{14, 37} Place of birth – urban or rural ⁵ Southern region ¹⁴ The Flanders ⁵ The Netherlands ⁵ West Germany ²⁴ East Germany ²⁴

Note. ^a superscript refers to study reference number: ²Buhler & Fratzckm, (2005), ⁵Corijn, Liefbroer & Gierveld (1996),
¹⁴Mahaffy & Ward (2002)¹⁶Miettinen & Paajanen (2003), ²⁰Myers (1997), ²¹Prezeshki, Zeighami & Miller (2005),
²²Seecombe (1991), ²⁴Stobel-richter, Beutel, Finch & Brahler (2005), ²⁷Tough, Benzies, Fraser-Lee, Newburn-Cook
(2007),²⁸Miller and pasta (1994), ³¹ Roberts, Metcalfe, Jack & Tough (2011), ³² Billari, Philipov & Testa (2009),
³³Miettinen (2010), ³⁷ Jokela, Kivimaki, Elovainio & Keltikangas-Järvinen (2009).

Table 2.10

Number of childbearing intention and desire drivers by sub-category according to study

Intentions and desire drivers (N=51)	Driver and study reference number ^a
Preconception preparation (n=27)	Having stable relationship ¹¹ Having a partner with whom the responsibility can be shared ¹¹ Partners suitability to parent ^{27, 31} Feeling sufficiently mature ¹¹ Having a good economy ¹¹ Financial security ^{27, 31} Having completed studies ¹¹ That work can be combined with having children ¹¹ Concerns of not advancing in job while on parental leave ^{27, 31} Concerns of losing job while on parental leave ^{27, 31} Education/Training ^{27, 31} Career ^{27, 31} Having access to childcare ¹¹ Having a home that is sufficiently large ¹¹ Owning a home ^{27, 31} Permanent employment ^{11, 27, 31} Wanting to have children before getting too old ¹¹ Feeling of biological clock ^{27, 31} Travel ^{27, 31} Having time to travel which would be difficult with children ¹¹ Having advanced in profession ¹¹ Friends have had children or are expecting children ¹¹ Health Status ^{27, 31} Own interest/Desire for a child ^{27, 31} Partners interest/Desire for a child ^{27, 31} Proximity to family ^{27, 31} Culture or faith ^{27, 31}
Desire (n=13)	Family size preferences ^{1, 36} Childbearing ^{17, 21, 28} Childbearing desire-spouse ¹⁷ Child-number desire ^{21, 28, 32} Child-timing desire ²¹ Confidence in having desired number of children ²³ Child-timing ²⁸ Don't know [child-timing] ²⁸ Positive parenthood motivation ^{6, 21} Negative parenthood motivation ^{6, 21} Parenthood motivation ⁶ Personal motivation ⁷ Familial motivation ⁷
Intentions (n=11)	Child-timing intentions ¹⁸ Childbearing intentions ^{18, 38} Child-number intentions ¹⁸ Intention to have a baby ²⁶ Wants a child immediately ²⁵ Wants a child in the next five years ²⁵ Wants a child later on ²⁵ Wants a child in the next five years firmly ²⁵ Wants a child in the next five years not so firmly ²⁵ Wants a child later on ²⁵ Perceived likelihood of having a child in the next five years (yes certainly, yes probably, maybe, no probably not, no certainly not) ²⁵

Note. ^a superscript refers to study reference number: ¹ Barber (2001), ⁶ Gerson, Berman & Morris (1991), ⁷ Heaton & Holland (1999), ¹⁷ Miller (1995), ¹⁸ Miller & Pasta (1995), ²¹ Prezeshki, Zeighami & Miller (2005), ²⁵ Testa & Toulemon (2006), ²⁶ Taris (1998), ²⁷ Tough, Benzies, Fraser-Lee, Newburn-Cook (2007), ²⁸ Miller & pasta (1994), ³¹ Roberts, Metcalfe, Jack & Tough (2011), ³² Billari, Philipov & Testa (2009), ³³ Miettinen (2010), ³⁵ Schoen, Astone, Kim & Nathanson, (2009), ³⁶ Barber (2000), ³⁸ Philipov (2009).

Table 2.11

Number of personal value drivers by sub-category according to study

Personal Values drivers (N=131)	Driver and study reference number ^a
Positives of childbearing (n=45)	<p>To carry on our family name and traditions¹² Biological drive¹² It would be something to strive for¹² My family would be pleased if I had a child¹² So that in my old age I would have someone to care for me¹² Good for my relationship with my partner¹² My religious beliefs lead me to want a child¹² I want to invest in the future¹² I want to give love and affection to a child¹² It would be fun to have a child around the house¹² Raising a child would be fulfilling¹² I want the special bond that develops between a parent and a child¹² I want to share what I have and what I know with a child¹² My partner would be pleased if I had a child¹² I want to help shape the next generation¹² It would be something that is a part of us both¹² Most people want to have a child¹² I will develop as a person¹¹ I will give and receive more love¹¹ Another view on what is important¹¹ New interests in life¹¹ A stronger relationship with partner¹¹ Partnership benefits⁶ More contact with my family¹¹ We become a family^{11, 12} I feel complete as a man/woman¹¹ That I do the thing that is the meaning of life¹¹ Sense of security¹³ Everyday life will be more enjoyable¹¹ Child as social resource¹² New interests in life¹¹ I would give a child a good home¹² Experiencing love and life's fuller meaning⁶ Preference for raising children over having a career¹ Personal interest in childbearing⁶ Childbearing requiring creativity⁶ Childbearing value to society⁶ Stimulation and feeling of pride⁶ Children as personal pleasure¹⁵ Children as a social resource¹⁵ Satisfaction of childbearing^{17, 21} Joys of pregnancy, birth and infancy^{17, 21} Importance of having children^{14, 23} Attitudes towards activities with children¹ Expected rewards of having children²⁶ Adding interest to family life⁶</p>
Negatives of childbearing (n=40)	<p>Having a child would cause financial difficulties¹² Economic costs³⁵ My partner does not want a child¹² A child would restrict my freedom to do the things I enjoy¹² A child would be a lot of work for me¹⁹ I could not spend as much time with my partner¹² I am concerned about over population¹² Caring for a child would be an emotional strain¹² I do not like children¹² It might cause problems between me and my partner¹² Having a child would interfere with my career¹² I am concerned about the risk of having a disabled child¹² I do not want the responsibility of bringing up a child¹²</p>

Table 2.11

Number of personal value drivers by sub-category according to study (continued)

Personal Values drivers (N=131)	Driver and study reference number ^a
Values and beliefs (n=14).	<p>I would not have the patience to bring up a child¹² I do not think I would be very good at bringing up a child¹² I think there are more important things in life¹² Costs to career opportunities^{13,35} Costs to spending power¹³ Strains on my relationship¹¹ Costs to relationship with partner¹³ Costs to individual autonomy¹³ Less time to devote to work and career¹¹ Less time for my own interests¹¹ Less freedom¹¹ Poorer economy¹¹ Worries and responsibilities of rearing a child⁶ Belief that children cause worry and strain¹ Attitudes towards career^{1,36} Children mean economic burden¹⁵ Negatives of childcare^{17,21} Parental stress¹⁷ Negative perceptions of family life with children¹⁶ Having enough time for yourself and your interests¹⁵ Having enough time for friends¹⁵ Discomforts of childbearing⁶ Dangers of childbirth⁶ Social and personal restrictions⁶ Time Leisure, social activities⁷ Financial Considerations⁶</p>
Gender role (n=12)	<p>Attitudes³² Subjective norms³² Perceived behavioural control³² Value instrumentality⁶ Emotional Immaturity⁶ Antenatal⁸ Pronatal⁸ Believes mothers work is harmful to children⁷ Support mothers working⁸ Population concerns⁶ Self realisation¹⁵ Attitudes towards family norms¹⁵ Features of current state of being childless²⁶ Evaluation of current state of childlessness²⁶</p>
Religion (n=20)	<p>Gender role orientation¹⁴ Gender role values²² Traditional²⁰ Egalitarian²⁰ Gender equity⁸ Wife as decision maker²⁰ Husband as decision maker²⁰ Traditional family⁸ Traditional parenthood^{17,21} Sexual liberalism⁸ Equal division of work in the family¹⁵ Role model¹⁵</p> <p>Catholic^{8,14,20} Roman catholic²⁹ None^{8,29,32} Not religious²⁵, Baptist⁸ Other protestant⁸ Fundamentalist^{8,22} Other^{8,20,12} Religiousness not important³³ Religiousness important³³ Religiosity^{12,15,25,32} Religious affiliation^{14,17} Religion not important¹⁶ Religion important¹⁶ Importance of religious expression²⁹ Both uncommitted⁵ Female committed male not⁵ Male committed female not⁵ Both committed⁵ Church attendance (weekly, several a month, few per year, never)^{8,19}</p>

Note. ^a superscript refers to study reference number: ¹ Barber (2001), ⁶ Gerson, Berman & Morris (1991), ⁷ Heaton & Holland (1999), ⁸ Jacobson & Heaton (1991), ¹¹ Lampic, Skoog Svanberg, Karlstrom & Tyden (2005), ¹² Langdridge, Connolly & Sheeran (2005), ¹³ Liefbroer (2005), ¹⁴ Mahaffy & Ward (2002), ¹⁵ Miettinen & Paajanen (2003), ¹⁶ Miettinen & Paajanen (2003), ¹⁷ Miller (1995), ¹⁹ Mulder (2003), ²⁰ Myers (1997), ²¹ Prezhshki, Zeighami & Miller (2005), ²² Seecombe (1991), ²³ Skoog Svanberg (2006), ²⁵ Testa & Toulemon (2006), ²⁶ Taris (1998), ²⁹ Miller (1992), ³² Billari, Philipov & Testa (2009), ³³ Miettinen (2010), ³⁶ Barber (2000).

Table 2.12

Number of personality drivers by sub-category according to study

Personality drivers (N=8)	Driver and study reference number ^a
Personality (n=8)	Nurturance ²⁹ Affiliation ²⁹ Autonomy ²⁹ Achievement ²⁹ Sociability ³⁷ Emotionality ³⁷ Activity ³⁷ Neuroticism ³⁹

Note. ^a superscript refers to study reference number: ²⁹Miller (1992), ³⁷Jokela, Kivimaki Elovainio, & Keltikangas-Järvinen (2009), ³⁹ Reis, Dornte & Von de Lippe (2011).

Table 2.13

Number of socio-cultural drivers by sub-category according to study

Socio-cultural drivers (N=18)	Driver and study reference number ^a
Social influence (n=13)	Peers with at least one child ² Similar network partners ² Communication about children ² No communication about children ² No network partner gave support ² Number of network that gave support ² No network partner received support ² Number of network that received support ² Extended family support ⁸ Perceived best friends educational plans ¹⁴ Parents favour having a child ^{17, 18} Friends favour having a child ¹⁷ Social support ³⁹
Societal influence (n=5)	Provision rate of childcare ¹² Child care ²³ Crude birth rate ¹³ Crude marriage rate ¹³ Exchange of help ³²

Note. ^a superscript refers to study reference number: ²Buhler & Fratzckm, (2005), ⁸Jacobson & Heaton (1991), ¹²Langdrige, Connolly & Sheeran (2005), ¹³Liefbroer (2005), ¹⁴Mahaffy & Ward (2002), ¹⁷Miller (1995), ¹⁸Miller & Pasta (1995), ²³Skoog svanberg (2006), ³⁷Jokela, Kivimaki, Elovainio & Keltikangas-Järvinen (2009), ³⁹ Reis, Dornte & Von de Lippe (2011).

The 410 drivers demonstrated disparity in frequency of investigation and heterogeneity in terms of their conceptualisation and measurement. For example, age was conceptualised in more than six different ways (e.g., age, birth cohort). The variation in the conceptualisation of the drivers was evident in the majority of the 10 categories with some drivers being more representative of their categories (e.g. level of education) than others (e.g. parent's educational expectation). The kappa inter-rater reliability scores showed how representative the drivers were of their categories. Low kappa scores were the result of disagreement between the raters for the category personal values due to the heterogeneity of the drivers and the homogeneity of the two sub-categories ('positives of childbearing', and 'negatives of childbearing'). For example, the driver 'childbearing requiring activity' could be conceptualised as a positive or negative of childbearing. In addition, the conceptualisation and employment of the drivers in the research was based on the potential effect the factor would have on a particular outcome. For example, being catholic was examined in terms of its association with the desire for a child (Mahaffy & Ward, 2002), the likelihood of first birth (Myers, 1999) and voluntary childlessness (Jacobson & Heaton, 1991). Consequently, although numerous different drivers were found to be measuring the same principle factor, the potential facilitation or hindrance effect on childbearing varied according to the outcome under investigation, adding to the complexity and heterogeneity of the literature.

Additionally, within each of the 10 categories the distribution of drivers varied, from the category 'life cycle' having only 13 drivers to the category 'personal values' having 131. The heterogeneity of the literature and the varying conceptualisation of the drivers were also shown by the frequency with which drivers had been investigated in the literature (Figure 2.4).

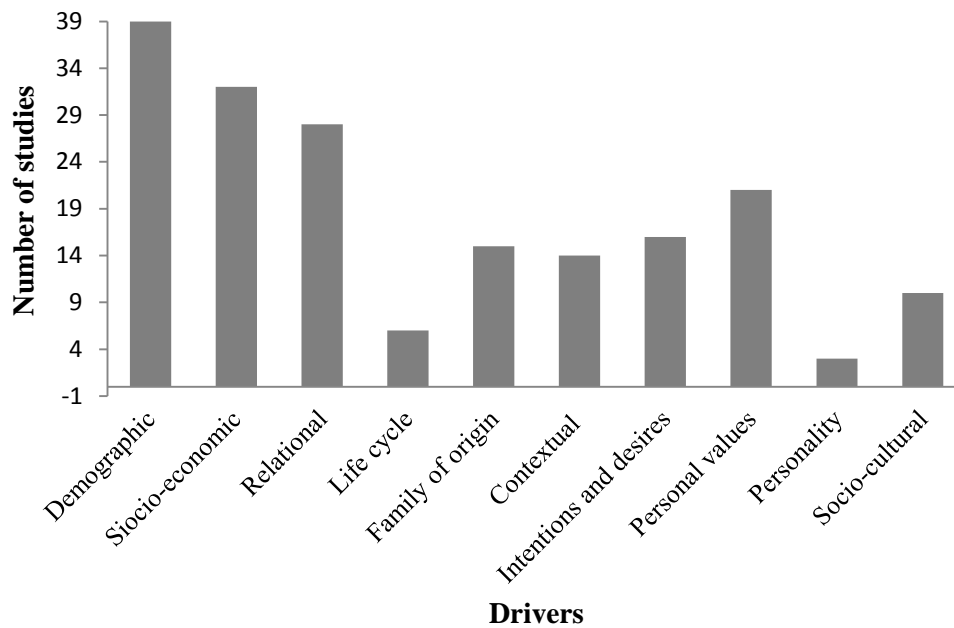


Figure 2.4. The number of studies examining the 10 categories.

The distribution of studies across the different categories of drivers varied considerably. All the included studies investigated demographic drivers and the distribution of the studies across the 15 demographic drivers was more concentrated than in the other categories. For example, 21 studies examined the associations between personal value drivers and childbearing decision-making. These studies were however distributed across a total of 131 drivers. Consequently, results show that few studies examined the same personal value drivers. Therefore, there was a greater amount of variance in the conceptualisation of the drivers in these categories. For example, in the category ‘personal values’, the potential effect having children can have on an individual’s relationship with their partner was conceptualised as ‘I could not spend as much time with partner’ ‘relationship with partner’ ‘a stronger relationship with partner’ ‘good for my relationship with my partner’. Consequently the drivers are overall measuring the same construct but the results demonstrate that researchers are not in

agreement on conceptualisation. The higher agreement in terms of the more concentrated distribution of studies and fewer conceptualisations of the demographic and socio-economic drivers compared to the other categories demonstrated the demographic nature of the research that has been carried out on childbearing decision-making.

Section IV: Study characteristics of the longitudinal studies

Analysis into the associations between the identified drivers and outcomes was carried out on longitudinal studies. Analysing the results of the longitudinal studies provides a better understanding of the potential causal relationships between the drivers and outcomes, compared to the cross-sectional studies because these study designs measure the drivers and outcomes at the same time point. Consequently, cause and effect cannot confidently be inferred or ascertained through examining the results of the cross-sectional studies.

Of the 11 included longitudinal studies (Table 2.14) two used data from a Panel Study on Social Integration in the Netherlands (PSSIN; Taris, 1998; Liefbroer, 2005) and another two studies used data from an Intergenerational Panel Study (IPS) of mother-child pairs (Barber, 2000, 2001). This resulted in nine samples drawn from six countries (United States [$n=5$], Netherlands [$n=2$] France [$n=1$], Germany [$n=1$], Bulgaria [$n=1$], Finland [$n=1$]). The 11 studies reported a total of 10,902¹ respondents after inclusion criteria were applied and four (36.4%) studies reporting data from more than 1,000 respondents. In all of the studies women were aged 50 years or less at the final data collection point with the majority of the studies having respondents reaching adulthood

¹ Barber (2000, 2001) has a sample of mother child pairs, only focal children were included in the calculation for the total number of respondents. Heaton, Jacobson and Holland (1999) report the total $N=1,127$ but report results for data totalling $N=1,449$. $N=1,127$ was used for the calculations of total respondents.

(≥ 18 years old) during the 1970s and 1980s. Of the longitudinal studies nine were initiated in the 1980s, one began in the 1990s and one began in 2002 (Table 2.14).

Table 2.14

Breakdown of methods, sample, outcomes studied and method of analysis according to included longitudinal studies (N 11)

Author	Barber 2000	Barber 2001	Heaton et al. 1999	Jokela et al. 2009	Liefbroer 2005	Miller & Pasta 1995	Myers 1997	Philipov 2009	Reis et al. 2011	Taris 1998	Testa & Toulemon 2006
Study & Country	Intergenerational Panel Study of Parents and Children (IPS)	Intergenerational Panel Study of Parents and Children (IPS)	National survey of families and households NSFH	Population-based Cardiovascular Risk in young Finns study	Panel Study on Social Integration in the Netherlands (PSSIN)	Longitudinal study of childbearing motivation	Marital instability over the life courses	Survey carried out in Bulgaria	The Rostock Longitudinal Study	Panel Study on Social Integration in the Netherlands (PSSIN)	Survey on fertility intentions (conducted by INSEE)
	U.S.	U.S.	US	Finland	Netherlands	U.S.	U.S.	Bulgarian	Germany	Netherlands	France
Study yrs	T1: 1980 T2: 1985 T3: 1993	T1: 1980 T2: 1985 T3: 1993	T1: 1988 T2: 1994	T1: 1980 T2: 1992 T3: 2001	T1-2: 1987-1989 T3-4: 1991-1995 T5: 1999/2000	T1: 1988/1989 T2: 1990 T3: 1991 T4: 1992	T1-2: 1980-1983 T2-3: 1983-1988 T3-4: 1988-1992	T1: 2002 T2: 2005	T1: 1970 T2: 1984/85 T3: 1990/91 T4: 1995/96	T1: 1987 T2: 1991	T1: 1998 T2: 2001 T3: 2003
Original sample size	T1: 1,113	T1: 1,113	T1: 13,017	T1: 1,839	T1: 1,775	T1: 201 couples	T1: 2,033	T1: 10,003	T1: 294	T1: 1,775	T1: 2,624
Selected sample size	835 mother-child pairs Men (50%) and women (50%)	833 mother-child pairs. Men (48%) and women (52%)	1,127 Men (58%) and women (42%)	1,501 men and women, no information about male to female ratio in selected sample size. original sample 58% women, 42% men	1,204 Men (51%) and women (49%)	196 couples Men (50%) and women (50%)	377 men and women No information about male to female ratio	3,738 2197 men, 1541 women	244 Men (49%) and women (51%)	288 men and women. Of the original sample approximately half (49%) were male.	363 Men (43%) and women (57%)

Table 2.14

Breakdown of methods, sample, outcomes studied and method of analysis according to included longitudinal studies (N 11) (continued)

Author	Barber 2000	Barber 2001	Heaton et al. 1999	Jokela et al. 2009	Liefbroer 2005	Miller & Pasta 1995	Myers 1997	Philipov 2009	Reis et al. 2011	Taris 1998	Testa & Toulemon 2006
Outcome(s) and measurement	First birth Unit of analysis is the person-month of exposure to 1 st birth. Event history techniques employed to estimate the relationship between attitudes and the timing of respondents 1 st birth. The number of months the individual is at risk of becoming pregnant with 1 st birth.	First birth Unit of analysis is the person-month of exposure to 1 st birth. Event history techniques employed to estimate the relationship between attitudes and the timing of respondents 1 st birth. The number of months the individual is at risk of becoming pregnant with 1 st birth.	First birth postponement and childlessness 1. Postpones, Want children at wave 1 but had not had children at wave 2. 2. Switches from initially wanting children at wave 1 to no longer wanting children at wave 2. 3. Consistently childless they have no children and do not intend to have children 4. Did not initially intend to have a child but had	First birth Probability of having a first birth at a given year	First birth Timing of 1st birth: full birth histories containing both year and month of birth during first wave and updated at all subsequent waves. The age at which the pregnancy leading up to first childbirth occurred was used as the indicator of the timing of the decision to have a first child.	First birth Each respondent who answered yes to have you tried to get pregnant at initial interview was coded as 1 on the proception variable.	Proception Dichotomous measure indicating whether the couple had a child or the wife is pregnant in the following period (coded as 1 and 0 otherwise).	First birth Dichotomous measure indicating whether or not the respondent had a child in the 3 years	First birth Time up to first birth measured in months	Intentions and first birth Intention was measured by asking whether respondent wanted a child within 4 years after the first interview. First birth was a dichotomous variable; Whether respondent had a baby within four years (high = yes)	First birth and postponement All births that occurred between 1998 and 2003. Women who were pregnant or had a birth by 2003 were considered achievers Postponement Voluntary (those who wanted a child within more than five years at the initial survey, did not have one during the years 1998-

Table 2.14

Breakdown of methods, sample, outcomes studied and method of analysis according to included longitudinal studies (N 11) (continued)

Author	Barber 2000	Barber 2001	Heaton et al. 1999	Jokela et al. 2009	Liefbroer 2005	Miller & Pasta 1995	Myers 1997	Philipov 2009	Reis et al. 2011	Taris 1998	Testa & Toulemon 2006
Outcome(s) and measurement (continued)			children or decided they might want children Intentional parents (individuals who wanted a child at wave 1 and had a child by wave 2) were the comparison group								2003 but still wanted one at the end of the follow up period). Involuntary (those who wanted a child within the next five years and did not have a child in the period 1998- 2003 but still wanted one in 2003)
Statistical analysis	Logistical regression	Logistical regression	Multinomial regression	Survival analysis	Hazard rate models, odd ratios	Logistical regression	Structural equation modelling	Logistical regression	Multiple regression	Structural equation modelling,	Logistical regression
Control variables	Family size, mothers age at first birth, family income, financial assets,	Family size, mothers age at first birth, family income, finan cial assets, parents education, religion,	Age education, income, race, Employment status	Marital status, education, age, area of residence	Parent's education, religion and marital status Number of siblings, gender, age, education, relationship,	No information provided	Race, religion, gender, length of time between interview periods, age of wife, family	Age, union status, number of siblings, education level, household income	No information provided	No information provided	Gender, age, marital status, duration of relationship, education level, employment, income,

Table 2.14

Breakdown of methods, sample, outcomes studied and method of analysis according to included longitudinal studies (N 11) (continued)

Author	Barber 2000	Barber 2001	Heaton et al. 1999	Jokela et al. 2009	Liefbroer 2005	Miller & Pasta 1995	Myers 1997	Philipov 2009	Reis et al. 2011	Taris 1998	Testa & Toulemon 2006
Control variables (continued)	parents education, maternal work, religion, mothers experience of divorce and remarriage age gender,	mothers experience of divorce and remarriage, age, gender,			status, employment		income, couples years of education, marital happiness				religion, fecundity

Section V: What is the nature of the relationship between the identified factors and childbearing?

Demographic drivers

All of the 11 longitudinal studies examined the association between demographic drivers and the childbearing outcomes. However only eight studies showed significant associations. The studies were heterogeneous using different methods for measuring outcomes, control variables and populations (see Appendix G Table G.1 for full evidence tables of significant results for demographic drivers).

Age was examined by seven of the 11 studies all of which found it to have a significant effect on childbearing preferences and behaviour. Age was conceptualised as birth cohort, age in years, age groups or the wife's age. Results are described in terms of the effects of older age on childbearing. Liefbroer (2005) found that in a sample of men and women aged 18, 22 and 26 years at the beginning of the survey, childbearing shortly after wave one (duration since wave one) was more likely to occur for men and women aged 26 years, than among either of the younger cohorts (18 and 22 years of age). However, younger age interacted with duration since wave one, with the rate of entry into parenthood increasing for the younger groups as they progressed into their twenties. Older age also interacted with duration since wave one, with the rate of entry into parenthood decreasing. The pattern of the results obtained by Liefbroer (2005) suggests that for men and women the effect of age on childbearing is bell shaped, reaching the peak of its facilitation in the late twenties and tailing off again in the thirties, a similar effect to that found by Jokela, Kivimaki, Elovainio and Keltikangas-Järvinen (2009). Jokela et al. (2009) found that age was associated with an increase in the odds of having a

first birth. However, this effect was found to additionally interact with time. Individuals belonging to different birth cohorts had different probabilities of having a child. For younger individuals (i.e., 18–27 years old) the probability of having a child increased over time, whereas for older individuals (i.e., 30 years old or over) the probability remained stable or decreased (Jokela et al., 2009).

Heaton, Jacobson and Holland's (1999) findings support those found by Liefbroer (2005) and Jokela et al. (2009). In a population of men and women aged 19 years and above (mean age being 34.9 ± 6.3), older age significantly increased the likelihood of being consistently childless, switching from initially wanting a child to wanting to be childless and the likelihood of switching from initially not wanting a child to wanting or becoming a parent. In other words as individuals age, their decisions and intentions about childbearing change, either they decide it is too late to have a child or they decide that having a child is a good thing to do before their time runs out. These results for age are similar for men and women apart from when it comes to postponing childbearing. In this case, the coefficient is larger and significant for males. Older age is therefore shown to hinder childbearing for men, significantly increasing the likelihood that they will postpone having their first child (Heaton et al., 1999).

Myers (1998), Testa and Toulemon (2006) and Philiopov (2009) also found older age to hinder childbearing. In a sample of married men and women (where the wife was under 45 years of age), Myers (1998) found that the wife being older significantly hindered childbearing. Testa and Toulemon (2006) found that among men and women 20–45 years old (mean age being 30 ± 0.08), older age significantly hindered childbearing, decreasing the likelihood of first birth and increasing the likelihood of voluntary and involuntary postponement (ie. failing to have a desired birth but still wanting to start a family). Furthermore, Philiopov (2009) found that among men and women aged 18–34

years old, older age (31–34 years) decreased the likelihood of having a first birth in the follow up period (three years after first testing). Women aged 18–24 were significantly more likely to have a child than women aged between 25 and 34 whereas men aged between 18 and 29 were more likely to have a child than men aged 30–34 (Philiopov, 2009). Thus, the effect of age is shown to have an earlier impact on the decision-making of women compared to men. Contrary to these results, Taris (1998) found that for a sample of men and women aged between 18 and 30 years of age, older age significantly increased the intention to have a child and the likelihood of having a first birth for men and women.

Race and ethnicity was examined by two of the 11 studies, both of which found significant associations with childbearing (Heaton et al., 1999, Myers, 1998). The two studies examined the childbearing intentions and behaviour of white, black (Heaton et al., 1999), nonwhites, and non-Hispanic white individuals (Myers, 1998). Overall, results show that compared to whites, black individuals were more likely to have children. Heaton et al. (1999) found that being black, facilitated childbearing, being positively and significantly associated with intentional parenthood. Black individuals were unlikely to be consistently childless or switch to wanting to be childless. Further, black individuals were less likely to postpone childbearing or switch to wanting to have a child. The effect of race was consistent throughout the models presented by Heaton et al. (1999) indicating its effect to be independent of the other variables examined. The effect was similar for both men and women however, men were significantly less likely to become parents or switch to wanting a child compared to women. Consequently, men were found to be more likely to be intentional parents compared to women. Myers (1998) additionally found that being black increased the likelihood of having a first birth. Consequently the effect of race on childbearing was shown to be a consistent across the studies examining this driver.

Gender was examined by all of the 11 longitudinal studies. However only, four found a main effect of gender. Overall results for gender showed men to be less likely to have a child than women (Barber, 2001; Jokela et al., 2009; Reis et al., 2011; Testa & Toulemon, 2006). All studies that found a significant gender effect had samples of men and women without specification of their marital status. In a sample of men ($n=408$) and women ($n=425$), women were significantly more likely to have a first birth compared to men (Barber, 2001). In addition, Testa and Toulemon (2006) found that in a sample of 205 women and 156 men, men were significantly less likely to have a first birth than women, a result supported by Jokela et al. (2009) and Reis et al. (2011) who also found that the odds of having a child in the follow-up period to be lower for men than for women.

Socio-economic drivers

Overall 10 of the 11 longitudinal studies examined the association between socio-economic drivers and the childbearing outcomes. Nine of these studies found socio-economic drivers to be significantly associated with childbearing behaviour (see Appendix G Table G.2 for full evidence table of significant results for socioeconomic drivers; Barber, 2000, 2001; Heaton et al., 1999; Jokela et al., 2009; Liefbroer, 2005; Mahaffy, 2002; Myers 1997; Philipov, 2009; Testa & Toulemon, 2006). Of the nine studies that found a significant association between socio-economic drivers and childbearing behaviour, eight found educational drivers to be associated with childbearing preferences and behaviour. Conceptualisation and measurement of education varied, being measured in years (Heaton et al., 1999), according to educational level (e.g., educational level at 16 years old), achievement of secondary education (Liefborer, 2005; Philipov, 2009), mean of both spouses education (Myers, 1997), being currently enrolled

in education (Barber, 2001; Philipov, 2009), adolescent experiences of school success (i.e., total number of As and Bs in the final semester of high school divided by the total number of courses taken; Barber, 2001) and the highest level of completed study (Testa & Toulemon, 2006). Philipov (2009) also examined the association between intentions to study and childbearing behaviour.

Heaton et al. (1999), Jokela et al. (2009) and Myers (1997) found that for men and women, higher education hindered childbearing. Specifically, Heaton et al. (1999) found that higher education increased the likelihood of postponement of first birth and decreased the likelihood that individuals would change their childbearing intentions from not wanting a child to wanting a child or becoming a parent. Myers (1997) found that the higher the education of the couple the less likely they were to have a first birth. This was similar to the results found by Jokela et al. (2009) who found higher education decreased the likelihood of men and women having a first birth.

Liefbroer (2005) found that the hindering effect of educational attainment was only present for women. Highly educated women were found to delay childbearing whereas no significant association was found for men. Philipov (2009) found that lower educated men (lower than secondary) were significantly more likely to have a first child compared to those with higher education. Early adulthood experiences of education were also found to hinder childbearing (Barber, 2001). Being enrolled in education was found to decrease the likelihood of having a marital first birth for men and women (Barber, 2000, 2001) whereas early adolescent experiences of school success (i.e., higher grades achieved) were found to decrease the likelihood of premarital first births (Barber, 2001). Furthermore, Philipov (2009) found that being enrolled in education significantly hindered the likelihood of having a first birth for men and women, compared to those not enrolled and not intending to study. Intention to study was also shown to hinder the

childbearing behaviour of women (Philipov, 2009). Only one of the longitudinal studies found a positive effect of education on childbearing behaviour. Testa and Toulemon (2006) found that individuals with higher education who considered themselves likely to have a child in the next five years were more likely to have a child than individuals who had lower levels of education but similar desires and intentions (mean age of sample $30 \pm .08$).

Overall being employed was found to facilitate childbearing. Employment status was examined by three of the 11 longitudinal studies (Barber, 2001; Philipov, 2009; Testa & Toulemon, 2006). Being employed, compared to being unemployed was significantly associated with an increased likelihood of having a first birth for men (Barber, 2001; Philipov, 2009). Additionally, in a sample of respondents, the majority of which were employed, Testa and Toulemon (2006) found that being unemployed significantly hindered the likelihood of having a first birth for men and women.

Financial status drivers were examined by four studies. However, only two of these four studies were found to have a significant effect. Income was conceptualised in \$1,000s (Myers, 1997), wife's income contribution (Myers, 1997), social mobility (whether the couple's financial situation had changed significantly since the last interview; Myers, 1997) and higher income (Heaton et al., 1999). Results are described in terms of the effects of higher income on childbearing. Heaton et al. (1999) found that higher income was associated with intentional parenthood decreasing the likelihood of postponing the first birth, being consistently childless and/or changing ones intentions from initially not wanting to have a child to wanting to have a child. Higher income was found to have similar effects for men and women. Heaton et al. (1999) found that for men higher income was associated with being less likely to postpone childbearing whereas for women higher income was associated with changing intentions from initially not wanting

a child to wanting a child or becoming a parent. Consequently, for men higher income was associated with an increased likelihood of intentional parenthood compared to women. However, Myers (1997) found the reverse effect. Higher income was found to hinder childbearing, decreasing the likelihood of first birth as was the wife having a higher contribution to the family income in a sample of married persons aged 55 years and younger (wife under the age of 45 years). Notwithstanding this, social mobility (whether the couple's financial situation had changed significantly since the last interview) was found to significantly facilitate the likelihood of having a first birth for men and women (Myers, 1997).

Relational drivers

All of the 11 longitudinal studies examined the effect of relational drivers on childbearing decision-making. However, only nine found relational drivers to be significantly associated with childbearing behaviour (see Appendix G Table G.3 for full evidence table of significant results for relational drivers; Barber, 2000, 2001; Heaton et al., 1999; Jokela et al., 2009; Liefbroer, 2005; Miller & Pasta 1995; Myers 1997; Reis et al., 2011; Testa & Toulemon, 2006).

All of the 11 longitudinal studies examined relationship status drivers, six of which (Barber, 2000; Heaton et al., 1999; Jokela et al., 2009; Liefbroer, 2005; Reis et al., 2011; Tetsta & Toulemon 2006) examined the effect of being married at the initial stage of the survey and found significant associations. Additionally, Heaton et al. (1999) looked at the effect of getting married between the survey intervals on childbearing intentions and the likelihood of first birth. Being married at the beginning of the survey or getting married between the phases of the survey was found to facilitate childbearing, decreasing the likelihood of postponement of first birth and switching from initially wanting a child

to wanting to be childless (Heaton et al., 1999). In addition, being married at time one was associated with a decreased likelihood of being consistently childless (Heaton et al., 1999). The facilitating effect of marriage was similar for men and women but the coefficients were slightly larger for men. As with Heaton et al. (1999), marriage was also found to have a positive effect on the childbearing behaviour of men and women (Barber, 2000; Jokela et al., 2009; Liefbroer, 2005; Reis et al., 2011; Testa & Toulemon, 2006).

Cohabitation or living in a consensual relationship at the beginning of the survey period was also found to have a significant effect on childbearing behaviour by three of the 11 studies (Barber, 2001; Heaton et al., 1999; Liefbroer, 2005). As with being married, Heaton et al. (1999) additionally examined the effect of beginning cohabitation in the intervals between surveys. Heaton et al. (1999) found cohabitation to be associated with intentional parenthood. Cohabiting individuals were less likely to be consistently childless and individuals who began cohabiting were less likely to postpone childbearing (Heaton et al., 1999). Male cohabitants were found to be less likely to postpone childbearing and more likely to be intentional parents compared to female cohabitants. Barber (2000, 2001) found that cohabitating increased the likelihood of premarital first births for men and women and Liefbroer (2005) additionally found cohabitation facilitated childbearing for men and women. Thus, as with being married, being in a union was positively associated with childbearing preferences and behaviour.

Two of the 11 studies observed an effect of marital or union duration (Myers, 1997; Testa & Toulemon, 2006). Testa and Toulemon (2005) measured union duration using ordinal data (i.e., 0–2 years, 3–6 years and 7 or more) while Myers (1997) measured duration of marriage by the number of years the individuals had been with their current spouse. Myers (1997) and Testa and Toulemon (2005) found that longer duration of union hindered childbearing, decreasing the likelihood of first birth (Myers, 1997) and

increasing the likelihood of postponement (Testa & Toulemon, 2005). In addition however, Testa and Toulemon (2005) also found longer duration of union to decrease the likelihood of involuntary postponement thus facilitating childbearing (Testa & Toulemon, 2005).

Three studies examined the association between an individual's perceived marital happiness/relationship stability, divorce proneness and childbearing (Heaton et al., 1999; Liefbroer, 2005; Myers, 1997). Heaton et al. (1999) found that respondents who expressed concern about the stability of their marriage were more likely to be consistently childless. Additionally, for men, perceiving childbearing to have a negative effect on their relationship with their partner hindered childbearing behaviour by decreasing the likelihood of having a first birth between survey waves (Liefbroer, 2005). Myers (1997) also found that relationship instability hindered childbearing, finding divorce proneness to decrease the likelihood of first birth. Thus, for men and women, their relationship status, in addition to its stability, are important drivers that influence their childbearing preferences and behaviours.

Other relational drivers were also associated with childbearing. 'Dating' or having prior romantic relationship experience facilitated the likelihood of having a first birth (Barber, 2001; Liefbroer, 2005). Liefbroer (2005) examined the association between steadily dating at the beginning of the survey on the likelihood of first birth and found that it facilitated childbearing for men and women. Additionally, Barber (2000, 2001) found that 'going steady' before the age of 18 years also facilitated childbearing. In contrast, preferring to marry at an older age (Barber, 2000), getting divorced (Miller & Pasta, 1995), being single (Philipov, 2009; Testa & Toulemon, 2006) or getting remarried (Myers, 1997) were found to hinder childbearing for men and women.

Life cycle drivers

Of the 11 studies three studies examined drivers in the life cycle category, two of which found significant associations between the drivers and childbearing decision-making (see Appendix G Table G.4 for full evidence table of significant results for life cycle drivers; Miller & Pasta, 1995; Taris, 1998). Miller and Pasta (1995) and Taris, (1998) examined the association between perceived fecundity, chances of achieving pregnancy and childbearing. However, the two studies conceptualised the constructs quite differently. Taris (1998) measured chances of success of having a baby in terms of the influence environmental drivers (i.e., childbearing desires of the partner) have on the likelihood of having a child while Miller and Pasta's (1995) conceptualisation was more biological, asking respondents to rate their perceived fertility. Although conceptualised differently, both studies found that positive perceptions of success and fertility were positively associated with the intention to have a child (Taris, 1998) and proceptive behaviour (i.e., actively trying to conceive; Miller & Pasta, 1995) for men and women. Additionally, Taris (1998) examined the association between an individual's current level of satisfaction with being childless and found high satisfaction of childlessness to be negatively related to intentions to have a child for men and women (Taris, 1998).

Family of origin drivers

Of the 11 longitudinal studies five examined the possible associations between family of origin driver's and childbearing decision-making (Barber, 2000, 2001; Liefbroer, 2005; Miller & Pasta, 1995; Philipov, 2009). All five studies found family of origin drivers to have a significant effect on childbearing behaviour (see Appendix G Table G.5 for full evidence table of significant results for family of origin drivers).

In a sample of men and women, of whom 10% had parents who were divorced, Liefbroer (2005) found that having parents who were divorced significantly hindered childbearing for women but not for men. Barber (2001) found that having a greater number of siblings (i.e., mother's total number of children) increased the likelihood of marital and premarital first births for men and women. Having a greater number of siblings was also found to facilitate childbearing but only for men (Liefbroer, 2005; Philipov, 2009).

Miller and Pasta (1995) found that having parents who favoured having children, had a positive and significant association with the female respondent's proceptive behaviour. No significant association was found for men. Additionally, Barber (2001) found that having a mother who reported affiliation with the catholic religion significantly reduced the likelihood of having a premarital first birth for men and women compared to those who reported otherwise (Barber, 2001). The mother wanting their child to be older at marriage, have higher education and employment (Barber, 2000) also hindered childbearing for men and women.

The socio-economic status of the respondents' parents was also found to be influential. Barber (2001) used the variable parent's education as a control variable measuring it in terms of the average of the mother's and father's total education in years on the likelihood of the focal child having a premarital or marital first birth. Results showed that the higher the parent's educational achievement, the less likely male and female respondents were to have a premarital first birth. However, parent's educational achievement had no significant effect on the likelihood of having a marital first birth (Barber, 2001). Barber (2001) also found that greater family financial assets (measured at the time of the respondent's birth) such as cash, stocks and bonds (in dollars) significantly hindered childbearing, decreasing the likelihood of both premarital and marital first births

for men and women during the study period. Having a mother who worked when the respondent was aged 15 decreased the likelihood of having a first birth for men and women (Barber, 2000) but also interacted with gender showing that if the respondent was a daughter, the likelihood of having a first birth was significantly increased (Barber, 2000).

Socio-cultural and contextual drivers

Of the 11 longitudinal studies, three examined socio-cultural drivers but only one found a significant association (Reis et al., 2011). Further, only one study examined contextual drivers (Jokela et al., 2009). Jokela et al. (2009) found that living in a rural area of residence decreased the likelihood of having a first birth during the study period for men and women (see Appendix G Table G.6). Reis et al. (2011) found social support from friends to be associated with childbearing behaviour increasing the hazard rate of first births (entering into parenthood earlier) but only for women (see Appendix G Table G.7).

Intentions and desire drivers

Drivers in the intention and desire category were examined by five of the 11 studies all of which found a significant association with childbearing (Barber, 2001; Miller & Pasta, 1995; Philipov, 2009; Taris, 1998; Testa & Toulemon, 2006). Constructs, measurements and conceptualisation varied according to study as did control variables and outcomes examined (see Appendix G Table G.8 for full evidence table of significant results for intention and desire drivers).

The intention to have a child was found to significantly increase the likelihood of having a first birth (five studies: Miller & Pasta, 1995; Philipov, 2009; Taris, 1998; Testa

& Toulemon, 2006). Respondents were asked whether they wanted a child in the next four years (Taris, 1998) or their perceived likelihood of having a first birth in the next five years (Testa & Toulemon, 2005). Others asked whether or not respondents intended to have a child (Philipov, 2009) or how certain the respondents were about having a child (Miller & Pasta, 1994). All four studies found that wanting a child within the specified time frame, intending to have a child or being certain about having a child facilitated childbearing for men and women. Miller and Pasta (1995) additionally reported that greater disagreement between husbands and wives in terms of their childbearing intentions decreased proceptive behaviour (Miller & Pasta, 1995).

Child-timing intentions (Miller & Pasta, 1995; Testa & Toulemon, 2006) and family size preferences (Barber, 2001) were also found to be positively associated with childbearing. Testa and Toulemon (2006) conceptualised child-timing intentions as wanting to have a child in the next five years, how firmly this intention was, perceived likelihood of having a child in the next five years and the certainty of this happening. Comparison group for these analyses were individuals who wanted a child later on in the future but were certain that they did not want children in the next five years (Testa & Toulemon, 2006). Child-timing intentions were measured by Miller and Pasta (1995) by asking the respondents how soon they intended to have their first child. Higher child-timing intentions (sooner) were positively related to both proception (Miller & Pasta, 1995) and the likelihood of first birth (Testa & Toulemon, 2006). Using the Coombs (1974) scale Barber (2001) found that higher family size preferences were positively and significantly related with marital first birth for both men and women.

Personal value drivers

Six of the 11 studies examined the potential effect of drivers in the personal values category on childbearing decision-making. Personal value drivers were found to have significant associations with childbearing preferences and behaviour by four of these studies (Barber, 2001; Heaton et al., 1999; Liefbroer, 2005; Myers, 1997; see Appendix G Table G.9 for full evidence table of significant results for personal value drivers). Heaton et al. (1999) found that alternative opportunities to childbearing impacted on childbearing behaviour. Investment in leisure time increased the likelihood of being consistently childless. However, it was also found to increase the likelihood of switching from initially not wanting to have a child to wanting to or becoming a parent. Gender analysis revealed that compared to men, women with a high investment in leisure time were significantly more likely to switch to wanting a child (Heaton et al., 1999). Thus, alternative opportunities were shown to have a more profound hindrance on the childbearing behaviour of men compared to women (Heaton et al., 1999). Positive attitudes towards luxury goods were also found to decrease the likelihood of premarital and marital first birth for men and women. Such results were also supported by Liefbroer (2005) who found negative evaluations of the effect of having children on spending power (i.e., perceiving higher costs) decreased the likelihood of first birth for men while no significant effect was found for women. Valuing career and perceiving higher costs to career as a result of childbearing significantly decreased the likelihood of having a first birth, during the study period, for men and women (Barber, 2001; Liefbroer, 2005).

Results showed that positive perceptions of children and childbearing facilitated the likelihood of having a first birth. Barber (2001) found that believing that children cause worry and strain significantly decreases the likelihood of marital first births for men and women while for women with positive attitudes towards activities with children, the

likelihood of having a marital first birth was increased (Barber, 2001). Additionally, a higher perceived sense of security from childbearing had a significant positive main effect on the likelihood of first birth for men (Liefbroer, 2005). Duration since wave one was also found to interact with birth cohort and sense of security from childbearing, significantly increasing the likelihood of having a first birth for both men and women (Liefbroer, 2005).

Similarly, having higher personal and familial motivation was found to facilitate childbearing for men and women. Having higher or more positive personal motivation (measured by a four index item summing motivations based on the stress and worry of raising children, the desire for someone to care for the respondent when they are old, having someone to love and needing something to do) was associated with intentional parenthood (Heaton et al., 1999) and a decreased likelihood of postponing the first birth. Family motivation (measured by a three index item about the importance of giving grandchildren to parents, providing a child with siblings and having at least one boy and one girl) was found to decrease the likelihood of remaining consistently childless and decrease the likelihood of switching from initially not wanting to have children to wanting to have or having a first birth (Heaton et al., 1999). Gender analysis revealed that men who had high familial motivation were less likely than women to switch to childlessness (Heaton et al., 1999).

Traditional gender role orientation had a significant effect on childbearing (Heaton et al., 1999; Liefbroer, 2005; Myers, 1997). Traditional gender role was measured and conceptualised differently in the three studies in which it was considered. Heaton et al. (1999) measured traditional gender role orientation by asking the respondents their position on whether they believed having a working mother was harmful, whereas Myers (1997) measured it in terms of egalitarian gender role

orientation. Furthermore, Myers (1997) investigated the effect of the husband as the decision maker in the relationship conceptualising gender role in terms of potential power imbalances between spouses. Liefbroer (2005) examined the perceived effect childbearing can have on the autonomy of women. Results are presented in terms of having a traditional gender role orientation.

Overall holding more traditional gender role attitudes was found to be positively related to childbearing, increasing the likelihood of first birth (Myers, 1997), and decreasing the likelihood of switching from initially wanting children to not wanting children (Heaton et al., 1999). Traditional gender role orientation was however found to increase the likelihood of postponement of first birth among people who expressed concern about the effects of having a working mother (Heaton et al., 1999). Liefbroer (2005) found that the increased impact childbearing was perceived to have on autonomy the less likely women were to have a first birth. However, this effect was found to decrease over time (duration since wave one).

Personality drivers

Of the 11 longitudinal studies two examined personality drivers and their association with childbearing preferences and behaviour. Both studies found significant associations (see Appendix G Table G.10 for full evidence table of significant results for personality drivers). Jokela et al. (2009) found that scoring higher on sociability measures resulted in a 15% increase in the odds of having a first birth at any age. Activity (high stability in an individual's personality) across the 9 years of follow up was also found to lead to a 19% increase in the odds of having a first birth for men only. However, this result became non-significant when marital status variables were introduced to the model. Thus, the effect of activity was accounted for by marital status. Reis et al. (2011) found

more neuroticism during early adult life decreased the odds of having a first birth for men and women.

Summary

Of the 410 drivers, few were examined by the longitudinal studies. Further, few longitudinal studies found significant associations between the drivers and childbearing preferences and behaviours. The significant associations found showed the drivers to operate similarly for men and women. Childbearing preferences and behaviours were determined by demographic (e.g., age), socio-economic status (e.g., income), personal and familial values (e.g., traditional gender role, number of siblings), relational (e.g., marital status), individual difference (e.g., personality) and socio-cultural drivers. Overall, being female, younger, black, married/cohabiting, having a stable relationship, a good socio-economic standing, being personally orientated towards childbearing (e.g., family motivation), being brought up in an environment that is orientated towards childbearing (e.g., having a greater number of siblings) and perceiving fewer individual costs as a result of childbearing facilitated childbearing behaviour for men and women.

In addition to the main effect found for gender, that showed men to be significantly less likely to have positive childbearing preferences and behaviours, important gender differences were found between men and women in terms of the effects of the drivers. For example, the drivers being employed, older age, having a higher number of siblings and cohabitation were found to have more of a consistent facilitating effect on the childbearing behaviour of men compared to women. On the other hand perceiving childbearing to entail higher costs to leisure time and spending power were found to have a more profound negative effect on the childbearing behaviour of men. For women, the drivers that had the most profound positive effect on their childbearing

preferences were drivers that reflected childbearing orientation (e.g., positive attitudes towards activities with children). Conversely, the drivers that had the most profound negative impact on the childbearing preferences and behaviours of women were those reflecting alternatives to family life. For example, higher education, perceiving costs to career and having a more egalitarian gender role within the family (i.e., wife's income contribution) were found to hinder childbearing.

Section VI: Threats to validity

Methodological limitations were present in all of the included longitudinal studies. However, the quantity and severity of methodological limitations varied. Selection bias was a threat in the majority of the 11 longitudinal studies. Barber (2001), across a period of 13 years examined a sample of mother and child pairs. Inclusion criteria for the study was that the focal children had to be childless at time one (T1) and both the focal children and the mothers had to have completed all waves of the survey with no missing data. As such the final sample was 833 mother child pairs. However, Barber (2001) showed only 808 individuals actually had complete data (see Barber 2001, Table 1) and failed to provide an explanation as to why the 25 individuals who had missing data were included in the analysis. Another bias is evident in the study conducted by Liefbroer (2005). In this study, analysis was based on information from all participants that participated in at least two waves of the study. This could have underestimated or overestimated the results. For example, individuals who completed T1 and T2 could be yet to achieve their childbearing goals, compared to those who drop out later (and thus have complete data at later waves) who are more likely to have had children. However, Liefbroer (2005) did compare the sample that only completed wave one to those who completed multiple waves and found no difference in the perceived costs and rewards of childbearing. Nonetheless, selection

bias may have resulted in certain individuals being more likely than others to be included in the final analysis. This could have undermined the external validity of the results obtained. Furthermore, the representativeness of the samples may also bias the applicability of the results to certain populations. The included samples showed little economic and cultural diversity. The majority of the samples were white, well educated with high economic status. Thus the results may not be reflective of the childbearing preferences and behaviours of the general population.

Although specific groups were initially underrepresented due to sampling procedures, underrepresentation was increased throughout the duration of the studies due to dropout. For example, in the analysis of dropout Liefbroer (2005) found that individuals who were underprivileged were more likely to dropout than those with good socioeconomic standing. Myers (1997) also found that the majority of individuals who dropped out were African American, Hispanic, younger and less well educated than those that remained in the study. Further, Jokela et al. (2009) found a higher rate of male dropout in addition to younger age groups. Since the outcomes were assessed from months to years after the initial survey, attrition was a threat in most of the studies with the childbearing preferences and behaviours of these specific groups having decreased representation throughout the duration of the studies. Attrition was of particular relevance in the studies conducted by Liefbroer (2005) and Testa & Toulemon (2006) in which completion rates for all waves of the study were 47% and 13.8% respectively. Although, the attrition rates are high for these studies Liefbroer (2005) overcomes this by maximising the sample size by performing the analysis on information about all respondents who participated in at least two waves of the study. Furthermore, the high attrition rate for Testa and Toulemon (2005) is in part due to the inclusion criteria applied to the sample. Testa and Toulemon (2005) used data from a French survey on fertility

intentions conducted by the INSEE (Institut National de la Statistique et des Etudes Economiques). This data contained the childbearing preferences and behaviours of men and women who were infertile or sterilised. Therefore, the final sample size is small due to the primary aims of the survey being to examine the childbearing preferences and behaviours of childless individuals who were not sterile or infertile at the initial interview or during follow-up. Notwithstanding this, completion rates were overall higher for those investigators that began their data collection in the 80s and where study duration and data collection intervals were shorter (e.g., Miller & Pasta, 1995; Taris, 1998). Longer duration resulted in more time during which an individual could decide not to continue to participate or could have moved house without leaving a follow-up address (Testa & Toulemon, 2006).

High attrition and selection bias in the included studies are of particular importance when it comes to statistical validity and power. It is plausible that in the studies with small samples ($n=363$) such as Testa and Toulemon (2005), the power of the statistical test was too low to find significance. Additionally, Testa and Toulemon (2005) failed to examine interaction effects of gender due to the samples of men being too small for intended analysis. Consequently, important gender effects could have been missed. The issue of statistical power was only touched on and acknowledged to be a potential problem by Testa & Toulemon (2005). However, statistical power is especially important in studies examining behaviour such as those in this review.

Measurement error often contributes to small effect size in psychosocial research and was an evident threat in the studies included in the review. Miller and Pasta (1995) failed to find a significant effect of child-number intentions for parity 0 individuals. This is however likely to be due to the fact that this variable was a 'synthetic' variable calculated from the data of seven predictor variables (i.e., child-number desires, perceived child-

number desires of spouse, measures of positive and negative childbearing motivation, gender, parity, age) measured at the initial interview. Miller and Pasta (1995) argue that using a measure of child-number desires is likely to predict child-number intentions. However, desires and intentions have been shown to have different associations with completed family size. Child-number desires have been found to be associated with overestimating the total number of children the respondent will have, whereas intentions are a more reliable indication of actual behaviour (Testa & Toulemon, 2006). Thus, this variable is questionable in terms of whether it is a true representation of child-timing intentions. Additionally, other variables (and their measurements) included in Miller and Pasta's (1995) study may have distorted the overall results obtained. Child-timing intentions were measured by asking how soon the respondents wanted to have their first child on a scale of one to eight, one being within 12 months and eight being that they do not intend to have a child. Including individuals who did not intend to have a child may have increased the weight of the variable. This is additionally shown when the category 'did not intend' was taken out of the analysis, which reduced the association between the variable and the outcome proceptive behaviour. The reliability of the measures included in the studies is further brought into question by the fact that very few of the studies provided reliability analysis. Where reliability statistics were provided they were low (e.g., Myers, 1997). Furthermore, Miller and Pasta (1995) refer the reader to Miller (1994) for the reliability of their measures. However, Miller (1994) does not provide Cronbach alpha or alternative values for reliability.

The measurement of the outcomes could also initiate problems. A number of the studies assume that the study period is equal to continuous exposure to pregnancy. The authors exclude individuals who have been sterilised but they do not take into account the respondent's use of contraception. Consequently, the majority of the research assumes

that the respondents are actively exposing themselves to pregnancy. The only study that does not assume continued exposure to pregnancy is that conducted by Miller and Pasta (1995). In this study, respondents were specifically asked whether they had tried to get pregnant during the last 12 months/since the last interview. Consequently, the majority of the studies did not consider the act of trying to get pregnant. Rather they considered the outcome of either pregnant/have a first birth or not. The problems posed by the assumption of continued exposure to pregnancy and the lack of complete data on reproductive lifespan behaviour were evident in all the included studies. For example, Heaton et al. (1999) classifies those who intend to have a child at T1 and those who still intend, but have yet to have a child at time two (T2) as postponers. However, some of these individuals could have been actively trying to get pregnant but may have been unsuccessful. Consequently the possibilities of reduced fertility or infertility are largely overlooked by the studies. Further, such conceptualisations overlook the effect of life course variables such as age. The surveys present a snap shot of childbearing behaviour (range 2–13 years of follow-up) but the length of continuation of the studies do not accurately represent the reproductive lifespan, particularly for men. Consequently, the statistical effects/associations are underestimated as the majority of the respondents will eventually begin parenthood but possibly not in time span of study. Consequently, postponers may be younger individuals and thus may wait longer until they begin their childbearing journey than older individuals. It is difficult for younger individuals to make effective long-term forecasts of their childbearing intentions and behaviour (e.g., Liefbroer, 2005).

The measurement of the outcome variable used in Barber's (2000, 2001) studies also present threats to the validity of the results obtained. Barber (2000, 2001) used life history calendars to gather retrospective event history data on timing of first birth. While

life history calendars are thought to be flexible enough to collect continuous measures of complex sequences of personal events, having approximately eight years in between data collection on fertility history (data was collected at 23 and 31 years of age) could reduce the validity of the results in terms of the respondents ability to accurately report sequences of events. While this is arguably unlikely when it comes to having a first birth, the length between data collection points could be reduced to increase validity of the results obtained.

Another threat to the generalisability of the results obtained is the data used. In the majority of the studies, participants became adults in the 70s and 80s therefore the issues that are important to their decision-making may not be reflective of the issues faced by individuals in the 90s. Furthermore, ideas presented by the studies are somewhat outdated. For example, Barber (2001) used scales that referred to preferences of employment and childbearing but did not include scales that incorporate the combination of working and having children. Such scales are of reduced relevance to contemporary society. Consequently, the applicability of the results to contemporary childbearing preferences and behaviour is uncertain.

Discussion

The results reveal a complex and heterogeneous literature. There were numerous childbearing outcomes and drivers that differed in measurement, how frequently they were investigated and in representation of discipline, county, population and sample size. Furthermore, the distribution of the studies across the identified drivers illustrated disproportional attention to demographic and socio-economic drivers compared to those in other categories highlighting the predominantly demographic focus of the identified

literature. The results for the significant associations between the identified drivers and childbearing behaviour illustrate the decision of whether and when to begin parenthood to be relatively similar for both men and women; a complex time dependent process influenced by individual, social and environmental drivers.

The childbearing decisions of men and women appear to be based on whether they have achieved certain life goals and the perceived impact childbearing can have on their lifestyle relevant to their current life stage. Although this process is similar for men and women some important gender differences were identified. Men were found to strive towards the achievement of pronatalist environments in which to have a child wanting high relationship stability (e.g., marriage, cohabitation) and a source of income to support their family. On the other hand women were found to strive towards the achievement of independence in the form of education, career and income security. Only once these life goals have been achieved do men and women enter into parenthood. Further, results suggest that if the achievement of such factors is not possible men are less likely to enter into parenthood than women (Jokela et al., 2009; Reis et al., 2011). However, results show that when this occurs for women, women revise their intentions based on their biological ability to have children (e.g., age), either deciding to enter parenthood before it is too late or foregoing parenthood altogether (Heaton et al., 1999).

Overall the results support the Theory of Planned Behaviour (TPB) in that intention was found to be a reliable predictor of childbearing behaviour (Ajzen, 1991). However, in line with reformulations of the theory (e.g., Miller, 1994), a number of drivers not included in the TPB (i.e., distal factors) were also found to influence childbearing preferences and behaviour. Further, the decision of whether to enter into parenthood was not only determined at the individual level. Environmental factors were also found to have a significant contribution in the decision-making process (Lesthaghe,

1995). As such, the results support a proposition put forward by Myers (1997) that no single theory of childbearing is adequate in terms of its ability to explain and capture the complexity involved in childbearing preferences and behaviour because decisions regarding childbearing are so dynamic. The dynamics of childbearing are suggested to be of increased complexity due to the decline in traditional gender role orientation, increased economic opportunities available to women in addition to more available contraception.

As a result of changes in society there has been an increased emphasis on the risks of delaying parenthood for both parents and child. Consequently, there has been a rise in the number of studies examining the potential influence individual, environmental and social drivers have on the decision of whether and when to begin parenthood. Older age increases the risks of reduced fecundity, implications during pregnancy, delivery and neonate (Homan, Davies & Norman, 2007). Further, with childbearing trends indicating that more women are delaying having children until their late 20s and early 30s (ONS, 2011) it is somewhat unsurprising that the majority of the studies in the current review considered the possible association between age and childbearing in the context of contemporary childbearing trends and the negative effect older age can have on ones fecundity. The results of the current systematic review demonstrated childbearing decision-making to be essentially time dependent. Older age hindered childbearing, particularly for women (Myers, 1997) with childbearing being shown to be most likely to occur during the mid to late 20s, remaining stable or decreasing in the early to mid 30s (Jokela et al., 2009; Liefbroer, 2005). Thus, childbearing behaviour is suggested to occur in a bell-shaped curve along the continuum of age with the likelihood of entering parenthood significantly decreasing over time (Liefbroer, 2005). However, results do indicate that, while this may be the picture for the majority of people, not all people act in this way. A minority of individuals (particularly men) are shown to enter into parenthood,

or postpone childbearing until an older age (Heaton et al., 1999; Testa & Toulemon, 2006). Consequently, the effect of age on an individual's fecundity is shown to be more of an important consideration for women rather than men. Age was shown to have an earlier impact on their decision-making, a possible effect of women being more constrained biologically in terms of their ability to naturally conceive. Men are not so biologically constrained with regards to the timing of their first (or subsequent) child, having the ability to wait longer while women are of increased risk of loss or reduced fecundity (Keizer et al., 2008). This result suggests that the decisions made by men to wait longer until they have their first child may affect the childbearing preferences and behaviours of women and impact contemporary childbearing trends. Disagreement between spouse's childbearing intentions has been shown to hinder childbearing (Miller & Pasta, 1995). Therefore, the decisions of men to postpone childbearing are likely to result in their partner also postponing (involuntarily) childbearing until agreement is achieved. This could potentially jeopardise the couple's ability to conceive naturally due to the biological restrictions of fertility that accompany older age. Notwithstanding this, the woman's decisions to postpone childbearing until their preconditions have been achieved (e.g., having a stable career) may also jeopardise a couple's ability to conceive naturally.

Although previous research has tended to examine childbearing preferences and behaviours in light of the historical changes that have occurred for women (Hakim, 2003; Jamieson, Milburn, Simpson & Wasoff, 2010), results obtained from the current review highlight the importance of considering the influence of such changes on the parenthood decisions of men. Demographic and socio-economic drivers have typically been employed in the childbearing literature to highlight the conflict women face between childbearing, educational attainment and labour force participation (Barber, 2001;

Lesthaeghe, 1995; Parr, 2005; Rovi, 1994). The incompatibility between family and alternative lifestyle choices (alternatives to childbearing) is highlighted by the current review. However, importantly it is not only women who are shown to face a trade off between childbearing and competing alternatives. Men too seem to experience conflict, although to a lesser extent than women (Miller, 2011). Consequently, the impact of socio-economic factors on the decision of whether and when to begin parenthood may not be as isolated to women as previously thought.

The notion that individuals endeavour to have a stable economic standing before beginning parenthood (Heaton et al., 1999) is evident for both men and women. However, men and women have different preference in terms of what they consider to be important before or when beginning parenthood. For example, while higher income and employment facilitates childbearing for men, being associated with intentional parenthood, high income initially hinders childbearing for women (Heaton et al., 1999). Thus, results reflect both traditional gender role orientation and the increased economic independence of women. Men have traditionally been viewed as important economically, being the primary breadwinner of the family (Jamieson et al., 2010). Consequently, for men, higher income enhances commitment to the financial aspects of procreative responsibility (i.e., preferred and actual involvement as well as sense of obligation in the realm of fertility) which in turn facilitates childbearing (Marsiglio, 1991). However, today, the opportunities given to women mean that they are also contributing to the socio-economic standing of the family. Furthermore, women have more choice in terms of their reproductive careers, having the ability to forgo childbearing until a later stage of life or all together due to the increased availability of female contraceptives. The results of the review highlight that women perceive childbearing to entail costs to their independence (individual and socio-economic) and therefore forgo childbearing until they have reduced

the potential uncertainty childbearing can elicit by putting in place a number of preconditions (e.g., financial security) and thus being prepared for the arrival of a child (Friedman, Hechter & Kanazawa, 1994). The perceived costs of childbearing for women may in part be due to the role of men remaining largely economic in the parenthood process. For example, Miller (2011) found that although men want more emotional engagement in fathering practices, men continue to construct and justify caring responsibilities and obligations alongside work choices. Consequently, childbearing and childcare overall remains a woman's issue and responsibility (Miller, 2011).

The conflicts posed for men and women are however illustrated to be time dependent. While high income initially hinders childbearing for women, it is found to increase the likelihood of switching intentions from initially not wanting a child to wanting or having a child (Heaton et al., 1999). In other words income is important for women until the desire for a child outweighs its importance or the biological ability to have a child is running out due to age (Heaton et al., 1999). This time dependent pattern is also evident for the associations found between educational level and childbearing. Being enrolled in education and having positive adolescent experiences with school is found to hinder childbearing (Barber, 2001). However, higher education is also found to facilitate childbearing (Testa & Toulemon, 2006). Such results suggest that age may have a moderating effect on the impact of education with older individuals being likely to have already completed their educational aspirations and thus more likely to be personally ready to begin parenthood.

While childbearing may have a more direct impact on the lives of women, increased opportunities for women have also initiated potential costs of childbearing for men. It has previously been proposed that with decreasing male breadwinner households and lifestyles, men are increasingly viewing parenthood negatively as meaning more

responsibility, obligation and less freedom (Jamieson et al., 2010; Kaufman, 1997; Veroff, Douvan & Kulka, 1981). This idea is reinforced by the results that show men to progress into parenthood when they perceive fewer costs to their spending power and leisure time (Heaton et al., 1999). For men the negatives of childbearing have a much more predominant hindering effect on childbearing than for women, reinforcing the idea that men are viewing childbearing more negatively. These results also show that men and women have different values and perceptions of parenthood and that social change has influenced the childbearing behaviours of men as well as women but in different ways. Notwithstanding this, increased opportunities for women may have a positive affect on mens involvement in childbearing. Marsiglio (1991) proposes that if women have strong work commitments then men are likely to perceive that their partner will be unlikely to accept full or even the majority of responsibility for the child care. As a result, men may be forced to reevaluate their relative commitment to childbearing, increasing procreative consciousness (i.e., cognitive and affective activity in the reproductive realm) and responsibility (Marsiglio, 1991)

Being married is shown to remain the most widely accepted foundation of childbearing (Hank, 2003; Myers, 1997) by the current review. Having a stable relationship that fosters pronatalism is shown to facilitate childbearing particularly for men. For men, the achievement of a pronatalist environment in which to have a child is illustrated to occur with marriage or cohabitation. Unlike female cohabiters, male cohabiters were less likely to postpone childbearing and more likely to be intentional parents (Heaton et al., 1999). Consequently, cohabitation is suggested to be an increasingly accepted foundation in which to have a child, particularly for men. Marriage is still the favoured environment in which to have a child. However, during the last decade the link between marriage and childbearing has increasingly weakened (Green &

Biddlecom, 2000; Jamison et al., 2010; Keizer, Dykstra & Jansen, 2008). Further, with the studies in the current review being somewhat outdated, it is important to gain a clearer picture of the predictive ability of cohabitation, particularly when examining the childbearing preferences and behaviours of men. The results found for marital status and the effect it has on childbearing are further reinforced by the results found for personal values, in particular gender role orientations. Results revealed that traditional men and women are more likely to begin parenthood (Myers, 1997). Unlike individuals who strive towards academic achievement, professional occupations and financial independence, men and women who hold traditional gender role attitudes are more orientated towards parenthood (Caldwell, 1982; Hakim, 2003; Rindfuss, Morgan & Swicegood, 1988; Thornton, Axinn & Teachman, 1995). Men who have traditional gender role attitudes may be more orientated towards parenthood because they have more active procreative consciousness than less traditional males. This means that traditional males will tend to view their partner, father and sex identities as being based more fully on their procreative capacities and responsibilities (Marsiglio, 1991). Consequently, alternative lifestyles are less important and thus not sought prior to parenthood (Barber, 2001).

The importance placed on childbearing or competing alternatives is shown to be somewhat determined by early life experiences and upbringing. The influence of the parental home on an individual's behaviour is a well-established area of research in social science (Thompson, 1980). It has been proposed by previous research that individuals adopt their parents' values and ambitions (Axinn, Clarkberg & Thornton, 1994). Thus it is somewhat unsurprising that factors such as 'a higher family financial status' were found to have a negative effect on childbearing. Having higher financial aspirations adopted from their parents is likely to result in an individual postponing or forgoing childbearing until these aspirations have been achieved (Barber, 2000). Further, family dynamics are

also shown to have an influence on childbearing behaviour. For example, having a higher number of siblings significantly increased the likelihood of first birth for men and women, but particularly for men, reinforcing the proposition that childbearing is more likely for pronatalist men who value traditional family life.

Limitations and directions for future research

The review had a number of limitations but also identified several areas for future research. A limitation of the current review that warrants mentioning is the lack of cross-cultural comparisons. In conducting the systematic review many studies concerning less developed nations were excluded due to them relating to issues such as family size, birth spacing or son preference and not the actual drivers behind the decision to have a first child. Additionally, studies on less developed nations tended to employ qualitative analysis. Consequently, a qualitative review of the childbearing literature may provide additional insight into the decision of whether and when men and women begin parenthood and how these decisions differ according to country and/or culture. Another limitation is the lack of prospective studies. As previously mentioned, the studies mostly consisted of cross-sectional design, which makes it difficult to distinguish the causality of the findings. Further, only a limited number of the longitudinal studies found significant associations between the drivers and childbearing preferences and behaviour. Therefore, the results obtained may lack reliability, particularly for the results for gender differences as only a few comparisons between studies could be made. Another limitation is extendable to all literature reviews and concerns the possibility that potential relevant studies are missed by the search.

Although there were limitations with the review itself, these limitations extend to the studies included in the review. Although the overall objectives of the review were to

identify the drivers behind childbearing preferences and behaviours, methodological issues such as generalisability are cause for concern for the validity of the research. Most of the studies were conducted with samples who were well educated, middle class, white and in a cohabiting or marital union. Further, the majority of the included longitudinal studies were initiated in the 1980s, a time in which childbearing preferences and behaviours were quite different to what they are today. Consequently, more up-to-date childbearing studies, incorporating the important variables identified by the review would help gain a clearer picture of what drives individuals towards or away from parenthood. Furthermore, more prospective research that spans the reproductive years of men and women would be important to obtain an all encompassing picture of contemporary childbearing preferences and behaviours.

Sample selection and item measurement may also reduce the validity of the results. For example, it is widely accepted that socio-economic factors such as employment hinder childbearing for women but nonetheless they feature predominantly in all of the studies reviewed. Few studies have examined cognitive or personal factors that may impact the decision of whether and when to begin parenthood. The overall focus given to demographic and socio-economic factors reflects the overall demographic approach to the study of childbearing, highlights the previous focus given to women and the need for a gender integrated approach to the study of childbearing preferences and behaviours. Increasingly, the focus given to men may also reveal new drivers that are applicable to men that have not been considered by the current literature.

Comparability of the studies and the results obtained would also be improved if measurement methods were similar across studies and took into account whether the respondents were actively trying for a child or using preventative measures (i.e., contraception). This would give a more representative picture of childbearing preferences

and behaviours. As such, future research needs to take into account whether individuals are actively trying for a child and the possibility that people may have been trying but were unsuccessful.

Conclusion

The results demonstrate a complex heterogeneous literature base to the study of childbearing. The childbearing preferences and behaviours of men and women are relatively similar. However, important gender differences were identified. Consequently, attributing contemporary childbearing trends to the result of the choices and behaviours of women may mean that an inaccurate picture of childbearing is being obtained. Consequently, results highlight the need to increase the attention given to men in psychological research on childbearing. This will elicit a clearer distinction of what drivers are considered important and/or have an influence on the childbearing preferences and behaviours of men which in turn will provide a more encompassing picture of contemporary childbearing behaviour.

Chapter 3: Nesting before trying to conceive: What's in the nest and why is it important for men and women?

Introduction

There is ample evidence to show that the value of children is changing. Parenthood is still important to the majority of individuals in most societies (Katz-Wise, Priess & Hyde, 2010; Whiteford & Gpnzalez, 1995). However, the decision of whether or not to begin parenthood has been redefined as optional and subject to rational decisions weighed on the basis of the perceived opportunity costs of childbearing compared to the alternatives (Hoffman & Hoffman, 1973; Liefbroer, 2005). Research indicates that people prepare for parenthood (so-called nesting) and that men and women have specific preconditions they want to meet before beginning parenthood (Boivin, Bunting, Tsibulsky, Kalebic & Harrison, 2010; Miller, 1995). These preconditions concern economic factors (e.g., being in full time employment), personal and relational readiness (e.g., having a stable relationship) and health/care provision (e.g., being able to meet the economic costs of children). It is important to determine why these preconditions are important because meeting preconditions precede the decision to begin parenthood which may lead to people delaying childbearing and potentially jeopardising their parenthood goals. Therefore, the aims of the current study were to examine the correlates of the preconditions of parenthood and whether they differed according to precondition and gender in an attempt to ascertain the factors that contribute to why some people emphasise one or another of the preconditions of parenthood as important.

To whom the preconditions of parenthood matter and why may be best understood by using the Value of Children Theory (Friedman, Hechter & Kanazawa, 1994), a well established rational choice approach to explaining contemporary fertility behaviour. According to the theory all rational actors are motivated to reduce uncertainty in their lives. In situations of uncertainty, actors are proposed to choose the course of action with which the highest expected value is associated (Friedman et al., 1994). This is achieved by either seeking additional information that informs decision-making in specific situations (Stinchcombe, 1990) or by pursuing “global strategies designed to reduce uncertainty regarding whole strings of future courses of action” (Friedman et al., 1994, p. 382). Although no actor can make the future certain and few global strategies exist, the desire to reduce uncertainty impels actors to courses of action that ensure their maximum current and future certainty such as stable careers, marriage and children. For example, parenthood is proposed to be a global strategy as it is an irreversible commitment over a long period of time that is anticipated to change life from uncertain to relatively certain. This reduction in uncertainty is thought to be achieved as a result of the constraints parenthood places on the achievement of alternative lifestyles/goals and the way in which parenthood determines a whole course of future action (Friedman et al., 1994).

Friedman et al. (1994) argue that the decision to begin parenthood is more likely among individuals whose alternative pathways (e.g., career) to reducing uncertainty are limited. For example, for individuals where stable careers are less accessible (e.g., poor African-American women) as uncertainty reduction strategies, the impetus to have a child is greater. Paradoxically however, when alternative pathways for reducing uncertainty are more readily available it is likely that they will be sought as uncertainty reduction strategies rather than or prior to childbearing. Furthermore, childbearing (although an uncertainty reduction strategy in itself) has been shown to elicit uncertainty in terms of

the constraints or costs entering into parenthood can have on future life choices (e.g., Heaton, Jacobson & Holland, 1999; Liefbroer, 2005). The perceived costs childbearing can have to employability, educational attainment and financial status have therefore been identified as explanations for postponement of parenthood, particularly for women (Blossfeld, Mills & Kurz, 2005; Lampic, Svanberg, Karlström & Tydén, 2006).

The burden of family responsibilities is still, to a great extent, borne by women (Nikander, 1995). Women have larger physiological roles in pregnancy, childbirth and recovery (Frisco, Weden, Lippert & Burnett, 2011). Furthermore, despite the increased involvement of men (Sayer, 2005), in the United Kingdom women continue to bear the majority of the childcare responsibilities (Office of National Statistics (ONS), 2003). For example, in the year 2000, women living in a couple and working full time spent an average of nearly three and a half hours a week on childcare and other activities with their children compared to the one hour spent by men (ONS, 2003). As a result, fertility and childbearing research tends to focus and conceptualise the costs of childbearing primarily in relation to women (Morgan & Taylor, 2006). Increased gender equity has resulted in women facing tough decisions in the trade off between family and alternative lifestyles (e.g., career). Consequently, women, rather than men have been recognised to experience uncertainty in more areas of their lives, putting in place corresponding preconditions as uncertainty reduction strategies, when it comes to parenthood (Friedman et al., 2004; Miettinen & Paajanen, 2005; Rosina & Testa, 2009).

Women have been found to assess the decision of whether and when to begin parenthood in relation to their current and likely future circumstances across a series of domains, including partnership, employment and income (Hobcraft & Kiernan, 1995). Research has found women to actively delay childbearing in order to ensure optimal conditions (e.g., economic stability) that will potentially reduce uncertainty by

counteracting the potential costs of childbearing (Barber, 2001; Bretherick, Fairbrother, Avila, Harbord & Robinson, 2010). Miettinen and Paajanen (2005) found unemployment to be associated with intending to postpone parenthood, while employment was found to be positively associated with childbearing intentions (Miettinen & Paajanen, 2005). Such results suggest that individuals with greater economic resources can more easily meet the expenses of raising a child. Therefore, less uncertainty is thought to be experienced in terms of the anticipated effect of childbearing to an individual's economic standing (Heaton et al., 1999; Miettinen & Paajanen, 2005). On the other hand, individuals with lower economic resources have been proposed to perceive childbearing to entail greater costs and experience more uncertainty in terms of their ability to provide adequately for their child (Heaton et al., 1999). Such uncertainty is likely to elicit a higher importance on the fulfilment of economic preconditions before beginning parenthood. Notwithstanding this, good economic standing (e.g., having a stable career) has also been shown to elicit uncertainty in terms of the potential costs of childbearing to an individual's autonomy in the public sphere (i.e., participation in activities beyond the family). Demographic and ecological studies have found women who are highly educated and career orientated perceive high costs to childbearing. These women have more to lose in terms of loss of, or reduced investment in human capital as a result of withdrawal or reduced participation in the labour force (Becker, 1981; Bianchi, Robinson & Milkie, 2006). Further, women appear to be becoming more work centred as a result of increased educational and career opportunities, considering childbearing only when their personal ambitions have been achieved (Hakim, 2003). Consequently, for women, economic preconditions may be important in order to ensure their autonomy in the public sphere is maintained and that alternative life goals have been achieved.

Uncertainty is not only experienced in relation to the potential impact childbearing could have on an individual's involvement in the public sphere. Friedman et al. (1994) initially proposed marriage to be a global strategy for reducing uncertainty in the private sphere (i.e., relationship stability) but the growing fragility of marriage undermines its usefulness as a global strategy. Consequently, research has proposed childbearing to be a strategy for reducing uncertainty within the private sphere (Myers, 1997). Childbearing is proposed to reduce marital uncertainty by enhancing the dependence of each member of the marriage, deterring spouses from leaving the relationship (Friedman et al., 1994). Such propositions stipulate that relationship instability increases the propensity to have a child (Myers, 1997) decreasing the importance placed on alternatives to family life and thus parenthood preconditions. However, divorce proneness has been shown to have negative associations with the propensity to have a child (Lilliard & Waite, 1993). Furthermore, the perceived negative effects of childbearing on relationship stability have been shown to decrease the likelihood of beginning parenthood, particularly for men (Liefbroer, 2005). Consequently, delaying, or avoiding childbearing altogether, is suggested to be used as a strategy for reducing uncertainty in the private sphere (Heaton et al., 1999). For example, delaying childbearing maintains relationship stability and/or ensures that optimal relationship conditions are met before beginning parenthood. As such, for individuals experiencing marital uncertainty or for individuals who perceive childbearing to entail costs to their relationship, the importance of relational preconditions is suggested to be increased.

Putting in place preconditions to reduce uncertainty may be perceived as enhancing the best of both worlds. Parenthood preconditions allow for childbearing and alternative lifestyle choices to be fulfilled (Heaton et al., 1999). However, viewing preconditions to be important could enhance the risks associated with delayed

childbearing, increasing the likelihood that parenthood goals will unintentionally be forgone. Delayed childbearing is associated with lower fertility (Dunson, Columbo & Baird, 2002), increased risk of pre-term birth (Prysak, Lorenz & Kisly, 1995), spontaneous abortion, ectopic pregnancy (Anderson, Wohlfahrt, Christens, Olsen & Melbye, 2000) and gestational and labour complications (ESHRE Capri Workshop Group, 2005). These risks have a more pronounced and direct effect on women than men. However, if men delay childbearing in pursuit of alternative lifestyle choices (Heaton, et al., 1999) their decisions may impact negatively on themselves and their partner. Deterring childbearing could potentially jeopardise a man's (and a woman's) parenthood goals by causing his partner to involuntarily delay childbearing until an age when the woman's biological ability to conceive naturally is compromised (Dunson et al., 2002). Consequently, understanding the preconception decision-making process of men and why they emphasise one or another of the preconditions of parenthood as important is imperative to our understanding of contemporary fertility behaviour.

The available research on how individuals prepare the nest for the arrival of a child is predominantly female orientated. However, research including men has shown men also perceive childbearing to entail costs (e.g., Heaton, Jacobson & Holland, 1999). Consequently, research suggests that men too endeavour towards the fulfilment of parenthood preconditions to reduce childbearing uncertainty. Additionally, research has shown the importance placed on the preconditions of parenthood to differ according to gender. For example, demographic and ecological studies have found that women place significantly more importance on education, having children before a certain age and having social support compared to men (Gonzalez & Jurado-Guerrero, 2006; Skoog Svanberg, Lampic, Karlstrom & Tyden, 2006). On the other hand men have been found to consider and be more influenced by the potential costs childbearing can have to their

leisure time, spending abilities, financial and relationship stability (Heaton et al., 1999). Men who perceive higher costs to their leisure time as a result of having children may delay childbearing until they have fulfilled this alternative lifestyle or until childbearing has more precedence in their lives (Agadjanian, 2002). Previous research shows that there is a point during an individual's childbearing lifespan that childbearing takes precedence over alternative lifestyle choices like career and education (Heaton et al., 1999; Liefbroer, 2005). Consequently, childbearing is entered into regardless of the potential accompanying costs and uncertainty (Heaton et al., 1999). Notwithstanding this compulsion, research suggests men and women are likely to implement different parenthood preconditions and view their importance differently as a result of having different spheres of uncertainty in their lives (e.g., Koropecykj-cox & Pendell, 2007; Liefbroer, 2005). As such, one would expect that the preconditions that are the most important to an individual are those that address areas of greatest concern or uncertainty for that individual.

More research into the childbearing preferences and behaviours of men is needed to increase the validity of the available research base. There is a paucity of research on how men prepare for becoming fathers for the first time and why meeting certain preconditions is more important than meeting others. The available literature is biased towards women in terms of presentation and discussion of the literature and results (e.g., Berrington, 2004). There has been a slight increase in studies attempting to gain a clearer understanding of the male perspective (e.g., Bledsoe, Lerner & Guyer, 2000). However, much of this research has focused on the transition to parenthood during pregnancy and after birth (e.g., Katz-Wise, Priess & Hyde, 2010) or infertility (e.g., Sallmen, Sandler, Hoppin, Blair & Baird, 2006). Furthermore, where there is research on men, they have considerably lower rates of participation and thus their attitudes and behaviours are not

well represented. Empirically, examining the correlates of the preconditions of parenthood and whether they differ according to precondition and gender in a population of men and women currently trying to conceive, would contribute to our understanding of the male (and female) preconception decisional process and thus contemporary fertility trends.

Present study

Little is known about why meeting some preconditions are more important than meeting others. The aims of the present study were therefore to examine the correlates of the preconditions of parenthood for men and women actively trying to conceive in order to ascertain whether the correlates differed according to precondition and gender. To achieve the research goals archival data from the International Fertility Decision Making Survey (IFDMS; Bunting, Tsibulsky & Boivin, 2012) was used. The IFDMS is an international study aimed at understanding the decision to have a child and the decision of what to do if natural attempts were unsuccessful. The survey was translated into 12 languages and implemented online, in clinics and via social research panels in 18 countries.

The hypotheses of the present set of analyses were that the correlates of the preconditions of parenthood would differ by precondition and gender as a function of the perceived consequences (costs/uncertainty) of beginning parenthood. Specifically it was expected that economic preconditions would be important for individuals of lower economic standing. Personal and relational readiness would be important to individuals with low relational stability and health and child costs would be important to individuals who were already experiencing such difficulties.

Method

Participants

The original sample consisted of 10,045 (1,690 men, 8,355 women) individuals from 79 countries (18 countries > 100 participants per country). The inclusion criteria of the IFDMS required participants to be between 18 and 50 years of age, currently married or living with their partner (sexual orientation was not requested), currently trying to conceive for at least six months and not pregnant. The only exclusion criteria applied to recruitment in fertility clinics: patients using specialist fertility medical services were excluded (e.g., treatment for Human Immunodeficiency Virus (HIV) sero-positive or HIV discordant or hepatitis C, pre-implantation genetic diagnosis). The lower age limit was applied to avoid the need to obtain parental consent whereas the upper age limit was applied because it is the upper end of natural fertility for women (ESHRE Capri Workshop Group, 2005). The criterion for partnership was applied to avoid heterogeneity in sample demographics because <4% of people intentionally choose to start families outside of a partnership (Gonzalez & Jurado-Guerrero, 2006). A 'duration of trying' entry threshold that was mid-way between the start of trying and start of referral to specialist care (usually 12 months, National Institute of Clinical Excellence, NICE, 2004) was applied to capture the 'worrying well' group and thereby early decision-making and potential precursors to help seeking. The 'specialist treatment' exclusion was applied because in these patients the need for treatment arises from their medical condition (e.g., genetic condition) and not a fertility problem, per se.

Due to the primary interest of the current study being to try and explain what correlates made the preconditions of parenthood influential in the decision to move naturally from the state of having no children to the state of having a child the following

additional inclusion criteria was applied: 1) childless (never had a birth, adopted a child and did not have any stepchildren), 2) had not undergone any medical treatment. The final sample was 1,668 (1,225 women, 443 men).

Materials

The International Fertility Decision-Making Study (IFDMS) was a 45-minute online survey concerned with childbearing issues. The survey centred around two decisional points: the decision to have a child and the decision of what to do if natural attempts were unsuccessful. Constructs measured in the survey were generated from the Theory of Planned Behaviour (TPB; Ajzen, 1991), the Health Belief Model (Rosenstock, 1990) fertility theories (e.g., preference theory; Hakim, 2003) along with a systematic review of childbearing decision-making (1990 onward) carried out by the author of the current thesis and another researcher from the Cardiff Fertilities Research Group (N. Kalebic). The questionnaire phrasing was adapted so that it would be applicable to men and women who had/had not received fertility treatment and who had/had not had children. Only constructs relevant to the present analysis are described.

Preconditions of parenthood

The items constituting the preconditions of parenthood were adapted from Tough, Benzies, Fraser-Lee and Newburn-Cook, (2007), Lampic et al. (2006) or generated on the basis of theoretical work (Hoffman & Manis, 1978; 1979). The preconditions of parenthood were derived from factor analysis on childbearing decisional items (see Boivin et al., 2010 for factor analysis). For the current analysis three preconditions were

used as the dependent variables: economic preconditions, personal and relational readiness and health and child costs.

Economic preconditions: The economic precondition of parenthood consisted of four items (i.e., need to finish education, financial security, wanting secure employment, worries about effect on career). Respondents indicated the degree of influence each item had in their childbearing decision-making process on a five-point response scale (1 = *not at all influenced*, 5= *completely influenced*). Scores ranged from 4 to 20 with higher scores indicating greater influence in the parenthood decision-making process. Cronbach reliability coefficient in the present sample for the four items was $\alpha=.79$ (443 men, 1,225 women).

Personal and relational preconditions: Personal and relational readiness consisted of four items (i.e., Partner ready to have child(ren), feeling ready to have child(ren), having a stable relationship, personal fulfilment from having children). Respondents indicated whether the factors had an influence on their decisions about parenthood on a five-point response scale (1= *not at all influenced*, 5= *completely influenced*). Scores ranged from 4 to 20 with higher scores indicating greater influence in the parenthood decision-making process. Cronbach reliability coefficient in the present sample for the four items was $\alpha=.77$ (443 men, 1,225 women).

Health and child costs: Health and child costs consisted of three items reflecting personal and partner health status and potential costs of childbearing (i.e., my health, health of my partner, economic costs to children). All items were measured on a five-point response scale, where respondents indicated how influential the factor was in their decision-making

about parenthood. (1= *not at all influenced*, 5= *completely influenced*). Scores ranged from 3 to 15 with higher scores indicating greater influence in the parenthood decision-making process. Cronbach reliability coefficient in the present sample for the three items was $\alpha=.76$ (443 men, 1,225 women).

Correlates of the parenthood preconditions

Control variables: Respondents indicated whether they were male (0) or female (1) their age (in years) and the total number of years they had been trying to conceive for.

Background variables: Respondents indicated the total amount of time they had been with their current partner (in years), their area of residence (0= urban 1= rural) and how fertile they perceived themselves to be (five-point response scale, 0= *not at all fertile*, 5= *extremely fertile*).

Economic correlates: Respondents indicated their level of education (none, primary, secondary, post secondary/college [0= less than university], undergraduate, postgraduate [1= at least university level]) and work salience. Work salience was measured by a 3-item Occupational Role sub-scale of the Life Role Salience Scales (Amatea, Cross, Clark & Bobby, 1986). These three items assessed the importance of work (i.e., having work is an important goal in life, work gives more satisfaction than anything else I do, it is important to have work) and were rated on a five-point response scale (1= *strongly disagree*, 5= *strongly agree*). The mean across items was taken with scores ranging from 1 to 5. Higher scores indicated higher work salience. Cronbach reliability coefficient the present sample for the three items constituting work salience was $\alpha =.79$ (443 men, 1,225 women).

An adapted version of McQuillian's 'perceived economic hardship' scale from the National Survey of Fertility Barriers (McQuillian, personal communication, 13 January, 2009) was used to derive relevant income information. The four items assessed whether (a) annual income for the household was lower, about the same or higher than a typical household in the community and whether in the previous 12 months the person had had difficulty (b) paying their bills, (c) buying food/clothes or other things the household needed or (d) paying for medical care. The response scale for the final three items (c to d) was *never to very often* (range 1 to 5) and included a 'do not know' option. The response scale for (d) additionally had an option to indicate that medical care was not needed and/or that a National Health Service provided this care. Items concerned with difficulty paying for essential items and bills were combined to form an economic hardship index. Scores ranged from 2 to 10, with higher scores indicating increased economic hardship. Cronbach reliability coefficient in the present sample for the three items constituting the economic hardship index was $\alpha = .76$ (443 men, 1,225 women). Finally, respondents indicated whether they had paid employment and whether their partner had paid employment (0=No/don't know, 1=Yes).

Social correlates: The social correlates of the preconditions of parenthood were subjective norms (Conner & Norman, 1996), which were assessed according to the extent to which significant others (i.e., the partner, family/in-laws or close people in the community) would want the person to have a child. Corresponding items inquired about participants' desire to comply with these wishes. For these six items agreement was indicated on a seven-point response scale (1=*Strongly disagree*, 7=*Strongly agree*) with higher scores indicating more normative pressure from significant others to have children and more desire to comply with these norms. Cronbach reliability coefficient for the

present sample for the six items was $\alpha=.78$ (443 men, 1,225 women). A further two items assessed whether the respondent had friends or family who had had children (0=No, 1=Yes) and whether the respondent knew anyone who had decided not to have children (0=No, 1=Yes).

Health correlates: Health correlates of the preconditions of parenthood were whether they or a close family member had an illness or whether they were experiencing personal, work or other stress. Respondents also reported whether they had any other life event they were struggling to cope with and whether they had required medical care in the last 12 months. All health factors were dichotomous variables (0=No/don't know, 1=Yes).

Relational correlates: Personal and relational correlates were the World Health Organisation (WHO) general life satisfaction item (i.e., 'how satisfied are you with your quality of life') which was rated on a five-point response scale (1=*very dissatisfied*, 5=*very satisfied*) as per the original measure (WHO-Group, 1998). Secondly, relationship happiness was measured using the overall marital happiness item (item 31) from the Spanier Dyadic Adjustment Inventory (1976). Marital happiness was rated on a six-point response scale with higher scores indicating more marital happiness (1= *extremely unhappy*, 6= *perfectly happy*).

Translation

The survey was produced in English, tested with potential users and then translated to 12 languages (Danish, French, German, Italian, Spanish, Portuguese [European & Brazilian], Turkish, Japanese [Nihongo], Hindi, Russian and Chinese [Mandarin]). The Cardiff University Centre for Lifelong Learning translation services

carried out the first translation from English to the target language. Local fertility experts examined the first translation against the English version and proposed revisions to ensure the two were consistent and appropriate for fertility usage and local custom. The version agreed by fertility experts and the translator was used in the survey. The survey was uploaded using SurveyTracker software (Training Technologies, 2007) or software used by the market research companies involved in the project: Ipsos-Health for Turkish, Japanese, Russian, Hindi and IMS-Health for China.

Procedure

The data collection period was July 2009 to April 2010. Multiple data collection methods were used (social research panel, fertility clinic or online) according to what was feasible in each target country.

Social research panel and fertility clinic recruitment: Market research companies performed data collection in four countries, Japan, Russia, India (Ipsos-Health) and China (IMS-Health) where online recruitment was limited. The company was instructed to recruit 200 participants according to the IFDMS inclusion/exclusion criteria. Participants were recruited from existing Ipsos-Health or IMS-Health community and social research panels. Panel members received a hyperlink to the study via email and completed the survey electronically. Participants were also recruited from 28 fertility clinics in India and China (number of clinics in China not recorded). IFDMS project workers distributed paper versions of the survey in clinics where patients attending appointments were invited to participate by medical personnel (opportunity sampling). Those interested completed the questionnaire and returned forms to project workers for data entry by the market research (IMS-Health, China) or specialist data entry company (Sai International, India).

Electronic data files from the social research panels and clinics were returned to the Cardiff University research team for analysis. Participants recruited from social research panels received small tokens that could be redeemed for goods as incentives for participating in the research.

Online recruitment: The majority of participants were recruited online via 1) paid advertising on search engines (Google) and social media websites (Facebook), 2) study hyperlink on topic relevant websites (e.g., Babycentre, patient advocacy sites, fertility clinics) or 3) direct or indirect traffic (e.g., magazine articles, word of mouth).

Participants did not receive a financial incentive for online participation. Paid Google adwords displayed the study hyperlink if people used specific keywords in their search (e.g., getting pregnant, calculating ovulation, IVF, etc.) or it was displayed automatically on the Google content network websites that concerned relevant topics (e.g., information about getting pregnant). Paid Facebook profiling adverts displayed the IFDMS study hyperlink to its members with the requested demographic profile (e.g., in partnership, age, country, gender). Webmasters at general health, infertility and pregnancy/parenting websites were contacted and asked to post the survey on their website. Websites in Australia, Brazil, Canada, Denmark, France, Germany, India, Italy, Mexico, Portugal, Spain, United Kingdom and United States were selected for survey placement.

Webmasters were offered a summary report of the IFDMS findings in exchange for collaboration. For all online methods (Google adwords, Facebook, dedicated sites) a banner about the IFDMS (e.g., 'Trying to conceive? Contribute to fertility survey from Cardiff University') and a study hyperlink at an appropriate position was placed on the website. The survey took approximately 40–45 minutes to complete. The online survey was identical to the one used on social research panels and in fertility clinics (see

Appendix H for recruitment outcome according to website by country and gender). The Ethics Committee of the School of Psychology, Cardiff University carried out the ethical review and approved the study (for online and social research panel data collection). Ethical review and approval was additionally gained from each clinic as per country requirements.

Data analysis

Application of inclusion and exclusion criteria for the current analysis resulted in 8,377 respondents being excluded due to a) having had a child ($n=3,394$), b) already being engaged in fertility treatment ($n=4,856$), or having missing data for c) whether they had a child or level of treatment engaged in ($n=65$, $n=62$ respectively). Respondents who had no children but were missing on treatment, or who had not provided a response to whether or not they had had a child, were excluded from the present analysis as they could not be classified as to whether they met the inclusion criteria. Final sample size after exclusion was $N=1,668$. Reliability was assessed using the Cronbach alpha reliability coefficient (α) and descriptive statistics were used to profile the sample on background information, socio-economic, personal/relational and health correlates. T-tests (t) and chi-square (χ^2) statistics were used for gender and country comparisons (as relevant based on type of measurement). Where applicable, scores were standardised because different units of measurement were included in the regression analysis. Multiple regression analysis was employed to examine the correlates of the preconditions of parenthood with gender interactions. Economic preconditions, personal and relational readiness and health and child costs were used as the dependent variables in three regressions. For all the regressions, in the first model the control variables were entered (Model 1). In the second model, all the correlates of the preconditions were entered

(Model 2) and in the third model gender interactions were entered (Model 3). When the block of interactions was significant (as indicated by the change in R square; ΔR) individual main effects were examined using simple slope analysis (Baron & Kenny, 1982). For the simple slope analysis, where the independent variable was continuous, the interaction was computed using the average plus or minus one standard deviation. When the block of interactions was not significant, individual main effects were not explored (Baron & Kenny, 1982). Statistics were standardised beta coefficients (β) and the probability value of .05 was considered significant. Only significant gender interactions are shown in the tables (see Appendix I for full regression tables).

Results

Overview

The results are presented in four sections. Section I shows the background characteristics of the total sample and according to men and women separately. Section II shows the economic, social, personal, relational and health status of the sample. Section III shows the correlates of the preconditions of parenthood and whether they differ according to precondition and gender. Section IV shows the importance of the parenthood preconditions according to country.

Section I: Background characteristics

Table 3.1 shows the background characteristics of the sample. The majority of the respondents were in their late twenties had been with their partners for approximately four years, had received a university level education, perceived themselves to be moderately fertile and had been trying to conceive for approximately 1.5 years. Compared

to the women in the sample, men were significantly older, perceived themselves to be more fertile, had been trying to conceive for longer, and were more likely to have a university education.

Table 3.1

Descriptive statistics for control and background variables, t-test and chi-square for men (n=443) and women (n=1225)^a

	Total sample (N=1,668)	Men (n=443)	Women (n=1,225)	Test statistic <i>t/χ²</i>
Control variables				
Age (<i>M ± SD</i>)	29.02 (5.67)	30.72 (5.64)	28.41 (5.55)	7.48***
Years trying to conceive (<i>M ± SD</i>)	1.55 (2.04)	1.74 (2.24)	1.48 (1.88)	2.25*
Background characteristics				
Years together (for those partnered) (<i>M ± SD</i>)	3.91 (3.10)	4.05 (3.43)	3.86 (2.98)	1.10
Perceived fertility (<i>M ± SD</i>)	2.79 (.90)	3.01 (.96)	2.71 (.87)	6.15***
University educated (<i>n (%)</i>)	917 (55.0)	286 (64.6)	631 (51.5)	23.21***
Urban area (<i>n (%)</i>)	1327 (79.6)	361 (81.7)	965 (78.8)	1.65

Note. *N* and *n*=Sample size, *M*= mean, *SD* = standard deviation. t-test for continuous data, chi-square for categorical data. ^aSample size varies per variable due to missing data.

p*<.05, *p*<.01, ****p*<.001.

Section II: Socioeconomic, personal, relational and health status of the sample

Table 3.2 shows the socio-economic, personal, relational and health status of the total sample and according to gender. Overall the sample had good economic standing, with the majority having low economic hardship, paid work and a partner in paid work. Men had significantly higher work salience were more likely to be in paid work and less likely to have a partner in paid work compared to women.

Social variables show almost all of the respondents had friends or family that had already had children but also that approximately half of the sample knew someone who had decided not to have children. Women were significantly more likely to know someone who had decided not to have children compared to men. The sample scored highly on subjective norms, being more likely to agree with and want to comply with the norms of significant others. Men were significantly more likely to agree that their community would want them to have children. Further, men were more likely to want to comply with the norms of their partner and their community compared to women.

Personal and relational variables show the majority of the sample had high life satisfaction and relationship happiness, with women rating higher satisfaction and happiness than men. A minority of the sample had personal and family physical illness, personal stress, work stress or other life events that they could not cope with. Approximately half of the sample had other forms of stress and 70% had needed medical care in the last 12 months. Women were significantly more likely to have had family illness and other life events they could not cope with compared to men whereas men were significantly more likely to have work stress.

Table 3.2

Economic, social, personal, relational and health status of men (n=443) and women (n=1225)^a

Variable	Total (N=1,668)	Men (n=443)	Women (n=1,225)	Test statistic <i>t/χ²</i>
Economic				
Work salience (<i>M ± SD</i>) ^b	3.37 (.96)	3.57 (.88)	3.29 (.97)	5.26***
Economic hardship (<i>M ± SD</i>) ^c	3.07 (1.37)	3.03 (1.41)	3.08 (1.36)	.75
Have paid work (<i>n (%)</i>)	1289 (77)	385 (86.9)	904 (73.8)	29.00***
Partner has paid work (<i>n (%)</i>)	1417 (85)	321 (72.5)	1096 (89.5)	85.04***
Social				
Have friends/family with children (<i>n (%)</i>)	1584 (95.3)	428 (96.0)	1156 (94.0)	6.02
Know someone who has decided not to have children (<i>n (%)</i>)	761 (45.6)	184 (41.5)	577 (47.1)	4.41*
Partner subjective norm (<i>M ± SD</i>) ^d	6.16 (1.40)	6.07 (1.31)	6.19 (1.44)	1.43
Comply partner norms (<i>M ± SD</i>) ^d	4.63 (1.86)	5.35 (1.46)	4.37 (1.93)	9.63***
In-law/family subjective norm (<i>M ± SD</i>) ^d	5.74 (1.67)	5.77 (1.44)	5.72 (1.74)	.43
Comply in-law norms (<i>M ± SD</i>) ^d	3.53 (2.07)	4.33 (1.92)	3.24 (2.04)	9.71***
Community subjective norms (<i>M ± SD</i>) ^d	4.84 (1.89)	5.04 (1.68)	4.76 (1.95)	2.61**
Comply community norms (<i>M ± SD</i>) ^d	3.17 (2.06)	3.99 (2.00)	2.87 (2.00)	10.00***
Personal and relational				
Life satisfaction (<i>M ± SD</i>) ^b	3.54 (.98)	3.45 (.87)	3.58 (1.00)	2.35*
Relationship happiness (<i>M ± SD</i>) ^c	3.84 (1.31)	3.72 (1.17)	3.89 (1.35)	2.36*
Health				
Personal physical illness (<i>n (%)</i>)	76 (4.6)	18 (4.1)	58 (4.7)	.343
Family illness (<i>n (%)</i>)	133 (8.0)	24 (5.4)	109 (8.9)	5.25*
Personal stress (<i>n (%)</i>)	473 (28.4)	115 (26)	358 (29.2)	1.89
Work stress (<i>n (%)</i>)	444 (26.6)	139 (31.4)	305 (24.9)	6.77**
Other stress (<i>n (%)</i>)	799 (47.9)	205 (56.3)	594 (48.5)	.64
Other life events cannot cope with (<i>n (%)</i>)	304 (18.2)	54 (12.2)	250 (20.4)	14.78***
Needing medical care in last 12 months (<i>n (%)</i>)	1240 (74.3)	325 (73.4)	915 (74.7)	.15

Note. *N* and *n* = Sample size, *M* = mean, *SD* = standard deviation. t-test for continuous data, chi-square for categorical data. ^asample size varies per variable due to missing data. ^b scores ranged from 1-5, ^c scores ranged from 3-10, ^d scores ranged from 1-7, ^e scores ranged from 1-6. **p*<.05, ***p*<.01, ****p*<.001.

Section III: What are the correlates of the preconditions of parenthood?

Table 3.3 shows summary statistics for main and interaction effects in a multiple regression on the correlates of economic preconditions of parenthood. In total 3.3% of variance in economic preconditions was accounted for by the control variables (Model 1) (adjusted $R^2=.03$, $F(3,1457)=16.41$, $p<.001$). Being female and older age was significantly and positively related to rating economic preconditions as important. Years trying to conceive were significantly and negatively associated with rating economic preconditions as important in the parenthood decision-making process.

When the correlates (economic, social, relational and health variables) of the preconditions of parenthood were entered into the regression analysis (Table 3.3, Model 2) the total amount of explained variance in economic preconditions significantly increased ($\Delta R^2=.15$) to 17.9% (adjusted $R^2=.16$, $F(28, 1432)=11.15$, $p<.001$). Longer duration of relationship, university education, work salience, having paid work, high relationship happiness and family illness were all positively associated with rating economic preconditions as important. Wanting to comply with partners subjective norms was negatively associated with economic precondition importance.

The interaction step of the analysis (Table 3.3, Model 3) increased the total amount of variance accounted for to 20% (adjusted $R^2=.17$, $F(53, 1407) = 6.64$, $p<.001$) but the increase in explained variance was not significant ($\Delta R^2=.02$). Because the block of interactions was not significant individual main effects are not presented.

Table 3.3 shows how the relationship between the correlates and the dependent variable economic preconditions changed with the introduction of new variables. The correlate 'years trying to conceive' was consistently negatively associated with economic preconditions in each step of the regression analysis. The strongest association between years trying to conceive and economic preconditions was in Model 2 whereas the weakest

association was in Model 3 as a result of the introduction of interaction variables. The association between gender and economic preconditions became slightly stronger with the introduction of the correlates of the preconditions (Model 2), but was no longer significantly associated with economic preconditions with the introduction of gender interactions. Age was only significant in the first step (Model 1). Whereas university education, compliance with partner's norms and work salience all remained significant with the introduction of interaction variables to the model, having paid work, relationship happiness and family illness become non significant. The strongest and most consistent relationships were between years trying to conceive, university education and economic preconditions.

Table 3.3

Summary of regression coefficients for the association between the correlates of economic preconditions with gender interactions

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Control variables									
Gender	.59	.25	.06*	.62	.26	.07*	-1.02	1.28	-.11
Age	.56	.12	.12***	.08	.13	.02	.12	.13	.03
Years trying to conceive	-1.00	.17	-.16***	-1.04	.19	-.16***	-.99	.19	-.15***
Background Variables									
Urban area of residence				-.09	.26	-.01	.33	.54	.03
Years together				.87	.18	.15***	.51	.31	.09
Perceived fertility				-.17	.12	-.04	-.19	.24	-.04
Economic variables									
University level education				1.08	.11	.25***	.99	.22	.23***
Work salience				.66	.11	.15***	.49	.22	.12*
Economic hardship				-.02	.12	-.00	.05	.25	.01
Have paid work				1.01	.28	.09***	.93	.65	.09
Partner has paid work				-.42	.32	-.04	-.03	.47	-.00
Social variables									
Friends/family have had children				-.03	.11	-.01	-.43	.24	-.09
Know anyone decided not to have children				-.04	.21	-.01	-.21	.43	-.03
Partner subjective norms				-.09	.12	-.02	.02	.27	.01

Table 3.3

Summary of regression coefficients for the association between the correlates of economic preconditions with gender interactions

(continued)

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Comply partner norms				-.29	.14	-.07*	-.64	.32	-.15*
In-law/family subjective norms				.11	.14	.03	-.15	.32	-.04
Comply family/in-law subjective norms				-.05	.19	-.01	-.17	.39	-.04
Community subjective norms				.06	.14	.01	-.11	.30	-.03
Comply with community norms				-.25	.18	-.06	-.21	.35	-.05
Relational variables									
Life satisfaction				.04	.11	.01	-.01	.23	-.00
Relationship happiness				.29	.11	.07*	.03	.23	.01
Health variables									
Personal illness				-.06	.53	-.00	2.26	1.11	.11*
Family illness				1.19	.40	.08**	-.25	.94	-.02
Work stress				.42	.33	.04	-.33	.70	-.04
Personal stress				.57	.32	.06	.77	.67	.08
Other life events cannot cope with				-.48	.33	-.04	-.20	.71	-.02
other physical, personal stress				-.35	.39	-.04	-.22	.85	-.03
Needing medical care in last 12 months				-.06	.53	-.00	2.26	1.11	.11

Table 3.3

Summary of regression coefficients for the association between the correlates of economic preconditions with gender interactions

(continued)

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Gender interactions									
Personal illness*gender							-3.03	1.26	-.13*
Friends have child*gender							.58	.27	.11*
ΔR^2		.03***			.15***			.02	
<i>F</i>		16.41			11.15			6.64	

Note: Gender (1 = female), *B* = unstandardised beta. *SE B* = standardised error, β = standardised beta. ΔR^2 = difference in variance accounted for in the dependent variable. Only significant interactions are shown.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3.4 shows summary statistics for main and interaction effects in a multiple regression on correlates of personal and relational readiness. In total 7.3% of variance in personal and relational readiness was accounted for by the control variables (Model 1) (adjusted $R^2=.07$, $F(3,1456)=38.19$, $p<.001$). Being female was positively associated with the importance of personal and relational readiness whereas older age and years trying to conceive were negatively associated.

Introduction of economic, social, relational and health variables (Table 3.4, Model 2) significantly increased the total explained variance in personal and relational readiness ($\Delta R^2=.09$) to 16% (adjusted $R^2=.14$, $F(28, 1431)=9.71$, $p<.001$). University education, having paid work, having friends who had had children, partner's subjective norms, communities subjective norms, higher life satisfaction and higher relationship happiness were all significantly associated with rating personal and relational readiness as important in the parenthood decisional process. Struggling to cope with other life events was negatively associated with the importance placed on personal and relational readiness.

The interaction step of the analysis (Table 3.4, Model 3) increased the total amount of variance accounted for to 17.8% (adjusted $R^2=.15$, $F(53, 1406)=5.76$, $p<.001$) but this increase in variance was not significant ($\Delta R^2=.02$). Because the block of interactions was not significant, individual main effects are not presented.

Table 3.4 shows how the relationship between the variables and personal and relational readiness changed with the introduction of new variables. As with economic preconditions, the correlate 'years trying to conceive' was consistently negatively associated with personal and relational readiness in each step of the regression analysis, with its strongest association being in Model 1 and its weakest association being in Model 3. Age was also consistently negatively related to the dependent variable in all three models, the strongest association being in Model 2 and the weakest association being in

model 1. Agreement with partner's subjective norms and having friends and/or family who have had children remained positively related to personal and relational readiness in Model 3 whereas university education, having paid work, life satisfaction, agreement with community subjective norms and experiencing difficulty in coping with other life events were only significant in Model 2. The strongest and most consistent relationships were for the correlates: gender, age and years trying to conceive.

Table 3.4

Summary of regression coefficients for the association between the correlates of personal and relational readiness with gender interactions

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Control variables									
Gender	1.49	.24	.16***	1.21	.25	.13***	2.17	1.26	.23
Age	-.26	.11	-.06*	-.34	.13	-.08**	-.29	.13	-.07*
Years trying to conceive	-1.11	.17	-.18***	-.98	.19	-.16***	-.97	.19	-.15***
Background variables									
Urban area of residence				.26	.26	.03	-.40	.53	-.04
Years together				.22	.17	.04	.02	.30	.00
Perceived fertility				-.19	.12	-.04	.31	.24	.07
Economic variables									
University level education				.27	.11	.07*	.17	.22	.04
Work salience				-.08	.11	-.02	.00	.22	.00
Economic hardship				.14	.12	.03	.02	.25	.01
Have paid work				.64	.27	.06*	.96	.64	.10
Partner has paid work				.50	.31	.04	1.35	.46	.11**
Social variables									
Friends/family have had children				.35	.11	.08**	.47	.23	.11*
Know anyone decided not to have children				.29	.21	.04	-.10	.42	-.012

Table 3.4

Summary of regression coefficients for the association between the correlates of personal and relational readiness with gender interactions (continued)

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Partner subjective norms				.47	.12	.11***	.72	.27	.17**
Comply partner norms				-.00	.14	-.00	-.20	.32	-.05
In-law/family subjective norms				-.11	.14	-.02	-.19	.31	-.05
Comply family/in-law subjective norms				-.33	.19	-.08	-.33	.39	-.08
Community subjective norms				.29	.14	.07*	.63	.30	.15
Comply with community norms				-.32	.18	-.08	-.42	.35	-.10*
Relational variables									
Life satisfaction				.24	.11	.06*	.18	.23	.04
Relationship happiness				.50	.11	.12***	.67	.23	.16**
Health variables									
Personal illness				.45	.52	.02	.14	1.09	.01
Family illness				-.02	.39	-.00	.64	.92	.04
Work stress				.00	.32	.00	-.18	.69	-.02
Personal stress				.15	.32	.02	-.41	.66	-.05
Other life events cannot cope with				-.63	.32	-.06*	.02	.70	.00

Table 3.4

Summary of regression coefficients for the association between the correlates of personal and relational readiness with gender interactions (continued)

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
other physical, personal stress				-.06	.39	-.01	.61	.83	.07
Needing medical care in last 12 months				.14	.24	.01	-.30	.46	-.03
Gender interactions									
Perceived fertility*gender							-.66	.27	-.12*
Partner paid work*gender							-1.61	.64	-.18*
ΔR^2		.07***			.09***			.02	
<i>F</i>		38.19			9.71			5.76	

Note: Gender (1 = female), *B* = unstandardised beta. *SE B* = standardised error, β = standardised beta. ΔR^2 = difference in variance accounted for in the dependent variable. Only significant interactions are shown.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3.5 shows summary statistics for main and interaction effects in a multiple regression on correlates of health and child costs. In total only .2% of variance in health and child costs was accounted for by the control variables (Model 1) (adjusted $R^2=.00$, $(F(3,1454)=.88, p>.05)$). None of the control variables were significantly associated with health and child cost preconditions.

Addition of economic, social, relational and health variables (Table 3.5, Model 2) significantly increased the total amount of variance accounted for in health and child costs ($\Delta R^2=.07$) to 7.3% (adjusted $R^2=.055$, $F(28, 1429)=4.01, p<.001$). Rating health and child costs as important in the parenthood decisional process was significantly associated with area of residence (rural), work salience, community subjective norms, personal physical illness, personal stress and having needed medical care in the last 12 months.

The interaction step of the analysis (Table 3.5, Model 3) increased the total variance accounted for to 8.8% (adjusted $R^2=.053$, $F(53, 1404)=2.54, p<.001$). The interaction block was however not significant ($\Delta R^2=.02$) and thus the main effects are not presented.

Table 3.5 shows how the relationship between the variables and the dependent variable health and child costs changed with the introduction of new variables. With the introduction of the correlates of parenthood preconditions (Model 2) age became significantly negatively related to health and child costs and remained so in Model 3. Work salience and agreement with community subjective norms were significantly related to the dependent variable in model 2 and Model 3, with the association becoming stronger with the introduction of interaction variables. Area of residence (rural) was negatively associated with the dependent variable in Model 2 only and personal illness, personal stress, and having needed medical care in the last 12 months were all positively associated with health and child costs but again in Model 2 only. University education,

knowing someone who had decided not to have children and experiencing difficulty with coping with other life events became significant with the introduction of interaction variables in Model 3. The strongest and most consistent relationships were found for the correlates age and work salience.

Table 3.5

Summary of regression coefficients for the association between the correlates of health and child costs precondition with gender interactions

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Control variable									
Gender	-.02	.25	-.00	.36	.28	.04	1.75	1.38	.18
Age	-.19	.13	-.04	-.30	.14	-.07*	-.31	.14	-.07*
Years trying to conceive	-.02	.18	-.00	-.11	.21	-.02	-.13	.21	-.02
Background characteristics									
Years together				.18	.19	.03	.38	.33	.06
Urban area of residence				-.68	.28	-.06*	-.31	.58	-.03
Perceived fertility				.09	.13	.02	-.19	.26	-.04
Economic variables									
University level education				.225	.121	.052	.58	.24	.13*
Work salience				.53	.12	.12***	.64	.24	.15**
Economic hardship				.18	.13	.04	.45	.27	.10
Have paid work				.37	.30	.04	1.13	.70	.11
Partner has paid work				-.43	.34	-.04	-.55	.50	-.04
Social variables									
Friends/family have had children				-.05	.12	-.01	-.05	.26	-.01

Table 3.5

Summary of regression coefficients for the association between the correlates of health and child costs precondition with gender interactions (continued)

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Know anyone decided not to have children				.11	.23	.01	.89	.46	.10*
Partner subjective norms				-.03	.13	-.01	.17	.29	.04
Comply partner norms				.16	.15	.04	-.00	.34	-.00
In-law/family subjective norms				-.18	.15	-.00	-.50	.34	-.12
Comply family/in-law subjective norms				.33	.20	.08	.67	.42	.16
Community subjective norms				.35	.15	.08*	.70	.33	.16*
Comply with community norms				-.03	.20	-.01	-.72	.38	-.16
Relational variables									
Life satisfaction				-.00	.12	-.00	-.11	.25	-.03
Relationship happiness				.19	.12	.04	.05	.25	.01
Health variables									
Personal illness				1.48	.57	.07**	1.47	1.19	.07
Family illness				.28	.43	.02	.92	1.01	.06
Work stress				.47	.35	.05	-.24	.76	-.02
Personal stress				.95	.35	.10**	1.00	.72	.11

Table 3.5

Summary of regression coefficients for the association between the correlates of health and child costs precondition with gender interactions (continued)

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Other life events cannot cope with				-.29	.35	-.03	-1.60	.77	-.14*
other physical, personal stress				-.34	.42	-.04	.24	.91	.03
Needing medical care in last 12 months				.81	.26	.08**	.21	.50	.02
Gender interactions									
Comply Community norms*gender							.94	.44	-.18*
ΔR^2		.00			.07***			.02	
<i>F</i>		.87			4.01			2.54	

Note: Gender (1 = female), *B* = unstandardised beta. *SE B* = standardised error, β = standardised beta. ΔR^2 = difference in variance accounted for in the dependent variable. Only significant interactions are shown.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Section IV: Country differences

The importance of economic preconditions, personal and relational readiness and health and child costs were found to vary according to country. There was a significant difference between the countries in terms of how important they rated economic preconditions ($\chi^2=599.01$, $p<.001$) personal and relational readiness ($\chi^2=813.84$, $p<.001$) and child and health costs ($\chi^2=480.67$, $p<.001$). Economic preconditions were rated the most important by individuals living in Germany ($M= 11.79$, $SD=4.03$), while Russia rated them the least important ($M=8.05$, $SD=3.80$) (See Appendix J, Figure J.1 for bar graph of the importance of economic preconditions according to country). The importance of personal and relational readiness was found to be the highest for people living in Denmark ($M=17.68$, $SD=2.12$) and the lowest or least important for people living in Japan ($M=11.30$, $SD=3.35$) (see Appendix J, Figure J.2 for bar graph of the importance of personal and relational readiness according to country). People living in India rated the health and child costs the most important ($M=11.64$, $SD=3.36$), whereas people living in Spain rated them the least important ($M=8.32$, $SD=3.79$) (see Appendix J, Figure J.3 for bar graph of the importance of health and child costs according to country).

Discussion

The start point from which people prepare for parenthood is what they currently have, whether it will be sufficient and whether it could be threatened by the arrival of a child. There was clear correspondence between the preconditions that mattered most and the domain of uncertainty for the individual. For example, economic preconditions were particularly important to highly educated people with paid employment and to individuals with high relationship stability. Personal and relational readiness mattered most to people

who valued close personal and wider social relationships and to people already enjoying a high quality of life in these domains. Being able to meet the healthcare demands and costs of children were particularly important to individuals already experiencing other burdens. Consequently, results showed the importance of the preconditions of parenthood varied as a function of contextual and individual factors.

Preparing the nest for the arrival and upbringing of a child was shown to be important for men and women. However, women rated two preconditions (i.e., economic, personal and relational readiness) to be significantly more important compared to men. In contemporary society we are witnessing an ever-increasing shift in gender role attitudes with more and more men and women approving of wives and mothers working along with the idea that men should help out around the home (Kaufman, 2000). The gains from marriage and having children have been reduced and women are becoming more work centred (Hakim, 2003). Although men endorse increased gender equity, their role in the family remains that of the breadwinner and women continue to bear the majority of household and childcare responsibilities (Jamieson, Milburn, Simpson & Wasoff, 2010; Office of National Statistics (ONS), 2003). The loss of autonomy in the public sphere (e.g., career) as a result of childbearing is therefore greater for women. Therefore, the sphere of uncertainty for women when it comes to childbearing appears to be at the personal level as a result of personal values and ambitions. For example, the correlates 'university level of education', 'paid work' and 'higher work salience' were found to be positively associated with rating economic preconditions important in the parenthood decision-making process. These results suggest that childbearing elicits uncertainty in terms of its perceived effects on one's ability to participate in the public sphere and achieve alternative life goals and aspirations. Women have more to lose in terms of loss of earnings or withdrawal from the labour market as a result of childbearing.

Consequently women are shown to place more importance on economic preconditions in an effort to try and reduce uncertainty, maintain individual autonomy and establish optimal economic conditions for themselves and their child, before beginning parenthood (Lee Grometnov, 2006; Friedman et al., 1994).

Although overall rated more important by women, economic preconditions were also found to be to be important for men but perhaps for different reasons. As with women, the importance of preconditions was associated with high educational attainment and work salience. This suggests that for men, childbearing may elicit uncertainty in terms of their ability to be the breadwinner of the family and adequately provide for their family financially. However, the reduction of the male breadwinner, female housewife model of family life has also been shown to be contributing to men viewing parenthood negatively as meaning more responsibility, obligation and less freedom (Jamieson et al., 2010). Therefore, this result may also be an outcome of men anticipating economic costs (e.g., spending power) to their autonomy (Heaton et al., 1999). This reinforces previous research that posits that men are more concerned with the economic burden and stress of having children than women (Kaufman, 1997). In either case, and for either gender, seeking optimal economic conditions before beginning parenthood reduces the uncertainty in the public sphere by attempting to counteract the potential economic costs elicited by having a child (Friedman et al., 1994). Consequently, the results obtained go against the hypothesis that economic preconditions would matter most for individuals of low economic standing. This could be a result of individuals of lower economic standing having less alternative pathways to uncertainty reduction. Consequently, the impetus to have a child for this particular group is suggested to be greater (Friedman et al., 1994). Further, prior research has shown people to regard having children as adding to their social and economic resources (Becker, 1981). Consequently, for individuals of low

economic standing the economic value of children may be perceived to be greater than the potential costs. Therefore, childbearing may be sought as a strategy to reduce uncertainty in the public sphere. Consequently, less importance is placed on the parenthood preconditions and more importance is placed on the project of having a child. Notwithstanding this, overall the sample had good socio-economic standing. Therefore, if individuals with lower socioeconomic status were better represented in the sample the results may have differed.

Economic preconditions were also found to matter to individuals who had been in a relationship for a longer period of time and who had high relationship happiness. Consequently, results suggest that while relationship stability may reduce uncertainty in the private sphere (e.g., marital stability) being in a relationship is not enough as individuals still experience uncertainty in other domains. Interestingly, compliance with partner norms and years trying to conceive were negatively associated with rating economic preconditions as important. This suggests that wanting to comply with the childbearing wishes of significant others reduces the importance placed on alternatives to family life. Further, results indicate that an individual's priorities change over time. Over time more importance is placed on the project of having a child rather than on meeting alternative life goals. These results are in line with previous research that suggests that for men and women there comes a time when childbearing takes precedence over other alternative life goals and aspirations (Heaton et al., 1999).

The norms of significant others were also found to be associated with rating personal and relational readiness important. Specifically, having a partner who wanted a child was shown to increase the importance of personal and relational readiness. This result could be an effect of the individual not feeling personally ready to have a child. Although being in a stable relationship may be a major factor in most individual's

decisions to start childbearing, if one member of the couple does not feel personally ready to have a child, childbearing may be delayed. This delay may be the result of individuals placing more importance on ensuring that both members of the couple are personally ready before beginning parenthood. The social influence of close friends or family was also shown to have significant contributions to why personal and relational readiness was considered important. Having friends or family who have had children increased the importance of personal and relational readiness. Thus, social interactions with others who have already had children are shown to reinforce the need to ensure personal and relationship stability. Such a result could be due to an increased awareness of the impact having children can have on one's relationship with their partner (Friedman et al., 1994; Liefbroer, 2005). As Social Cognitive Theory (Bandura, 1998) posits, people learn by watching those around them. Therefore, if an individual is surrounded by friends and family who already have children this may influence their own decision to start a family and what they regard to be important during the decision-making process. Further, previous research has shown that the ideal context for having children is characterised by a stable relationship with a partner to share the responsibility (Frisco et al., 2011). Thus, results suggest that individuals strive towards these optimal conditions before they are ready to become parents. With the arrival of a child potentially threatening relationship stability, personal and relational readiness is particularly important to those who already enjoy high quality of life in these domains. Ensuring personal and relational readiness allows for the costs accompanying childbearing to be overcome and relationship stability to be maintained. Thus, contrary to Friedman et al. (1994) who suggest that childbearing is a strategy for reducing uncertainty in the private sphere (i.e., marital instability), results support the proposition made by Lilliard and Waite (1993) that divorce proneness diminishes the propensity to have a child. Further, results are in line with the current

hypothesis that divorce proneness or relationship instability increases the importance placed on personal and relationship stability. Only once optimal personal and relational conditions have been met will individuals endeavour to have children.

In line with the current hypotheses, the healthcare demands and costs of children were found to be of particular importance to individuals experiencing other burdens (e.g., personal illness, stress). This result may in part be due to the international design of the study. In countries where health care is not provided free of charge (e.g., United States of America) ensuring that both members of the couple are physically healthy and economically stable is an important precondition in the childbearing decision-making process. This is an important strategy for reducing childbearing uncertainty as it ensures that personal health can be maintained in addition to being able to support the child's needs, physically and economically. According to the Reproduction Suppression Model (Wasser & Isenberg, 1986), if present conditions for reproduction are thought to be inadequate (e.g., physiological or environmental conditions) the individuals should delay childbearing until a better time when these conditions are met. Therefore, feeling physically ready may be more of an important consideration for individuals already experiencing health burdens because they may not feel physically ready to have a child. Consequently, reducing the uncertainty in their ability to be able to physically care for a child (i.e., placing importance on health and child costs) would be a strategy sought prior to parenthood. Country variations reinforce the pattern of the results obtained for why individuals emphasise one or another of the preconditions of parenthood as important. Economic preconditions and personal and relational readiness were shown to be most important to individuals living in countries that place high importance on these domains (e.g., Germany, Denmark). Health and child costs are important to individuals living in

less well developed countries where anticipation about the ability to meet the health and economic cost of children is more likely to be experienced (e.g., India).

Overall the results showed the correlates of the preconditions to vary according to precondition and gender. No one factor was correlated with all three preconditions when considering their main effects. However, half of the correlates of personal and relational readiness were additionally correlated with economic preconditions. On the whole, these correlates reflected developmental readiness and economic aspirations. While older age increased the economic preconditions of parenthood it decreased personal and relational readiness. These results suggest that individuals who are of mean childbearing age ($M=29$ years of age) feel personally and relationally ready to have a child but regard future economic stability as important in their decision-making process. Further, years trying to conceive were consistently negatively related to rating economic and personal and relational preconditions as important. Individuals who are at the beginning of their childbearing career may feel more anticipation about the consequences of childbearing and thus place more importance on preparing the nest for the arrival of a child compared to individuals who have been trying for longer. This is in line with life-span theory, which states that opportunities and challenges encountered throughout life will impact on personal goals (Salmela-Aro et al., 2007). Individuals will want and need to achieve other goals before planning to start a family. If these goals are achieved at an earlier stage/age then planning to start a family may start sooner than for individuals who have not yet achieved these goals and thus view them as more important.

Strengths and limitations

The aims of this research were largely achieved. All the men and women in the current analysis were childless and were currently trying to conceive. Therefore the

preconditions of parenthood and the uncertainty of childbearing were arguably more prominent than they would have been in a population of individuals who have already entered into parenthood and know what parenthood entails. The international nature of the questionnaire does however include risks for validity in responses due to translations. The English survey was translated by professional translators at Cardiff University and verified by fertility experts in collaborating countries. Although this is believed to be a rigorous process, as with all international research, constructs could be perfectly translated by not fully capture cultural elements of the topic investigated. Furthermore, internet surveys although increasing in occurrence and quality may also result in populations that are not necessarily representative. For example, internet use remains closely tied to higher socioeconomic status (Chen & Wellman, 2004) a bias that is reflected in the current study with the majority of the respondents being well educated and of good socio-economic standing.

Although causal relationships are discussed, these relationships must be considered with caution due to the cross-sectional nature of the data. All variables were measured at the same time therefore cause cannot be distinguished from consequence: higher education may cause people to place more importance on economic preconditions but the reverse may equally be true. Another limitation to the current research is the higher proportion of female participants compared to male. The participation rates of men were disproportionately low compared to those of women and thus, the results obtained may not be a true representation of the preconditions of parenthood for men. Additionally, the sample representativeness makes the generalisability of the results questionable. While the current research goes beyond that of previous research by examining the childbearing decision-making processes of people actively trying to conceive it is important to examine whether the current findings are extendable to

individuals who are not actively trying to conceive. Such research would determine the importance placed on the preconditions and the reasons for their importance at all stages of the parenthood decision-making process.

Conclusion

The importance placed on the preconditions of parenthood was demonstrated to be influenced by a number of contextual and individual factors, some of which were associated with more than one of the parenthood preconditions. What is clear from the results is that our understanding of the preconditions of parenthood should take into account the attitudes, opinions and behaviours of men as well as women and the context in which the preconditions of parenthood are derived. The preconditions of parenthood are neither inherently good nor bad. However, knowing explicitly what these are, what factors contribute to their importance and how they impact parenthood could help couples be more realistic about the time and effort needed to prepare the nest for parenthood. Consequently, fertility policies could be tailored to specific groups of people to help them meet their preconditions in a timely manner and reduce the possibility of people jeopardising their parenthood goals.

Chapter 4: Male participation in childbearing research: Predicting intentions and behaviour using the Theory of Planned Behaviour

Chapter overview

The 1994 International Conference on Population and Development (ICPD) placed emphasis on the need to increase male attendance and participation in reproductive health services and research (United Nations, 1995). In 2002 a report by The Alan Guttmacher Institute emphasised that the sexual and reproductive health concerns of men are important in their own right, not only because men play important roles as fathers and sexual partners. As a result, a number of researchers across multiple disciplines have begun to investigate the childbearing preferences and behaviours of men (e.g., Agadjanian, 2002; Jamieson, Milburn, Simpson & Wasoff, 2010; Kaufman, 1997; Puur, Olah, Tazi-Prev & Dorbritx, 2008; Von der Lippe & Fuhler, 2004). However, while men are no longer ‘missing’ from childbearing research, research including men tends to be biased towards women in terms of presentation and discussion of results (e.g., Berrington, 2004). Furthermore, the rates of male participation in this specific field of health research are shown to be disproportionately low compared to those of women. This means that the research base is not providing a good account of male attitudes towards whether, when and how many children to have. The gender asymmetry in participation in childbearing research makes clear the urgent need to investigate the childbearing preferences and behaviours of men. Better understanding would identify the male contribution to contemporary fertility trends (Thompson & Lee, 2011) and ensure male opinions were taken into account at the individual level and not only because of their association with women as their sexual partners (The Alan Guttmacher Institute, 2002). However, before

this can be achieved it is important to understand the determinants of male participation in childbearing research (Chapter 4, Part I) and what could be done to increase their participation (Chapter 4, Part II).

The determinants of participation in childbearing research may be best understood by using the Theory of Planned Behaviour (TPB; Ajzen, 1991), a psychological model of human motivation that has received wide attention in health behaviour research. The TPB (see Figure 4.1.1) states that the proximal determinant of behaviour is the decision or intention to perform the behaviour. The strength of the intention is however determined by its three principal constructs: attitudes, subjective norms and perceived behavioural control. Attitudes reflect the individual's affective (e.g., it is good vs. bad) and instrumental (e.g., it is beneficial vs. harmful) evaluations of performing the behaviour. Subjective norms are the perceived social pressures to perform the behaviour (e.g., my partner would want me to participate in childbearing research) and motivations to comply with the wishes of significant others (e.g., I want to do what my partner thinks is best). Perceived behavioural control refers to an individual's appraisal of their ability to perform the behaviour. Perceived behavioural control is proposed to work primarily through its influence on intentions. However, Ajzen (1991) additionally proposed that it could also reflect actual behavioural control and thus influence behaviour directly. The TPB posits that the three principal constructs co-vary with one another, that the implementation of intention is more probable when all three principal factors are positive and that intention is a single predictor of behaviour (Ajzen & Fishbein, 1980). Further, reformulations of the TPB have suggested that intention can only find expression in behaviour if the behaviour is under volitional control (Ajzen, 1991; Fishbein, 2000). Consequently, behavioural control and intention are proposed to have a joint effect on behaviour (interaction) in addition to their unique contributions (see Figure 4.1.1).

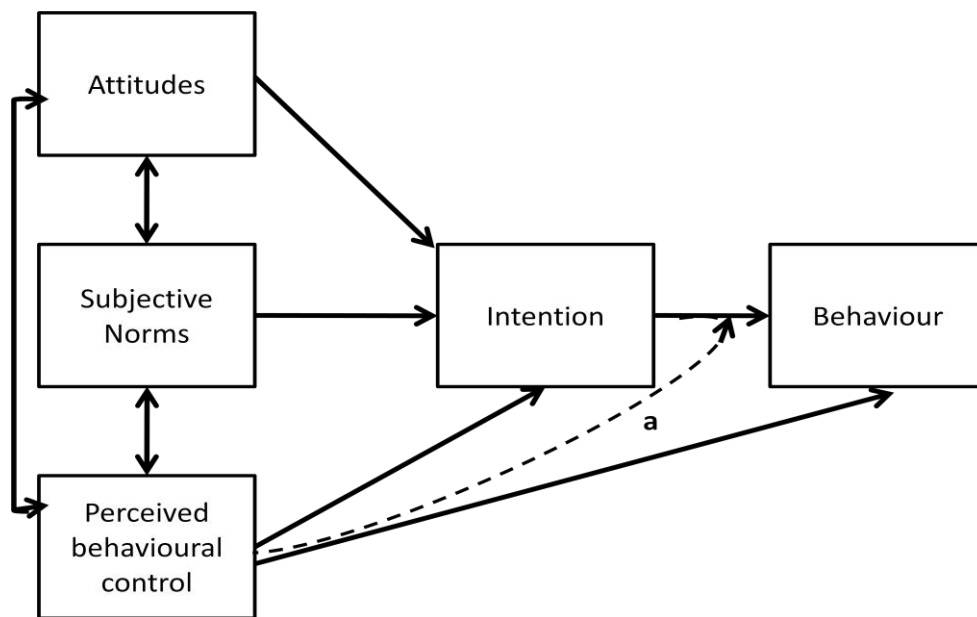


Figure 4.1.1. The Theory of Planned Behaviour. Adapted from Ajzen, I. (1991). The Theory of Planned Behaviour. *Organizational Behaviour and Human Decision Processes*, 50(2), 179–211. ^aDashed line represents interaction between perceived behavioural control and intention.

Previous research shows the TPB model to be applicable to men and women equally (e.g., Hagger, Chatzisarantis & Biddle, 2002). Therefore, there is little evidence to suggest that the intentions and behaviour of men and women would differ in response to their attitudes, subjective norms and perceived behavioural control. However, most studies employing the TPB examine gender neutral behaviours such as physical activity (e.g., Eves, Hoppea & McLaren, 2003; Hagger et al., 2002). Consequently, with childbearing being a female orientated topic (McDonald, 2000), the applicability of the theory to the intentions and behaviour of men in the childbearing context is relatively unknown. Potential differences between men and women may be evident in the strength of the constructs. Women may have more favourable attitudes towards participation in childbearing research as a result of their primary role in childbearing and men may

perceive less social pressure to participate, due to the behaviour being characterised as non-normative for men as a result of social change. Additionally, men may have less perceived behavioural control over participation in childbearing research because there is less research available for them to participate in.

The TPB is the most widely used theory in the study of behaviour and previous research provides a great amount of support for the TPB's ability to predict and explain a wide range of behaviours (e.g., smoking, physical activity; Armitage, 2005; Norman, Connor & Bell, 1999). Little empirical research has examined why male participation rates in research are disproportionately low compared to those of women, particularly in the field of childbearing and from a theoretical perspective. Consequently, employment of the TPB is suggested to be an appropriate theory to explain and predict a largely unexplored behaviour in order to provide foundational research in this domain.

Furthermore, Ajzen (1991) proposed that behaviour change interventions should be targeted at modifying the TPB construct/s that has the largest contribution in the intention behaviour relationship. Thus the TPB is suggested to be an effective theory for identifying what needs to be changed in order to elicit behaviour change. Therefore, the goals of the research presented in Chapter 4 were to examine whether: 1) the TPB model accounts for the variation in childbearing research participation across a three month period, 2) the TPB holds and operates equivalently across gender (gender invariance), 3) the inclusion of distal factors (i.e., factors not explicitly included in the TPB model) add to the TPB predicative ability and 4) who and what could be identified as the target of behaviour change interventions aimed to increase participation in childbearing research. Chapter 4 is consequently presented in two parts. Firstly, the TPB was employed to examine whether it could account for the variation in childbearing research participation for men and women (Chapter 4, Part I). Secondly, an extended version of the TPB was

applied to identify whether the inclusion of distal factors increased the efficiency of the TPB in predicting intentions and whether a profile of individuals most likely to respond to tailored behaviour change interventions designed to increase participation in childbearing research could be ascertained (Chapter 4, Part II).

Chapter 4, Part I: Understanding male participation in childbearing research

Introduction

Fertility research on men tends to be problem orientated, focused on sexual health rather than childbearing. It has centred on male knowledge of available contraceptive methods (e.g., Martin et al., 2000), the well being of women and children (e.g., Johanasson, Nguyen & Tran, 1998; Kaufman, 1997; Knoester & Eggebeen, 2006) and the investigation into the determinants and prevention of the spread of sexually transmitted infections (e.g., Alich, 2007; Forste, 2002). Relatively little attention has been devoted to the factors that shape and modify the childbearing preferences and behaviour of men and thus their potential contribution to contemporary childbearing trends (e.g., increased age at first birth). Consequently, the existing research on men is largely demographic and policy based, covering particular topics such as human immunodeficiency virus (HIV) contraception use and unintended pregnancies (Forste, 2002; Sonfield, 2002). In contrast, the research on women has developed in complexity, covering multiple disciplines, as well as a range of reproductive health and childbearing issues such as contraception, childbearing decision-making, fertility trends and infertility (Gauthier, 2007; Matysiak & Vignoli, 2006; Nattabi, Thompson, Orach & Earnest, 2009).

The research including men has increased since the 1990s. However, a review of the research on fertility and reproductive behaviour conducted between 1950 and 2000, demonstrates the disproportional focus given to women and the overall problem orientated approach to the literature that includes men (Poston & Chang, 2005). Using the

database Popline, Poston and Chang (2005) claim to have found over 75,000 studies on fertility and reproductive behaviour. Of these, only 381 were concerned with or included men and very few addressed the topic of childbearing (Poston & Chang, 2005). Two thirds were biological and medical in orientation (e.g., spermatogenesis). The other third investigated family planning policies, fertility regulation (e.g., male contraceptives), male attitudes towards fertility and family planning and/or economic and cultural factors that shape male fertility (e.g., determinants of childbearing behaviour). Poston and Chang (2005) also highlighted that the majority of the 381 studies included men alongside women. This issue was also acknowledged in a review of demographic accounts of male reproductive roles and used to account for the growth of studies on reproduction that included men (Green & Biddlecom, 2000).

Although there has evidently been less research exclusively on men than on women, studies including men alongside women provide important insight into the male perspective. However, such studies tend to be biased towards women in their primary aims, presentation and discussion of results. For example, Berrington (2004) claimed to have made important advances on previous research by incorporating men into the investigation of childbearing intentions and behaviour. However, statistical analysis and results were only performed and presented for women. Berrington (2004) concluded that the fertility intentions of men are largely consistent with those of women. However, true differences cannot be distinguished due to lack of statistical analysis and presenting data in this way can lead to a distorted perception of male childbearing preferences and behaviours.

Important advances have been made in terms of including men in the research on childbearing and understanding male childbearing preferences and behaviours. However, large scale studies including men consistently show the number of men participating in

childbearing research to be considerably lower than that of women (e.g., Bunting, Tsibulsky & Boivin, 2012; Tough, Tofflemire, Benzies, Fraser-Lee & Newburn-Cook, 2007). For example, the International Fertility Decision Making Study (IFDMS) – a survey implemented in 18 countries with one of its primary aims being to recruit men – showed an overall 9:1 female to male ratio (Bunting, Tsibulsky & Boivin, 2012).

Although the lack of male participation may be due to men choosing not to participate, it is not known whether lack of participation is governed by social change, lack of interest or lack of opportunity to participate due to researcher exclusion. Conversely, it is not known whether the lack of male participation has prevented the initiation of childbearing research focusing on men. The disproportionately low number of men participating in childbearing research could therefore be attributed to three possible causes: social change, researcher exclusion or self-exclusion.

Social change

A number of societal changes have firmly placed the control of reproduction with women and made reproduction a female issue (McDonald, 2000). Prior to the development of the first effective contraceptive pill in 1961 (Junod & Marks, 2002) contraceptive options were limited to predominantly male methods of contraception (e.g., withdrawal or condom use; Darroch, 2008). For example, a 1955 study on methods of fertility control among 1,901 white women showed that 27% were using the condom, 22% were using rhythm methods and 7% were using withdrawal (Westoff & Ryder, 1967). Westoff and Ryder (1967) then found a marked difference in the use of contraceptive methods between 1955 and 1965 as a result of the introduction of the hormonal contraceptive pill. Reliance on the condom, rhythm and withdrawal methods, which accounted for 56% in 1955, had declined to 36% by 1965. Hormonal

contraceptives became (and still are) the most popular form of contraception (Westoff & Ryder, 1967). Hormonal contraceptives are used today by 40% of the 75% of women below the age of 50 using at least one method of contraception (Office of National Statistics, 2008). The introduction of effective contraception brought newfound freedom for women. For the first time women had the ability to choose and plan the course that their reproductive lives would take independent of men, if so desired. Women could choose to have a birth or avoid a birth to shape their futures (Hakim, 2003; McDonald, 1996). Male methods of contraception became increasingly uncommon as a form of fertility control (although this varies across countries) as contraceptive methods for women became more widely available.

Greater choice for women has impacted men too. Opportunities to choose whether or not to parent are limited for men if women choose to exclude them from the decision-making (Edwards, 1994). Biddlecom and Fapohunda (1998) found that 7% of 1,860 married Zambian women aged 15 to 44 who used contraception did so covertly without their partner's knowledge. Although covert contraceptive use may be more characteristic of sub-Saharan Africa, as contraceptive use is less normative and widespread than in developed countries, it nonetheless emphasises the primary role of women in reproductive control. Thus, while reproductive rights are politically understood as the rights of men and women, in practice they concern mainly women's rights. The United Nations Population Fund (UNPF) and the World Health Organisation (WHO) advocate for reproductive rights with a primary emphasis on women's rights. Further, under the 1967 Abortion Act, as amended in 1990 by the Human Fertilisation and Embryology Act, a man has no legal right to prevent his partner from having an abortion nor may he force her to have an abortion. Moreover, the woman is not required to notify or obtain permission from the father (Statue Law Database, 1967; 1990).

Endorsing reproduction to be primarily the right of women is further reflected in the research on reproduction and childbearing. Women have been regarded to be more influential in reproductive decisions as reproduction is a legitimate sphere of power within marriage for women (Beckman, 1984; Berrington, 2004; Fried, Hofferth & Udry 1980). This assumption has some support in research. In examining regression models for the predictors of childbearing intentions among husbands and wives, Fried et al. (1980) found that wife-alone models accounted for more variance in both her and her husband's intentions ($R^2=.35$, $.30$ respectively) compared to husband-alone models applied to his and his wife's intentions ($R^2=.26$, $.19$ respectively). Consequently, Fried et al. (1980) argued that the characteristics of the women could be more closely related to childbearing intentions and behaviour than those of men. Research has additionally shown that women themselves consider their childbearing decisions as more relevant than those of their partner. In an investigation of the determinants of child timing, Miller and Pasta (1994) found that the respondents own attitudes and beliefs were dominant in the formation of child timing intention, particularly for women. Women placed more (just under twice as much) emphasis on their own attitudes and beliefs relative to those of their husbands in the formation of intentions, whereas men treated their own as equal to their wives (Miller & Pasta, 1994).

Researcher exclusion

The lack of male participation may also be due to researchers excluding men from their research. Researchers have traditionally solicited data from women only. Typically, information concerning male fertility preferences and behaviour has been collected by asking women about their partner's attitudes, opinions and intentions (Morgan, 1985). According to Becker's (1981) New Home Economics Model, the couple is a unit and

therefore attitudes, opinions and intentions are definitive, meaningful and complementary (Dodoo, 2001; Green, et al., 2006). This approach argues that attitudes and opinions about childbearing are interchangeable between spouses. Therefore, soliciting data about fertility preferences and behaviour exclusively from one spouse, typically the woman, should be deemed appropriate.

The process of partner selection justifies the view of strong concordance between spouses put forward by the New Home Economics Model (Becker, 1981). Individuals usually prefer a partner who resembles themselves in terms of values, lifestyle preferences, socio-economic status and intellectual ability (Ahern, Cole, Johnson & Vandenberg, 1985; Berezkei & Csanaky, 1996). This assortative mating or homogamy has resulted in researchers assuming that focusing on the characteristics of both partners is unnecessary because the social characteristics of the partners largely overlap (Corijin, Liefbroer & Gierveld, 1996; Fried et al., 1980). However, empirical research has shown that couple homogamy is not complete and that husbands and wives have differing childbearing attitudes, opinions and intentions. Consequently, investigating the characteristics of only one partner could potentially give rise to unreliable or misleading results attributed to the other partner (Corijin et al., 1996). For example, research comparing response data from both members of a couple show that when men and women are asked to report on whether or not their partner thought their most recent pregnancy was intended, only 66% of responses matched (Sobieszcsyk & Williams, 2001). In addition, Fried et al. (1980) found differences in the predictors of husbands and wives intentions to have a child. Self-reports were better predictors of personal rather than partner intentions to have another child, for men and women (Fried et al., 1980). Together, these results support the view that examining the characteristics of one spouse

to gain information about the couple or the other spouse may be problematic (Corijn et al., 1996).

Previous research suggests a number of potential conceptual and methodological constraints that could impact male participation in research (Alich, 2007; MacAdoo, 1993). These constraints may have deterred researchers from including men in research, which in turn may, paradoxically, have acted as an actual constraint for men. These obstacles may mean that men genuinely have fewer opportunities to participate even if they wanted to (Ajzen, 1996). One cause is that the reproductive life span of men is less determined by age (Bledsoe, Guyer & Lerner, 2000; Bretherick, Fairbrother, Avila, Harbord & Robinson, 2010). The childbearing years of women are defined by a narrower age range (15–49), than they are for men (15–79), making it practically easier to target the childbearing period of women to collect fertility preferences and behaviours throughout their reproductive careers. Most fertility surveys focus on women aged 15–44 since this represents the average reproductive lifespan of women (mean age at first birth being 29 years of age; Office of National statistics (ONS), 2008). Consequently for reasons of comparability, men of this age group are targeted as well. However, to estimate male completed fertility or final number of fathered children, data from men at all ages would be required. Thus, research may gather data primarily from women in order to reduce the possible economic costs of following men throughout their longer reproductive careers.

Other practical analytical challenges (depending on culture) include polygamy, extramarital relationships and the assumed inability of men to report on their progeny (Lloyd & Gage-Brandon, 1992). Previous research analysing the fertility histories of men and women have found short-falls in data reported by men on the number of children from prior unions (Cherlin, Griffith & McCarthy, 1983). The probability of being

unaware of their own biological children is higher for men than it is for women (Toulemon, 2001), particularly for men who have fathered a child outside of marital or cohabiting unions (Garfinkel, McLanahan & Hanson, 1998; Logan, Manlove, Ikramullah & Cottingham, 2006; Rendall, Clarke, Peters, Ranjit & Verropoulou, 1999). In examining the French population census data gathered from 380,000 men and women living in private dwellings, Toulemon (2001) found that men reported fewer biological children than women (1.61 compared to 1.85 respectively). Toulemon (2001) argues that the difference in reported progeny is likely to be due to union dissolution and/or lack of knowledge about having fathered a child. However, it has also been suggested that under-reporting the number of biological children may be intentional in an effort to hide extramarital relationships (Lindberg, Sonnerstein, Martinez & Marcotte, 1998).

The unreliability of data collected from men is not restricted to the reports of their number of biological children. Fikree, Gray & Shah (1993) also found that when reporting their partner's number of spontaneous and induced abortions, husbands made recall errors compromising study validity. Fikree et al. (1993) found that in a sample of 857 couples, the men reported 32 (1.8%) induced abortions while the women reported 57 (3.2%). However, the discrepancy could equally be due to women withholding information from their partners rather than the unreliability of the reports of men (Ratcliffe, Hill, Harrinton & Walraven, 2002). Fertility researchers may preferentially recruit women to enhance reliability (information about paternity is more likely to be missing than information about maternity) but this inadvertently causes under-representation of men in research and potentially misleading results. Men may make errors in their reports of various pregnancy outcomes due to women choosing the course of their reproductive careers irrespective of men, concealing or denying their pregnancies from their husbands or partners (Ratcliffe, 2002). Fikree et al. (1993) conclude that

husbands should be avoided as informants of their wives reproductive histories. However, husband reports provide important insight into couple communication and covert reproductive control. Further, other studies have found that men reported their fertility history accurately. For example, in a large study, men ($n=1,315$) reported the same number of stillbirths, live births by birth order, and child deaths as women, concluding that it was possible to collect accurate data from men (Ratcliffe et al., 2002).

Self-exclusion

The paucity of men in childbearing research may also be due to men perceiving childbearing topics as inapplicable to them or as primarily the concern of women. Men with greater interests in childbearing and family challenge the profile of male and female identity as defined by the gender system in society. Further, participation in such activities is influenced by the degree of support that men receive from their immediate family members and their community (Goldschieder, 2000; Mason, 1997; Puur et al., 2008). If engaging in family responsibilities is considered part of the feminine nature, then it could act as a possible deterrent for men with regards to participating in research on childbearing. The social discourse surrounding reproduction may therefore contribute to men excluding themselves from research due to lack of interest, perceiving their participation in childbearing research as non-normative, and/or perceiving a social pressure to avoid engagement in the behaviour (Ajzen, 1988; Barber, 2001). In a qualitative study in Mozambique, Agadjanian (2002) found that men felt anticipatory anxiety towards communicating their thoughts and feelings about reproduction due to fear of being ridiculed (Agadjanian, 2002). Men were more likely to have a one-on-one conversation with peer confidants than conversations with a large company of friends, as the former is less bound by rigid rules of gender conduct. Additionally, Agadjanian

(2002) found that men tended not to communicate about reproductive matters unless these affected them personally. This may mean that for men, participation in conversations and exchanges on reproductive matters is not spread evenly throughout their reproductive lives as it is for women but rather mainly confined around reproductive events such as pregnancy and the birth of a child. Before such occurrences men express little concern or reason to attend to reproductive matters. Agadjanian (2002) proposed this absence to be a reflection of a lack of interest in childbearing and a reassertion of gender role expectations and stereotypes. The gendered nature of male communication and behaviour may therefore play an important role in shaping male attitudes, intentions and participation in research on childbearing.

The disparity between male and female participation rates may be due to men being uninterested in participating in research in general (regardless of topic). National volunteer surveys such as the 2005 Citizenship Survey (Department for Communities and Local Government, 2006) have shown that participation in volunteering is considerably higher for women than for men. This suggests that men are less concerned with or interested in participating in unpaid activities in general. However, previous research in other areas of psychology have shown male participation to be high (e.g., cardiovascular and cancer research, clinical research studies, HIV and sexuality; e.g., Kalichman, Ramachandran & Catz, 2001; Niven & Carrol, 1993), and in some cases the number of men participating far exceeds the number of women. For example, a meta-analysis of 20 studies examining sexual orientation and left-handedness in a sample of 23,410 men and women, showed a 9:1 male to female ratio (Lalumiere, Blanchard & Zucker, 2000). Together these results suggest men may exclude themselves from the research on childbearing due to lower interest in the topic or perceiving the topic to be less personally relevant.

Overall the disproportionately low participation rates of men in childbearing research have led some researchers to regard men as uninterested in childbearing with some going as far as negating a genuine desire of men to have children (e.g., Fichtner, 1999). However, childbearing has been shown to be meaningful to the lives of men as partners, friends, family, health professionals and politicians (Coyle, 2007; Ghosh, 1999; Goldsieder & Kaufman, 1996). Research focused on men has shown that men want more acknowledgement that pregnancy and abortion are also meaningful to them (Holmes, 2004; Mattinson, 1985; Shostak, 1979) and that men are more interested in family planning than assumed (Green et al., 2006; Lindberg & Sonnerstein, 2000). For example, Martin, et al. (2000) found in a multi-centre study of attitudes towards the prospect of a male hormonal contraceptive among 1,379 men from three different countries (i.e., United Kingdom, China, South Africa), acceptability of the prospect was high. Intentions to use male contraception ranged from 44% in Hong Kong to 83% in Cape Town (Martin, et al., 2000). Further, national and international data provides numerous indications that the attendance of men at family planning clinics and their motivation to participate in reproductive healthcare behaviours is increasing (Armstrong, Cohall, Vaughan, Scott, Tiezzi & McCarthy, 1999; Department of Health, 2001; Pearson, 2003). Although men still represent the minority of clientele attending family planning clinics, an impressive increase in attendance has been observed. The greatest growth in family planning was recorded during the 1990s with the number of men attending increasing by 160% by the end of the decade and over the period 1988–1989 to 2000–2001, the number of men attending for condoms increased by 291% (Department of Health, 2001; Pearson, 2003). Increased use of contraception suggests that men want more involvement in the decision of whether and when to become fathers (Darroch, 2008; Martin et al., 2000). For example, for men, the use of contraception can avoid unwanted

pregnancies and the financial responsibilities (e.g., child support) that can be enforced as a result of fathering a child unintentionally (Child Support Act, 1991).

Present study

The purpose of the current study was to investigate the value of using the TPB model to account for variation in childbearing research participation using a prospective design. Specifically the current study sought to investigate the TPB efficiency in predicting participation in childbearing research across a three-month period. An additional aim was to examine whether the model measurement maintained its meaning (i.e., invariance) across gender.

To achieve these aims, men and women were recruited to an online Participation in Research Survey (PRS). In the first phase of the research (Time 1, T1) participants provided data about background characteristics, and the Theory of Planned Behaviour constructs attitudes, subjective norms, perceived behavioural control and intentions were measured. Additionally an indirect measure of behavioural intention (i.e., leaving an email address) was employed to examine whether intention actually led to men and women taking up the opportunity to participate in future research. In the second phase of the study (Time 2, T2) participants who had left their email at T1 were invited to participate in a new survey on childbearing. Whether or not individuals participated at T2 was used as a measure of research behaviour. This allowed a true measure of behaviour to be obtained and facilitated a more reliable analysis of the intention – behaviour relationship. Previous research examining the validity of the TPB in predicting and explaining behaviour has tended to use self report measures for behaviour. For example, Hamilton and White (2008) measured exercise behaviour by asking respondents to report how many times they had exercised that week. Failing to observe engagement in this

behaviour directly could have resulted in the respondents over or underestimating their behaviour. Consequently, observing whether or not individuals engage in childbearing research reduces the possibility of unreliable, self-reported measures of behaviour.

According to the TPB there should be little opportunity for intention to change between the assessment of intention and the subsequent behaviour measure. Thus for the purpose of prediction the time interval between the two measures was three months, keeping it at a minimum but allowing for a true assessment of whether the intention to perform the behaviour actually resulted in behavioural performance (Ajzen, 2006). Structural equation modelling (SEM) was used to test the fit between the TPB constructs and the outcomes of (1) behavioural intention and (2) T2 behavioural participation/research behaviour. Additionally, model invariance across gender for the outcome research behaviour was examined. It was hypothesised that the TPB would fit the data on participation in childbearing research and be invariant across gender.

Method

Participants

Eligible participants were men and women aged 18 years and older on the email list of Cardiff University. No other inclusion/exclusion criteria were applied. The final sample was 799 (176 men, 623 women).

Recommended sample size for SEM was generated using Creative Research Systems (2003) formula:

$$SS = \{Z^2 * (P) * (1-P)\} \div C^2; \text{ Where } SS = \text{Sample size; } Z=1.96 \text{ (for 95 percent level of confidence); } P=0.5 \text{ (the worst percentage that can ever pick a choice); } C^2=.035 \text{ (confidence intervals).}$$

For this study, values and required sample size were:

$$SS = \{(1.96)^2 * (.05) * (1 - 0.5)\} \div (.035)^2 = 784 \text{ respondents.}$$

The recommended sample size was also based on the minimum target sample size needed for structural equation modelling and multi-group analysis of structural invariance, which sets the lower limit to 200 respondents (Loehlin, 1998; Marsh, 1994).

Table 4.1.1 shows background characteristics of the total sample at T1 ($N=799$) and the subsample who left their email address ($n=288$). The majority of respondents at T1 were aged 29 years, single, had achieved a university education and had not given birth/fathered a child. Men were significantly older, were more likely to be homosexual and in full time employment compared to women.

The background characteristics of the subsample were similar to those of the total sample. However those that left their email were more likely to be heterosexual ($\chi^2(1) = 3.759, p=.05$), to have given birth/fathered a child ($\chi^2(1) = 9.993, p<.01$), be in full time employment ($\chi^2(1) = 6.661, p<.05$), to have been in a relationship for longer ($t(797) = -2.371, p<.005$) and were less likely to be students ($\chi^2(1) = 16.032, p<.001$) compared to those who did not leave their email. For the subsample no significant differences were found between men and women.

Of those that left their email, individuals were more likely to participate at T2 if they had given birth/fathered a child ($\chi^2(1)=3.98, p<.05$), had higher levels of education ($\chi^2(1)=11.51, p=.001$) and if they were not students ($\chi^2(1)=6.42, p=.01$). No significant differences were found between the men and women who participated at T2.

Table 4.1.1

Descriptive statistics for background characteristics, t-test and chi-square for men and women according to total (N=799) and subsample (n=288)^a

Variable	Total sample T1				Subsample left email			
	Total sample (N=799)	Men (n=176)	Women (n=623)	Gender test statistic t/χ^2	Total sample (N=288)	Men (n=49)	Women (n=239)	Gender test statistic t/χ^2
<i>Demographic</i>								
Age ($M \pm SD$)	28.95(11.20)	31.17(12.98)	28.32(10.51)	3.00**	29.59(10.35)	31.96(12.94)	29.10(9.69)	1.77
At least university level (n (%))	574(71.8)	134(76.1)	440(70.6)	2.06	210(72.9)	37(75.5)	173(72.4)	.20
Full time employment (n (%))	289(36.2)	75(42.6)	214(34.3)	4.06*	121(42.0)	23(46.9)	98(41.0)	.59
Student (n (%))	429(53.7)	92(52.3)	337(54.1)	.18	139(48.3)	24(49.0)	115(48.1)	.01
<i>Marital status</i>								
Married/Cohabiting (n (%))	364(45.6)	82(46.6)	282(45.3)	.13	158(54.9)	26(53.1)	132(55.2)	.08
Years together (for those partnered) ($M \pm SD$)	5.38(8.50)	5.62(8.87)	5.31(8.40)	.44	6.32(8.01)	7.33(9.88)	6.12(7.58)	.96
<i>Sexual orientation</i>								
Heterosexual (n (%))	737(92.3)	154(87.5)	583(93.6)	7.83*	273(94.8)	47(95.9)	226(94.6)	.15
<i>Fertility history</i>								
Given birth/fathered a child (n (%))	186(23.4)	45(25.6)	141(22.6)	.59	83 (29.5)	13(30.6)	70(29.3)	.05

Note. N and n=Sample size, M= mean, SD = standard deviation. t-test for continuous data, chi-square for categorical data.

* $p < .05$, ** $p < .01$, *** $p < .001$

Materials

The Participation in Research Survey (PRS) is a two part longitudinal survey of 18–70 year old men and women from Cardiff University. At T1 participants were asked to complete the first part of the Participation in Research Survey (PRS1), a 15-minute online survey assessing the principal constructs of the TPB and related distal factors (see Appendix K for PRS1). Constructs measured in the survey were generated from the Theory of Planned Behaviour (Ajzen 2006; Ajzen & Fishbein, 1980) as well as a review of the literature on men and childbearing decision-making (1990 onwards). The survey consisted of 37 questions and was divided into five sections: 1) background characteristics, 2) previous research behaviour, intentions to participate in childbearing research and interest in participating in other areas of research, 3) attitudes towards childbearing research, having a/another child and men's and women's roles, 4) subjective norms and perceived behavioural control about participation in childbearing research and 5) behavioural intentions towards participation in childbearing research. At time 2 (T2), the participants who had left their email at T1 were asked to participate in the second part of the Participation in Research Survey (PRS2), a five-minute survey on childbearing. The PRS2 was developed after preliminary analysis of the PRS1 and consisted of 23 questions divided into four sections: 1) background information, 2) attitudes towards research in general, 3) attitudes towards childbearing, 4) attitudes, subjective norms and perceived behavioural control about participation in childbearing research (see Appendix L for PRS2). Overall the materials were designed in order to examine whether attitudes, subjective norms, perceived behavioural control and intentions would predict behavioural intentions towards participation in childbearing research (all measured at T1) and whether those who had behavioural intentions translated their intentions into actual research behaviour at T2. The phrasing of both questionnaires was adapted so that it would be

applicable to men and women who had/had not had children. Only those variables used in the present analysis are described.

Independent measures

Attitudes: Eight items adapted from Francis et al. (2004) were used to assess direct measures of behavioural beliefs about participation in childbearing research at T1. All eight items were measured on six-point response scale (0–5), with negative and positive end points (e.g., *unpleasant–pleasant*). Five items measured outcome evaluations (e.g., for me participation in childbearing research is, 0=*bad*, 5= *good*) and three measured instrumental beliefs (e.g., for me participation in childbearing research is, 0=*harmful*, 5=*beneficial*). Scores were averaged across items to give an attitude scale. Higher scores indicated more favourable attitudes. Cronbach reliability coefficient in the present sample was $\alpha = .93$ (49 men, 239 women).

Subjective norms: Subjective norms (Conner & Norman, 1996) were assessed at T1 according to the extent to which significant others (e.g., important people, partner, in-laws/family, friends) would want the person to participate in childbearing research. Corresponding items inquired about participants' desire to comply with these wishes. The eight items were measured on a five-point response scale (1=*strongly disagree*, 5=*strongly agree*). Scores were averaged across items to give a subjective norm score with higher scores indicating more of the attribute. Cronbach reliability coefficient in the present sample was $\alpha = .82$ (49 men, 239 women).

Perceived behavioural control: Five items were used to measure perceived behavioural control at T1. Three items assessed controllability (e.g., it is easy to participate in childbearing research), and two items measured self-efficacy (e.g., the decision to participate is out of my control). All items were measured on a five-point response scale (1=*strongly disagree*, 5=*strongly agree*). Items were reversed where necessary and scores were averaged across all items to give an overall perceived behavioural control score. Higher scores indicated more perceived behavioural control. Cronbach reliability coefficient in the present sample was $\alpha = .71$ (49 men, 239 women).

Intention: Respondents were asked to indicate their intentions to participate in childbearing research if a new project was announced on three items at T1 (i.e., I would intend to participate, I would expect to participate, I would want to participate). Items were measured on a five-point response scale (1=*strongly disagree*, 5=*strongly agree*). Scores were averaged across all items and higher scores indicated greater intention to participate. Cronbach reliability coefficient in the present sample was $\alpha = .84$ (49 men, 239 women).

Dependent measures

Behavioural intention: At T1 respondents were asked to leave their email address if they were interested in receiving information about and participating in upcoming childbearing research. Whether or not the respondents left their email was used as an indication of behavioural intention to participate in childbearing research (0=did not leave email/no behavioural intention, 1=left email/behavioural intention).

Research behaviour: Those who left their email address at T1 received an email three months later asking for their participation in a second childbearing questionnaire (i.e., PRS2). Whether or not respondents participated in the second study (T2) was used as a measure of research behaviour (0=did not participate, 1=did participate).

Procedure

The Participation in Research Survey was uploaded using SurveyTracker software (Training Technologies, 2008) and participants were invited to participate via an announcement email (sent to all students and staff at Cardiff University) asking for voluntary participation in an online study. The Experiment Management System (EMS) at Cardiff University was also used to recruit respondents. The EMS is a participant panel system where researchers can advertise their studies to students at the School of Psychology at Cardiff University. Respondents who completed the questionnaire through the EMS system were rewarded one credit toward completion of their course requirements.

During the recruitment period (February 2011), there were 6,031 (2,806 men, 3,225 women) employees and 25,974 (10,898 men, 15,076 women) students at Cardiff University, all of which would have received the announcement email. Included in the announcement email was a sentence about the questionnaire (“the goal of the study is to better understand men and women’s participation in research”) and a URL link. Clicking on the URL took the respondents to a description of the content of the questionnaire and a consent form. To continue to complete the questionnaire respondents were asked to confirm that they were aged 18 or over and consented to participate. Questions were presented in the same order for all the respondents and once a respondent clicked to move to the next page they were unable to go back and change answers. The questionnaire took

approximately 15 minutes to complete. Throughout the questionnaire respondents had the option to click out and close the questionnaire with no data being submitted. Once they came to the final page a more detailed explanation of the study was provided and the option to submit their data if they wished.

Due to the outcome variable being whether or not the respondent completed the second questionnaire, respondents were not informed that there would be a second part to the study. At T1 respondents were asked to leave their email address if they were interested in hearing about and/or participating in upcoming surveys on childbearing. Unknown to the respondents, those who left their email would be contacted and asked for their participation in the PRS2 (T2). Respondents who left their email at T1 were contacted (via email) during May 2011 (approximately three months after completing the first questionnaire) and asked to participate in another childbearing survey. The email sent out to this subsample included a brief description of the questionnaire and a URL link. Participants received a more detailed explanation of the study, including the need for deception, when they submitted their data (or withdrew from the survey). The Ethics Committee of the School of Psychology, Cardiff University carried out the ethical review and approved the study procedures.

Data analysis

A total of 801 responses were downloaded from SurveyTracker into SPSS of which two were removed due to duplication. Descriptive statistics were used to profile the sample on background information. T-tests (t) and chi-square (χ^2) analysis were used for gender comparisons and for comparisons between those who had and had not left their email address and those who had and had not participated at T2 (as relevant based on type

of measurements). Internal reliability was assessed using the Cronbach alpha reliability coefficient (α). Scores were converted to standard scores where applicable due to variables having different units of measurement. Multiple items measuring the same construct (e.g., attitudes towards childbearing research) were used to create composite variables (mean across all items).

Structural equation modelling (SEM) in AMOS 7 using Maximum Likelihood (ML) estimation was used to estimate the association between attitudes, subjective norms, perceived behavioural control, intentions (T1) and the outcomes of (1) behavioural intention (T1) and (2) behavioural participation/research behaviour (T2). Two models were tested. The first model contained only the direct associations (Figure 4.1.2) and was tested on the two outcomes (i.e., behavioural intention and research behaviour). The second model (Figure 4.1.3) additionally contained the moderator perceived behavioural control and intention. This inclusion allowed for the possible joint effect of intention and perceived behavioural control to be accounted for. The second model was tested on the outcome research behaviour only.

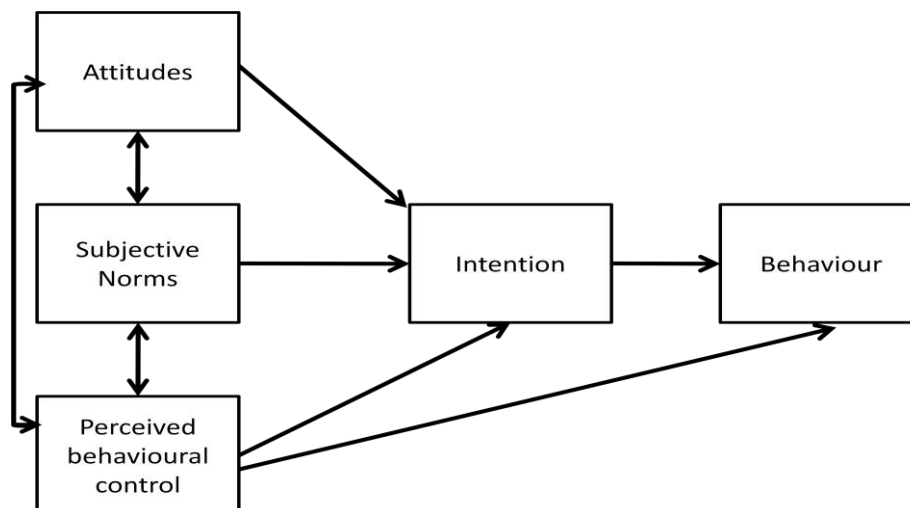


Figure 4.1.2. Theory of Planned Behaviour model applied to the outcomes behavioural intention (T1) and research behaviour (T2).

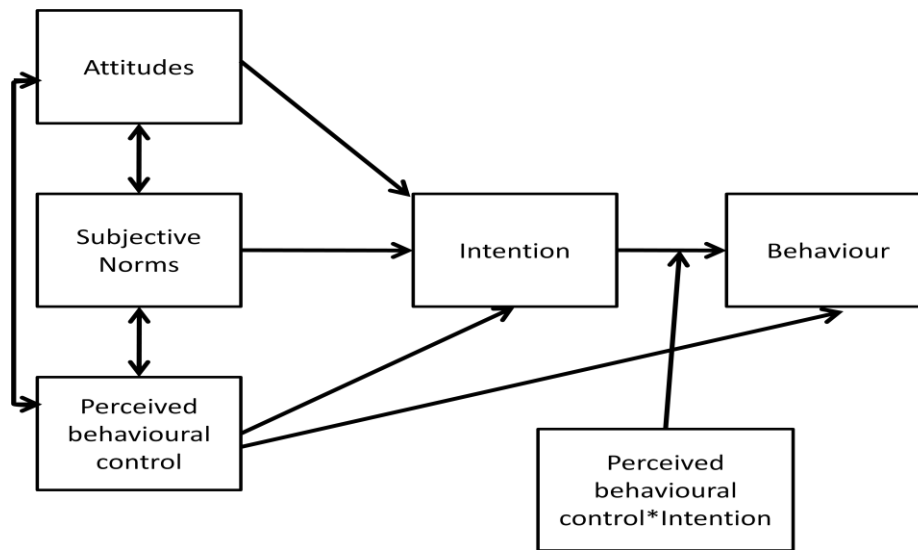


Figure 4.1.3. Theory of Planned Behaviour model with the introduction of the moderator variable applied to the outcome research behaviour (T2).

Standardised regression weights for the relationship between the exogenous variables and the endogenous variables are presented. For the endogenous variables percentage of variance accounted for is presented. Covariances are presented between the exogenous variables. Overall model fit was evaluated using chi-square (CMIN) relative chi-square (CMIN/df), Comparative Fit Index (CFI), the standardised Root-Mean-Square Error of Approximation (RMSEA), and Tucker-Lewis Index (TLI). CFI and TLI values greater than .90 were considered satisfactory (Garson, 2009). RMSEA values less than 0.10 were also considered satisfactory (Byrne, 2001; Kline, 1998). Relative chi-square (referred to as χ^2/df) was considered fit within the 3:1 range (Kline, 1998) for large samples (>200). Insignificant chi-square (χ^2) results at a 0.05 threshold indicated a good model fit. Chi-square below the 0.05 threshold indicated a bad fitting model (Barrett, 2007; Byrne, 2001; Kline, 2005).

The two structural models were also tested to examine whether the models held their meaning across gender for the outcome research behaviour using multi-sample

analysis of invariance. Multiple group models allow invariance tests to be conducted across two groups simultaneously and the fit of the configural model provides the baseline value against which subsequent invariance models are compared. The initial step in this analysis involved establishing a baseline model for males and females via single sample analysis. Sequences of increasingly constrained nested models were then explored. In the configural model both groups were entered simultaneously using the same parameters (assumed equality with no constraints) as in the baseline model for each group (i.e., gender) when analysed separately (Marsh, 1994). Five constrained models were then tested to compare the difference (Δ) between the χ^2 and CFI (i.e., $\Delta\chi^2$, ΔCFI) of the unconstrained (hypothesised model/configural model) and the constrained models. In Model 1, factor loadings were constrained to be invariant across the groups. In Model 2, covariance matrix and factor variances were constrained. In Model 3, the path coefficients (regression paths) were set to equivalence. Model 4 constrained variances and covariances, and Model 5 constrained the residuals to equivalence across groups. Non significant $\Delta\chi^2$ Values ($p > .05$, determined by F -statistic for chi-squared significance threshold) and ΔCFI values of $< .01$ indicated invariance across gender groups (Byrne, 2001).

The total sample ($N=799$) was used to test the SEM investigating whether attitudes, subjective norms, perceived behavioural control and intentions predicted the first outcome measure of behavioural intention at T1. Because the second outcome measure was whether or not respondents participated in childbearing research at T2, the sample for SEM analysis was restricted to individuals who had left their email at T1 ($n=288$) and thus has the opportunity to participate at T2. The TPB constructs were subjected to skewness and kurtosis tests based on the recommended ± 2 range for normal distribution. All TPB constructs met the assumptions of normality (see Appendix M).

Results

Overview

Results are presented in six sections. Section I presents the results for recruitment outcome and the participation rates of men and women in each phase of the research. Section II presents descriptive statistics for the TPB constructs used in the structural equation models. Section III presents the SEM for the outcome behavioural intention to participate in childbearing research ($N=799$). Section IV presents the SEM results for the outcome research behaviour. Section V presents the SEM for the outcome research behaviour with the addition of the moderator variable (perceived behavioural control by intentions) in the TPB model. Section VI presents a summary of model goodness of fit.

Section I. Recruitment outcome

Of the 799 respondents, approximately 87 (11%) were recruited from the EMS system and 712 (89%) participated in a response to the email. Overall response rate to the email was low, with only 2.5% of those who would have received the email responding.

Figure 4.1.4 shows recruitment outcome across study phases. More women ($n=623$) than men ($n=176$) participated in the survey at T1 with an overall ratio of 4:1. Of the sample participating at T1, 288 (36%) left their email. Significantly more women ($n=239$) than men ($n=49$) left their email address with an overall ratio of 3:1 ($\chi^2=6.59$, $p<.05$). Of the 288 individuals, 132 respondents (17 men, 115 women) participated at T2. Attrition for T2 was 54% and more women than men participated in the second study, however this difference was not significant ($\chi^2=2.95$, $p=.09$).

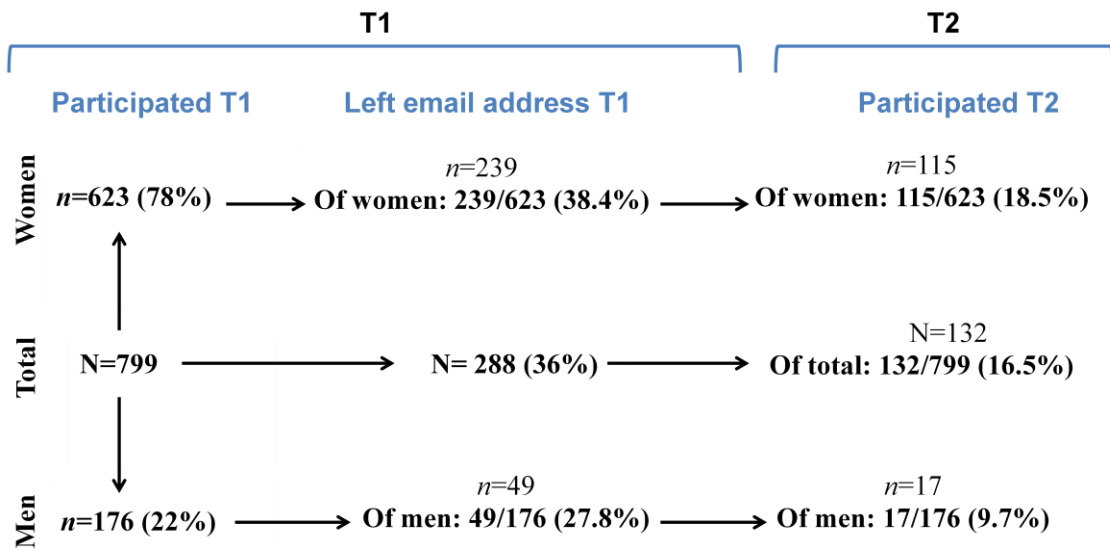


Figure 4.1.4. Sample size (percentage) active in each phase of the research protocol.

Section II. Descriptive statistics for the constructs used in the structural equation models

Table 4.1.2 shows the descriptive statistics for the TPB constructs, according to sample and gender, measured at T1 that were used in the SEM models. Gender difference tests show that men had significantly less favourable attitudes ($t(781)=3.66, p<.001$) and lower intentions to participate in childbearing research ($t(795)=2.69, p<.01$) compared to women. No significant differences were found between men and women in terms of subjective norms and perceived behavioural control.

The respondents who left their email addresses at T1 (i.e. the subsample) rated attitudes ($t(781)=14.88, p<.001$), subjective norms ($t(794)=2.93, p<.01$), perceived behavioural control ($t(786)=4.68, p<.001$) and intentions ($t(795)=10.99, p<.001$) significantly higher than those who did not leave their email addresses. For the subsample the only difference found between men and women was for attitudes towards

participation in childbearing research. Men had marginally less favourable attitudes than women ($p=.05$) (see Table 4.1.2).

For the individuals who left their email, those who participated at T2 had significantly higher attitudes ($M=3.52$, $SD=.76$) than those that did not participate ($M=3.33$, $SD=.80$) ($t(280)=2.05$, $p<.05$). No significant difference was found between those who did and did not participate for subjective norms ($t(284)=1.07$, $p=.28$), perceived behavioural control ($t(284)=.28$, $p=.78$) and intentions ($t(285)=1.89$, $p=.06$). Additionally, no significant difference was found between the men and women who participated at T2 in terms of subjective norms, perceived behavioural control and intentions. However, a marginally significant difference was found between men and women in terms of attitudes towards participation in childbearing research with women having slightly more favourable attitudes ($p=.059$).

Table 4.1.2

Descriptive statistics for indicator (exogenous) and outcome (endogenous) variables for men and women according to total and subsample

	Total sample							Subsample left email address						
	Total (n=799)		Men (n=176)		Women (n=623)		p value	Total (n=288)		Men (n=49)		Women (n=239)		p value
	M	SD	M	SD	M	SD		M	SD	M	SD	M	SD	
Exogenous variables														
Attitudes towards participation in childbearing research ^a	2.87	.87	2.65	.85	2.93	.87	.00	3.42	.79	3.22	.82	3.46	.78	.05
Subjective norms about participation in childbearing research ^b	2.66	.69	2.69	.68	2.65	.71	.55	2.76	.68	2.79	.66	2.75	.68	.72
Perceived behavioural control about participation in childbearing research ^b	3.96	.72	3.89	.76	3.99	.70	.12	4.12	.68	3.98	.72	4.15	.66	.12
Endogenous variables														
Intention to participate in childbearing research ^b	3.08	.95	2.91	.93	3.13	.95	.01	4.12	.67	3.44	.74	3.56	.87	.36

Note. M= mean, SD = standard deviation. p values from t-tests for gender difference. For all response scales, higher scores mean more of the attribute. ^arange 1-6, ^brange 1-5. p values ≤.05 for gender differences considered significant.

Section III. Predicting behavioural intention to participate in childbearing research

The results for the SEM testing the outcome behavioural intention are presented in Figure 4.1.5. The model was recursive with a $df=2$. Standardised regression weights indicate the relationship between attitudes and intention was positive and significant. Additionally, perceived behavioural control was also significantly associated with intention to participate and behavioural intention. Intention to participate was positively associated with the behavioural intention of leaving an email address. The covariances between attitudes and subjective norms, and attitudes and perceived behavioural control were positive and significant. The goodness of fit statistic was statistically significant at the .05 level ($\chi^2=80.57$, $df=2$, $p<.001$, $\chi^2/df=40.29$). The relative chi-square was over the recommended 3:1 range indicating badness of fit. TLI (.23) and RMSEA (90CI) =.22 (.18, .26) also indicated badness of fit. However CFI (.90) indicated goodness of fit.

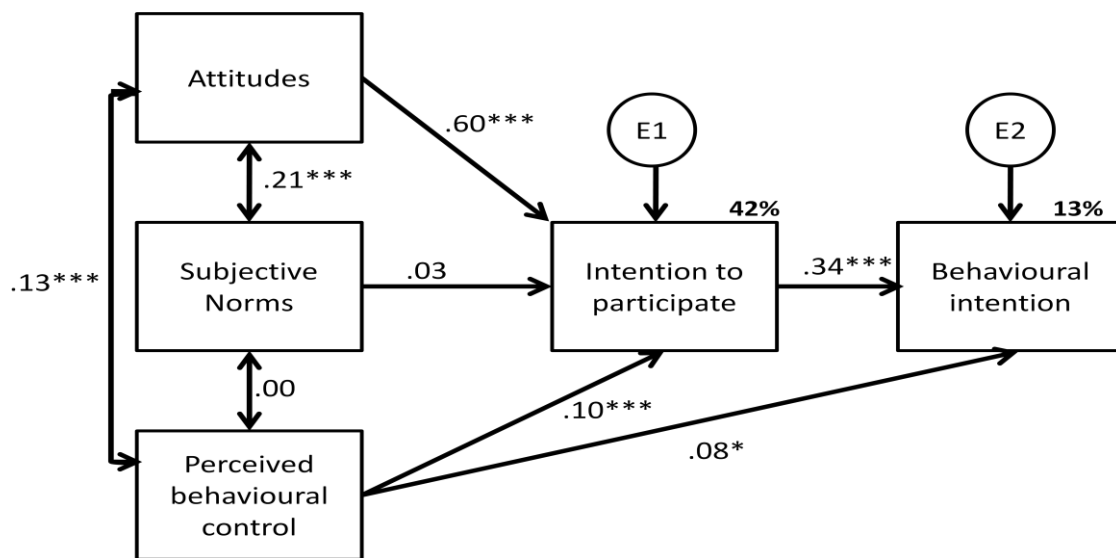


Figure 4.1.5. Theory of Planned Behaviour model applied to behavioural intention to participate in childbearing research ($N=799$). Values displayed are standardised regression weights (\rightarrow), covariances (\leftrightarrow) and percentage of variance accounted for in the endogenous variables. $*p<.05$, $**p<.01$, $***p<.001$.

Section IV. Predicting research behaviour

This section presents results for the SEM analysis testing the outcome research behaviour. The TPB model is tested on the data of the subsample, ($n=288$) and for men ($n=49$) and women ($n=239$) in the subsample separately. Additionally, this section presents the results for whether the model was invariant across gender (i.e., analysis of invariance).

Figure 4.1.6 presents the results for the SEM testing the outcome behavioural participation in childbearing research for the subsample ($n=288$). The model was recursive with a $df=2$. Standardised regression weights are displayed in the structural model. The relationship between attitudes and intention was positive and significant. Additionally, subjective norms and perceived behavioural control were also significantly associated with intention to participate. Intention to participate was positively but not significantly related to behaviour. Covariances between attitudes and subjective norms and attitudes and perceived behavioural control were also significant and positive. Perceived behavioural control was negatively but not significantly associated with behaviour and did not significantly covary with subjective norms. The goodness of fit statistic was statistically significant at the .05 level ($\chi^2=7.39$, $df=2$, $p<.05$, $\chi^2/df=3.69$). The relative chi-square was just over the recommended 3:1 range indicating badness of fit. TLI also indicated badness of fit (.73). However, RMSEA (90CI) =.09 (.03, .11) and CFI (.96) values indicated goodness of fit.

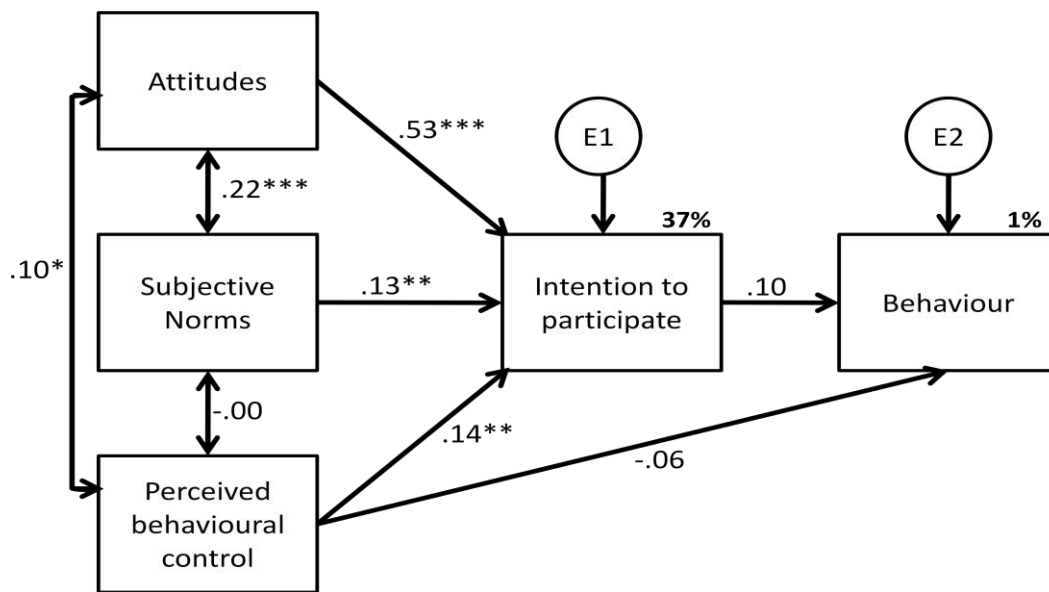


Figure 4.1.6. Theory of Planned Behaviour model applied to behavioural participation in childbearing research ($n=288$). Values displayed are unstandardised regression weights (\rightarrow), covariances (\leftrightarrow) and percentage of variance accounted for in the endogenous variables. * $p < .05$, ** $p < .01$, *** $p < .001$.

The model was then tested on men and women separately. Analysis showed that for men the model was recursive $df=4$ (Figure 5.1.7). The only significant relationship identified was between attitudes and intention to participate. All covariances were non-significant. The goodness of fit statistic was statistically not significant at the .05 level ($\chi^2=2.91$, $df=2$, $p=.23$, $\chi^2/df=1.46$). The relative chi-square was under the recommended 3:1 range, the CFI was over the .90 value (.93), and the RMSEA goodness of fit statistic was under the recommended .10 value RMSEA (90CI) =.06 (.00, .32) indicating goodness of fit. Other fit indices (TLI=.77) indicated badness of fit.

The model for women was also recursive $df=4$ (Figure 4.1.8). All the relationships between the exogenous variables and intention were positive and significant. Perceived behavioural control was negatively but not significantly related to research behaviour.

Intention was positively but not significantly related to behaviour. Covariances revealed that attitudes significantly covaried with subjective norms and perceived behavioural control. The goodness of fit statistic was not statistically significant at the .05 level ($\chi^2=5.42$, $df=2$, $p=.07$, $\chi^2/df=2.71$). The relative chi-square was under the recommended range, the CFI was also over the recommended value of .90 (CFI=.96) and RMSEA was under the .10 value (90CI) =.09 (.00, .17) indicating goodness of fit. Other fit indices (TLI=.77) indicated badness of fit.

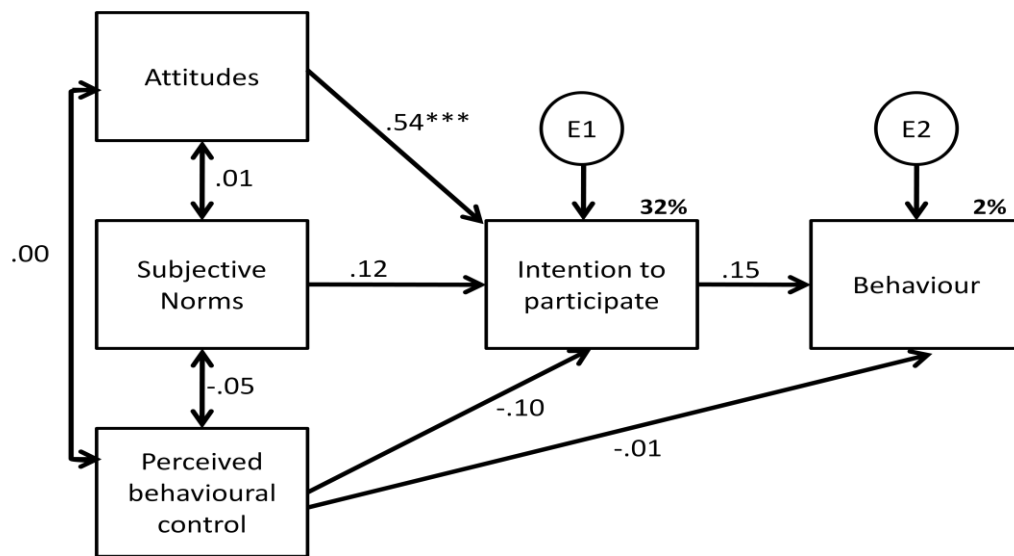


Figure 4.1.7. Theory of Planned Behaviour model applied to men’s behavioural participation in childbearing research ($n=49$). Values displayed are unstandardised regression weights (\rightarrow), covariances (\leftrightarrow) and percentage of variance accounted for in the endogenous variables. * $p<.05$, ** $p<.01$, *** $p<.001$.

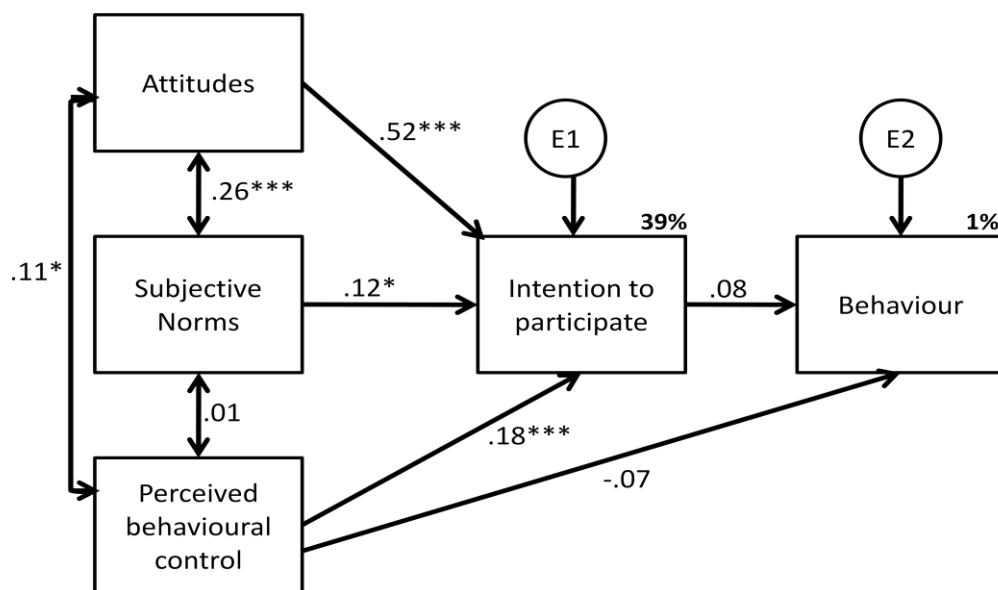


Figure 4.1.8. Theory of Planned Behaviour model applied to women’s behavioural participation in childbearing research ($n=239$). Values displayed are unstandardised regression weights (\rightarrow), covariances (\leftrightarrow) and percentage of variance accounted for in the endogenous variables. * $p<.05$, ** $p<.01$, *** $p<.001$.

To test for invariance across gender, both groups (i.e., men and women) were analysed simultaneously in a configural model using the same parameters as in the baseline model for each group separately (see data analysis section). Goodness of fit statistics showed the configural model to fit the data well ($\chi^2=8.65$, $df=4$, $p=.07$, $\chi^2/df = 2.20$), CFI=.97, RMSEA (90CI)=.06 (.00, .12). Invariance of factorial measurement and structure across groups was then tested through applying constraints to the parameters in the model. For all models $\Delta\chi^2$ values were not significant indicating invariance. However Δ CFI indicated invariance for model 1 and model 5 only (see Table 4.1.3).

Table 4.1.3

SEM multisample invariance analysis across gender for TPB model

Model	χ^2	Df	$\Delta\chi^2$	Δdf	CFI	Δ CFI
Configural model	8.35	4			.97	
Model 1	14.89	9	6.54	5	.96	.01
Model 2	17.97	11	9.62	7	.95	.02
Model 3	21.73	14	13.38	10	.95	.02
Model 4	28.14	20	19.79	16	.94	.02
Model 5	28.63	22	20.28	18	.95	.01

Note. $\Delta\chi^2$ =Difference in χ^2 between models; Δdf , = difference in degrees of freedom between models; Δ CFI = difference in CFI between the models; model 1 = constrained structural weights, model 2= constrained structural weights and intercepts, model 3= constrained Structural weights, intercepts and means, model 4= constrained structural weights, intercepts, means and covariances, model 5 = constrained structural weights, intercepts, means, covariances, residuals. Numbers in bold indicate goodness of fit.

*** $p<.001$, ** $p<.01$, * $p<.05$.

Section V. Predicting research behaviour with the introduction of the moderator variable

This section presents the results for the model with the introduction of the moderator variable. The model was tested on the data for the total subsample ($n=288$) and for men ($n=49$) and women ($n=239$) in the subsample separately. This section also presents the results for whether the model was invariant across gender.

Figure 4.1.9 presents the results for the SEM testing the outcome behavioural participation in childbearing research with the introduction of the moderator variable perceived behavioural control by intention to ($n=288$). The model was recursive with a $df=6$. Standardised regression weights are displayed in the structural model. The relationship between attitudes and intention was the strongest but additionally subjective norms and perceived behavioural control were also significantly associated with intention to participate. No significant relationships were found with the outcome variable research behaviour. The goodness of fit statistic were statistically significant at the .05 level ($\chi^2=75.07$, $df=6$, $p<.001$, $\chi^2/df=12.51$). The relative chi-square was over the recommended 3:1 range indicating badness of fit. Other fit indices (TLI=.14, CFI=.67; RMSEA (90CI)=.20 (.16, .24) also demonstrated badness of fit.

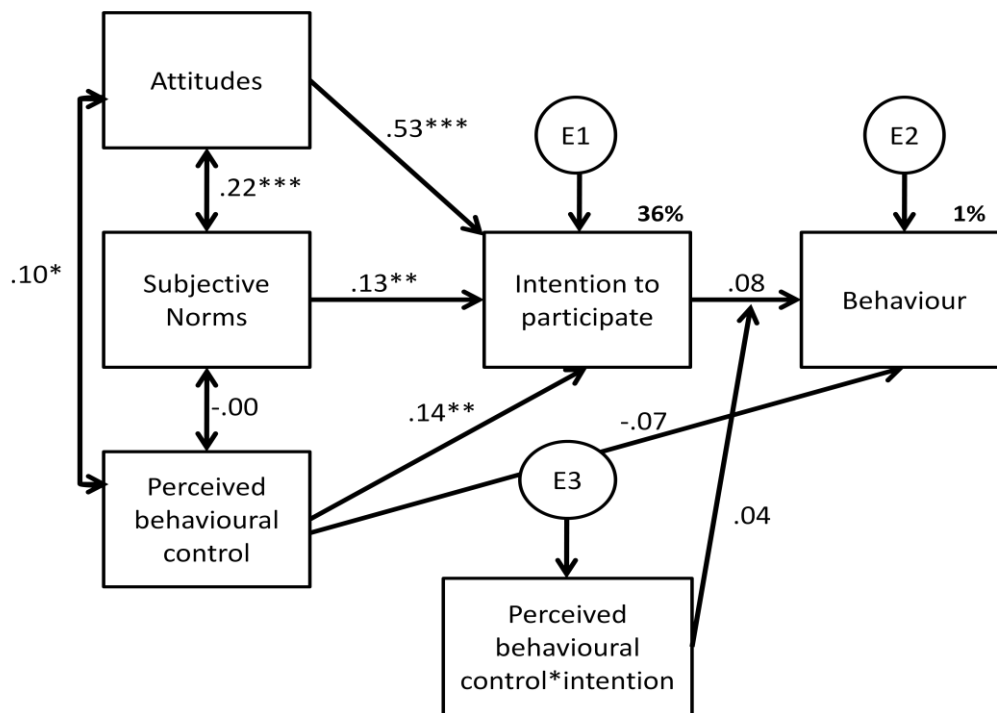


Figure 4.1.9. Theory of Planned Behaviour model applied to behavioural participation in childbearing research with interaction ($n=288$). Values displayed are unstandardised regression weights (\rightarrow), covariances (\leftrightarrow) and percent of variance accounted for in the endogenous variables. $*p<.05$, $**p<.01$, $***p<.001$.

The model with the introduction of the moderator variable was then tested for men and women separately. Single group analysis with the introduction of the moderator variable showed the model for men to be recursive with a $df=6$. The relationship between attitudes and intention was strong and positive ($\beta=.54$, $p<.001$), as was the relationship between intention and research behaviour ($\beta=.36$, $p<.01$). All other relationships between the exogenous and endogenous relationships were not significant as were all the possible covariances. The goodness of fit statistic were statistically significant at the .05 level ($\chi^2=26.65$, $df=6$, $p<.001$, $\chi^2/df=4.44$). The relative chi-square was over the recommended

3:1 range indicating badness of fit. Other fit indices (TLI=.39, CFI=.44; RMSEA (90CI) =.27 (.17, .38) also demonstrated badness of fit.

For women the model with the moderator variable was also recursive with a $df=6$. The relationship between attitudes and intention was strong and positive ($\beta=.52, p<.001$), as was the relationships between perceived behavioural control and intention ($\beta =.18, p<.001$). All other relationships between the exogenous and endogenous relationships were not significant. The covariance between attitudes and subjective norms ($\beta=.26, p<.001$) and between attitudes and perceived behavioural control ($\beta=.11, p<.05$) were also significant. The goodness of fit statistic were statistically significant at the .05 level ($\chi^2=54.83, df=6, p<.001, \chi^2/df=9.14$). The relative chi-square was over the recommended 3:1 range indicating badness of fit. Other fit indices (TLI=.49, CFI=.73; RMSEA (90CI)=.19 (.14, .23) also demonstrated badness of fit.

To test for invariance across gender, both groups were analysed simultaneously in a configural model using the same parameters as in the baseline model, with the introduction of the moderator variable, for each group separately. Goodness of fit statistics for the model with the introduction of the moderator variable perceived behavioural control by intentions showed the configural model did not fit the data well ($\chi^2=82.11, df=12, p<.001, \chi^2/df=6.84$), CFI=.67, RMSEA (90CI)=.14 (.115, .173). Invariance of factorial measurement and structure across groups was then tested through applying constraints to the parameters in the model. The result of the $\Delta\chi^2$ test provides evidence for invariance (model 1, model 5) and noninvariance with model 2–4 showing significant $\Delta\chi^2$. For all the models ΔCFI values were over .01 indicating variance (see Table 4.1.4).

Table 4.1.4

SEM multisample invariance analysis across gender for TPB model with interaction

Model	χ^2	<i>df</i>	$\Delta \chi^2$	Δdf	CFI	ΔCFI
Configural model	82.11	12			.67	
Model 1	93.71	18	11.59	6	.64	.03
Model 2	103.85	21	21.75**	9	.61	.06
Model 3	107.60	24	25.49*	12	.60	.06
Model 4	114.01	30	31.91*	18	.60	.07
Model 5	114.59	33	32.48	21	.61	.06

Note. $\Delta \chi^2$ Difference in χ^2 between models; Δdf , difference in degrees of freedom between models; ΔCFI , difference in CFI between the models; model 1 = constrained structural weights, model 2= constrained structural weights and intercepts, model 3= constrained Structural weights, intercepts and means, model 4= constrained structural weights, intercepts, means and covariances, model 5 = constrained structural weights, intercepts, means, covariances, residuals. Numbers in bold indicate goodness of fit.

*** $p < .001$, ** $p < .01$, * $p < .05$.

Section VI. Summary of model fit

Table 4.1.5 shows the model fit statistics for the different models and the outcomes they were estimating. The model applied to behavioural intention did not fit the data well, nor did the model with the introduction of the moderator variable. The model without moderation is shown to be the best fitting model when estimating the outcome research behaviour. Single group analysis (i.e., men and women separately) shows the highest goodness of fit. Additionally, invariance analysis showed this model to be invariant across gender.

Table 4.1.5

Goodness of fit according to fit indices and Theory of Planned Behaviour structural model

Fit indices	STRUCTURAL MODELS						
	Behavioural intention		Research behaviour		Research behaviour with moderation		
	Total sample	Subsample	Men	Women	Subsample	Men	Women
	(<i>N</i> =799)	(<i>n</i> =288)	(<i>n</i> =49)	(<i>n</i> =239)	(<i>n</i> =288)	(<i>n</i> =49)	(<i>n</i> =239)
Chi -square	<i>p</i> <.001	<i>p</i> <.05	<i>p</i>=.23	<i>p</i>=.07	<i>p</i> <.001	<i>p</i> <.001	<i>p</i> <.001
Relative chi-square (χ^2/df)	40.29	3.69	1.46	2.71	12.51	4.44	9.14
RMSEA	.22	.73	.06	.09	.20	.27	.19
TLI	.23	.09	.77	.77	.14	.39	.49
CFI	.90	.96	.93	.96	.67	.44	.73

Note: *N* and *n* = Sample size. Numbers in bold indicate goodness of fit.

Discussion

When given the opportunity to partake in childbearing research men participate significantly less than women. Recruitment outcome reflects participation rates of previous large-scale studies that show the rate of male participation to be far lower than that of women (Bunting, Tsibulsky & Boivin, 2012). The ratio of male to female participation at T1 was approximately 4:1 with only 22% of the sample population being male. Furthermore, men were less likely to leave their email address and participate at T2.

Notwithstanding this, when examining the participation of men and women as separate populations throughout each phase of the research protocol there was less discrepancy between their participation rates. For example, of the 623 women participating at T1, 38.4% left their email address and of those who left their email address, 48.1% participated at T2. These figures are similar to those that show 27.8% of men left their email address and of those that left their email address 34.7% participated at T2. Therefore, although in line with previous research men were found to have a higher dropout rate compared to women (Jokela, Kivimaki, Elovainio & Keltikangas-Järvinen 2009), once the participation of men had been obtained it was largely retained, and similar to women, throughout the duration of the study. The largest discrepancy between the participation rates of men and women was therefore shown to be at the initial recruitment stage of the study.

These findings reinforce previous research that finds men to be less likely to participate in survey research regardless of subject. This research has proposed men to be active non-responders, choosing to exclude themselves from research (Rogelberg, Conway, Sederburg, Spitzmuller, Aziz & Knight, 2003). Self-exclusion from research is further suggested by the results obtained by the structural equation models that show attitudes towards participation in childbearing research to be consistently the strongest

factor associated with intentions to participate. Further, descriptive statistics showed men to have significantly less favourable attitudes compared to women and single group analysis showed attitudes to be the only determinant of male intentions to participate in childbearing research. Self-exclusion is therefore suggested to be largely determined at the individual level rather than as a result of the researcher (e.g., less available research on childbearing to participate in) or the wider social context (e.g., childbearing being perceived to be a female issue).

Men and women who left their email address were more likely to have had a child, have been in a intimate relationship for a longer period of time and be employed. Further, individuals who participated at T2 were more likely to have higher levels of education, to have had a child and not be students. These findings suggest that participation in childbearing research is determined by the perceived relevance of childbearing to current life stage and level of interest in research. If the individual is in an environment that encourages positive perceptions of childbearing (e.g., have already had children, married, stable income) or research (e.g., higher education) the likelihood of them forming favourable depositions towards participation in childbearing research is increased. For example, students may perceive childbearing to be incompatible with educational attainment and thus may not perceive childbearing research to be personally relevant to their current life stage.

There was evidence to support the behavioural sequence of motivation proposed by the TPB when predicting and explaining variation in childbearing research participation. The TPB principal constructs explained a significant proportion of variation in intentions. This finding is in line with meta-analytic reviews that have found the principal constructs of the TPB to account for approximately 40% of the variance in intentions (e.g., McEachan, Connor & Lawton, 2005). Consequently, the proposed

influence attitudes, subjective norms and perceived behavioural control have on intentions is supported (Ajzen, 1991). However, there was evidence that TPB did not predict actual research behaviour. Intentions were not significantly related to research behaviour accounting for only 1% of its variance. This result was similar to those obtained from previous research examining walking behaviour. Galea and Bray (2006) found that intentions to walk among individuals with intermittent claudication accounted for only 8% of the variance in self-reported walking behaviour. Consequently, previous research also refutes the value of using the TPB as a model for explaining and predicting behaviour. Furthermore, goodness of fit statistics (obtained from the SEM analysis without moderation for the outcome research behaviour), were not consistent. Of the fit indices only RMSEA and CFI indicated goodness of fit. Thus overall model fit is somewhat inconclusive. Having two of a possible five statistics illustrating the model to fit the data well is arguable not adequate to conclude overall goodness of fit.

Notwithstanding this, chi-square in practice has been found to be affected by sample size, with samples above 200 rarely resulting in non-significant chi-square fit indices.

Consequently, for the current study, with the sample being larger than 200, chi-square may be subject to type I error. Not including the chi-square as a fit index would therefore reinforce the validity of using the TPB as a model to explain participation in childbearing research.

Other evidence that refutes the TPBs validity in explaining research behaviour concerns the fit of the model with the introduction of the moderator variable. The model with moderation demonstrated similar associations as in the model without moderation. However, the introduction of the moderator decreased rather than increased the model fit. All the goodness of fit statistics revealed the model did not fit the data well. Additionally, the moderator variable was not significantly associated with behaviour. Therefore, the

reformulation of the TPB model that suggests intention can only find expression when the behaviour is under volitional control (Ajzen, 1991) is shown to be less valid for explaining research behaviour than the original model. The interaction between intention and perceived behavioural control did not contribute to understanding the variations in participation in childbearing research and thus should be excluded from future research trying to predict and explain participation in childbearing research.

Single group and invariance analysis supports the use of the TPB (without the moderator variable) in predicting behavioural participation in childbearing research. Goodness of fit statistics for single group analysis showed the model to fit the data for men and women well with only TLI indicating badness of fit. However, as with the results for the total sample, there was no significant association between intentions and research behaviour for men and women. For men this could potentially be explained by the fact that only attitudes were associated with intentions. Thus, while increasing intentions to participate, the increase in intention was not strong enough to elicit the behaviour. The strength of the intention and therefore the likelihood of participation would according to the TPB be more likely if all three precursors of intention were positively and significantly associated with intentions (Ajzen & Fishbein, 1980). Research on condom use has supported this proposition. Albarracin, Johnson, Fishbein and Muellerleile (2001) found intentions to use condoms across 96 data sets was based on attitudes ($r=.58$), subjective norms ($r=.46$) and perceived behavioural control ($r=.45$). Comparing the results obtained by previous research to those of the current research, however, suggests that it may not be due to the principal constructs significance per se but more to do with their relative weight/strength. The results of the SEM without moderation predicting the research behaviour of the total sample and the sample of women both show all three principal constructs to be positively and significantly associated with intentions.

However, the strength of the associations between subjective norms, perceived behavioural control and intentions were weak. Consequently, results suggest if all three principal constructs had high relative weights with intention, their influence on intention would be more likely to result in intentions predicting behaviour.

Single group analysis showed the relationships between the variables were different for men and women. Examining the extent to which the measurements, the model and the constructs maintained their meaning across gender was therefore important. Analysis of invariance examines whether the same factor structure was held across groups, in this case men and women. Gender invariance revealed that the model did hold its meaning across groups. Thus results are in line with the theory's proposition that the intentions of men and women are not likely to differ in response to their attitudes, subjective norms and perceived behavioural control. Consequently, invariance analysis shows the TPB to be a model that is applicable to men and women in the childbearing context and that the intentions of men and women differ in terms of the relative strength of the individual constructs. This is an important finding for research on childbearing. Childbearing theories have typically been developed and tested with women only. Therefore the applicability of these theories to the childbearing preferences and behaviours of men are relatively unknown. Consequently, although the TPB is not a theory specific to childbearing, its applicability in the childbearing context (a gender specific behaviour) to men and women makes it a valid theory for future research examining this behaviour.

Structural equation models consistently showed attitudes towards participation in childbearing research to be the main trajectory of intentions to participate in childbearing research for men and women. Ajzen (1991) proposed that behaviour change interventions should be targeted at modifying the TPB construct/s that has the largest contribution

(relative weight) in the intention behaviour relationship. Thus, results suggest that the modification of attitudes would be the mechanism that would most likely elicit intention and potentially behaviour change (Ajzen, 1991).

Changing attitudes is likely to bring about a greater change in intentions than changing perceived behavioural control or subjective norms as indicated by the constructs relative weight. Descriptive statistics additionally showed men to have significantly less favourable attitudes towards participation in childbearing research compared to women. For example, they were less likely to endorse participation in childbearing research to be enjoyable, beneficial or valuable. Consequently, changing attitudes towards participation in childbearing research is suggested to be particularly important for increasing male participation in childbearing research. Although attitudes were shown to be the most suitable target for behaviour change, it is not known whether or not the modification of attitudes would result in an intention change strong enough to elicit actual behavioural engagement in childbearing research because the association between intention and behaviour was found to be non-significant. Consequently the TPB proposal that intentions are the proximal determinant of behaviour may be brought into question. However, previous findings show support for the predictive ability of intentions as the proximal determinant of behaviour (e.g., Godin & Kok, 1996; McEachan, Connor & Lawton, 2005). Consequently, poor model fit and the lack of a significant association between intentions and research behaviour suggests the small sample may have resulted in a lack of statistical power. Thus, results point to better powered research and investigation into effective ways of doing so given that men do not seem to be willing to participate in this type of research. Given poor model fit, results suggest that other variables may contribute to whether or not the behaviour is performed. Therefore, it is important to identify factors beyond those specified by the TPB (i.e., distal factors) that may mediate or moderate the

TPBs proposed motivational sequence of behaviour. Further, only 37% of the variance in intentions was accounted for by the TPB principal constructs. The lack of variance accounted for may be the result of the TPB having a limited number of constructs (Sniehotta, 2007). This suggests that the model is open to the inclusion of distal factors that may capture additional variance in intentions and enhance the predictive ability of the TPB. Consequently, the relationships found, in addition to further investigation of variables beyond those measured in the current model, should be considered when designing programmes or interventions to promote participation in childbearing research for both men and women.

Strengths and limitations

The aims of the current study were largely achieved because the design capitalised on predicting future observed behaviour. The collection of prospective data therefore allowed for a confident interpretation of the intention-behaviour relationship to be made. This is the first study on male participation in childbearing research with items and subscales demonstrating satisfactory reliability. Furthermore, although there have been numerous assertions pertaining to potential gender effects in the research on childbearing, few studies have examined gender invariance. Consequently, invariance tests allowed meaningful comparisons to be made between men and women, an important void in the existing literature. Theory testing using SEM allowed for a more reliable picture of male participation in childbearing research to be obtained. A relatively large sample size at T1, low missing data and high consistency between results particularly for attitudes suggests high quality data.

Structural equation modelling provides more insight into the relationships between the variables than standard regression analysis. However, the absence of

environmental and background factors in the model should be addressed in future research. Although background variables, reflecting life course and context are acknowledged in this research, their effects on the constructs are not included in the model. External factors could potentially have an effect on the three principal constructs of the TPB and intentions. Their inclusion could therefore provide more insight into what determines male participation in childbearing research.

Another limitation is the high attrition rate for participation in the second part of the study and the fact that study design did not allow all individuals who took part at T1 to take part at T2. The high attrition rate is a result in itself as it shows male participation to be consistently lower than that of women. However, the low rate of male participation could potentially reduce the effectiveness of the statistical tests employed. Structural equation modelling recommends a minimum sample size of 200 respondents. Although this requirement was met, having so few men in the sample (specifically in the subsample of those that participated) brings into question the applicability of the results obtained for analysis of invariance. The true implications of having a disproportionate number of respondents in each group involved in multi-sample analysis are not known (Byrne, 2001). Nonetheless, results could arguably be considered with more confidence if there were a higher number of men than that of the current sample. SEM with large samples is often found to increase the chance of type I error by eliciting significant chi-square statistics. However, using SEM on small samples has been found to be more likely to elicit insignificant chi-square statistics and thus the chances of making a type II error is increased. As such, it is important that other fit indices less sensitive to sample size are used for comparison of goodness of fit (Fan, Thompson & Wang, 1999). In the case of SEM in the current study, with the samples for invariance analysis being so small, and the chi-square statistics all showing goodness of fit, it is possible that the model is not

invariant across groups. Nonetheless, CFI values for invariance analysis indicate the model with constrained structural weights (Model 1) and the fully constrained model (i.e., model 5) to fit the data well and thus the model is shown to operate in the same way for men and women.

The fact that not all participants were given the opportunity to participate at T2 could additionally reduce the statistical power and could account for why no significant associations were found between intentions to participate and participation at T2. Selection bias could be a problem here, as selecting only those who left their email address gives rise to restriction of range (e.g., those who left their email had significantly higher intentions). Those who were not given the opportunity to participate due to failing to leave their email addresses may have participated if they were given the opportunity. Nonetheless, the results are important in terms of explaining the intention behaviour relationship. Allowing individuals to voluntarily leave their email address for future participation allowed examination into whether men intend to participate when given the opportunity and whether those who do intend actually perform in accordance to their intentions.

The measurement items were all self report and therefore participants may have answered in a way in which they thought was desired and thus the data gathered may not be a true representation of their thoughts and opinions. Notwithstanding this, the outcome variable behaviour was not a self-report measure. Numerous studies investigate the value of using the TPB to explain a wide range of behaviours. However, studies often only employ self-report measures of the behaviour and do not measure whether or not the behaviour occurs directly. For example, the intention to exercise has been found to be significantly associated with exercising. However, exercising was measured by asking respondents to report how many times they had exercised that week (Hamilton & White,

2008). Consequently, participants may have overestimated their behaviour to be in line with their intentions. Thus, for the current study, a non-significant association between intentions and behaviour may be due to measuring an actual observed behaviour rather than a self reported one. Other limitations include sample representativeness, with the majority of the sample being students with high levels of education, results may be specific to this particular population and thus replication of the research in non-academic settings would increase the generalisability of the findings and thus provide a more concrete picture of the research behaviour of the general public.

Summary

The results demonstrate the disproportionately low participation rates of men in childbearing research to be a product of self-exclusion from the research which is in turn largely determined by their attitudes towards the behaviour. Why attitudes have an overall stronger influence on intention than any other construct in the TPB is an important area of future research. The current study suggests that favourable attitudes are a result of being personally predisposed to participate in childbearing research as a result of childbearing and research being relevant to current life stage. However, examining factors beyond those specified by the TPB may help provide more insight into what determines participation in childbearing research. Examining factors beyond those specified by the TPB could help provide insight into whether they influence intentions directly or indirectly. Additionally, this analysis would help build a profile of individuals and factors that can be targeted in order to engender male participation in childbearing research. Increasing male participation in childbearing research through modification of their attitudes is a necessary first step in order to gain a clearer understanding of their childbearing preferences and behaviours. This is the first study looking at the possible

reasons for why men are underrepresented within this specific field of health research.

Identification of attitudes as being the predominant factor influencing male participation is an important contribution to research design, theory, behavioural interventions and empirical approaches to the study of male behaviour.

Chapter 4, Part II: Identifying who and what could be the target of behaviour change interventions aimed to increase participation in childbearing research.

Introduction

Findings from Chapter 4, Part I showed that the intention to participate in childbearing research was governed by an individual's attitudes more than any other construct. This was the case for men and women. However, men had significantly less favourable attitudes towards participating in childbearing research compared to women. Practically, this suggests that interventions based on the enhancement of attitudes could potentially lead to an associated increase in intentions: the proximal determinant of behaviour (Ajzen, 1991). However, the percent of variance in intentions accounted for by the Theory of Planned Behaviour (TPB; Ajzen, 1991) principal constructs was only 37% suggesting that other variables, not specified by the TPB may be relevant to fully understand the formation of intentions. Furthermore, in order to develop an intervention to enhance participation in childbearing research it would be important to tailor the intervention to specific populations to maximise its benefits, as shown in intervention research in other problem contexts (Kreuter, Bull, Clark & Oswald, 1999). Thus, the aims of Chapter 4 Part II were to investigate whether distal factors could be used to 1) increase the Theory of Planned Behaviour's ability to predict intentions to participate in childbearing research and 2) whether a profile of individuals who would respond to tailored behaviour change interventions designed to increase participation in childbearing research could be ascertained.

Numerous studies have found empirical support for the predictive validity of the TPB across a variety of different behaviours (Godin & Kok, 1996). In a review of condom use across 96 data sets the TPB principal constructs, attitudes, subjective norms and perceived behavioural control accounted for 50% of the variance in intention to use condoms with attitudes being the strongest predictor ($r=.58$) (Albarracin, Johnson, Fishbein & Muellerleile, 2001). Further, a review of 47 studies examining physical activity, found that on average 40% of the variance in intentions was explained by the TPB principal constructs (McEachan, Connor & Lawton, 2005). However, while attitudes were the predominant precursor of intentions to use condoms (Albarracin et al., 2001), perceived behavioural control ($r=.47$) was the strongest predictor of physical activity intentions (McEachan et al., 2005). Such meta-analytic reviews provide good support for the predictive validity of the TPB. However, results also demonstrate that the TPB constructs only account for approximately half of the variance in intentions. Consequently, a number of additional distal factors (i.e., factors not specified by the TPB) have been suggested and investigated in terms of their ability to enhance the predictive utility of the TPB (Conner & Armitage, 1998).

Distal factors

Ajzen (1991) suggested that the TPB was open to further expansion if additional predictors could be identified that accounted for significant variance over and above the TPB constructs. According to the TPB other variables may contribute to a given behaviour but their effect is thought to be primarily indirect, operating through the principal constructs attitudes, subjective norms and perceived behavioural control (Figure 4.2.1). This implies that variables external to the model would fail to account for

additional variance in intentions once the effects of the models principal components have been taken into account.

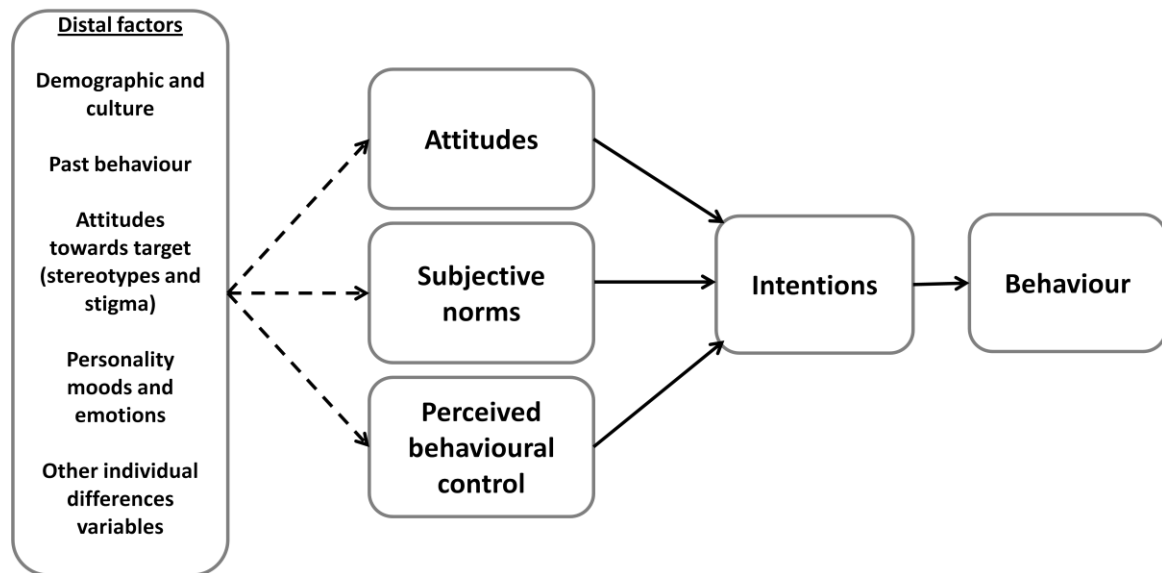


Figure 4.2.1. The underlying distal factors of attitudes, subjective norms and perceived behavioural control. Adapted from Fishbein, M. (2000). The role of theory in HIV prevention. *Aids Care*, 12(3), 273–278.

A number of researchers have attempted to increase the predictive power of the TPB by including distal factors. Distal factors have included, for example, moral norm (Jackson, Smith & Connor, 2003), personality (Bruijn, Kremers, Mcchelen & Burg, 2005a), parenting styles (Schmitz, Lytle, Phillips, Murray, Birnbaum et al., 2002), gender, age (Bruijn, Kremers, Mcchelen & Burg, 2005b) and attitudes towards competing alternatives to childbearing (i.e., non-parallel attitudes) such as career (e.g., Barber, 2001). This research has found that distal factors have both a direct and indirect effect on intentions and behaviour. Research examining the influence of parental factors on intentions to smoke and smoking onset found that when one or both parents smoked

adolescents were more likely to develop a positive attitude towards smoking ($\beta=.30$), but were also more likely to engage in smoking in the future ($\beta=.33$). Thus, parental factors were found to have an indirect (i.e., through attitudes) effect on intentions and a direct effect on smoking onset (Harakeh, Scholte, Vermulst, Vries & Engels, 2004).

Additionally, Dutch research examining intentions to use a bicycle as a mode of transport found that demographic distal factors were important in the identification of critical groups for directed behaviour change interventions (Bruijn et al., 2005b). For example, older age, being female, a native dweller and attending secondary schools were all found to significantly increase intentions to use bicycles. Furthermore, being female and attending secondary school remained significant even when the principal constructs of the TPB were entered into the regression. It was consequently suggested that interventions aimed at increasing bicycle use should be directed at those who are less likely to use bicycles, namely, immigrant students in vocational schools (Bruijn et al., 2005b). Such research suggests that the potential direct and indirect associations between distal factors and intentions could provide a more complete explanation of why men continue to have lower participation rates in childbearing research compared to women (Sutton, 2002) and what could be done to increase their participation.

When considering the possible distal factors that may be associated with intentions to participate in childbearing research it is important to recognise that the target behaviour under investigation consists of two aspects, namely childbearing and research. While the principal constructs of the TPB (attitudes, subjective norms, perceived behavioural control) are behaviour specific (i.e., participation in childbearing research), distal factors could refer to broader dispositions (Fishbein & Yzer, 2003) that may reflect the specific behaviour or the components of the behaviour (i.e., childbearing and/or research). The TPB provides some indication of potentially relevant distal factors such as

background factors (e.g., age), distal attitudes (i.e., those not specific to behaviour under study), stereotypes and personality (Ajzen, 1991; Fishbein & Yzer, 2003; Fishbein & Ajzen, 2010). The TPB also postulates that the selection of the relevant distal factors should be grounded in the literature specific to the behavioural domain of interest. Thus, based on previous research, in the present study the role of life course (e.g., age, marital status), childbearing attributes (e.g., perceptions of childbearing, gender role) and research attributes (e.g., interest in research, education, employment) were examined as the potential distal factors of intentions to participate in childbearing research.

Distal factors include those that make childbearing more personally relevant. For example life course variables that signal the childbearing years (e.g., parity, age and marital status) but also those that indicate personal involvement in childbearing per se (e.g., gender role attitudes). These factors are likely to be associated with intentions to participate in childbearing research because they predict childbearing behaviour more generally (e.g., Barber, 2001; Heaton, Holland & Jacobson, 1999; Liefbroer, 2005). Women of childbearing age (29 years of age, ONS, 2008) who are married and without children should be more likely to intend to participate in childbearing research because childbearing norms and gender role expectations make childbearing personally relevant to their current life stage (Barber, 2001). Furthermore, marital status should also predict intentions in men because men too tend to become more interested in childbearing when in stable relationships (Heaton et al., 1999) and when they are affected personally (e.g., when their partner is pregnant; Agadjanian, 2002). Similarly, intentions may be higher among those for whom research is personally relevant (e.g., students, academic staff). University students may be more likely to intend to participate in research, regardless of subject area as participation in research is encouraged within this environment.

Direct effects of the distal factors, over and above the effects of the TPB principal constructs are theoretically feasible, but it is recognised that the associations between the distal factors and intentions may also be mediated by the TPB principal constructs (Ajzen, 1991). Inclusion of distal factors would still be important but more to help identify if, and how, the distal factors shape attitudes, subjective norms and perceived behavioural control and to ascertain a profile of men willing/not willing to participate in childbearing research. This could provide fundamental knowledge for tailoring behaviour change interventions to increase participation in childbearing research.

Present study

The research reviewed suggests that distal factors are important in determining whether or not behaviours are performed and that identification of these factors could lead to the tailoring of interventions (Bruijn et al., 2005b). Thus the aims of the present study were to examine whether 1) distal factors add to the TPB in predicting intentions to participate in childbearing research, 2) the association between distal factors was mediated by attitudes, subjective norms and perceived behavioural control as proposed by the TPB and c) a profile of individuals who would most benefit from tailored behaviour change interventions aimed to increase participation could be ascertained. To achieve the research goals, data from the initial Participation in Research Survey (PRS1, N=799) was employed to test whether associations between distal factors and intention were direct, mediated by the TPB principal constructs and/or moderated by gender. It was hypothesised that there would be direct associations between the distal factors and intentions and that these associations would be moderated by gender.

Method

Participants

The total sample of men ($n=176$) and women ($n=623$) who participated at T1 was used for the current analysis (for details of sample characteristics see Chapter 4, Part I, pages 150-151). A power calculation was computed to identify minimum sample size for intended analyses (G*Power, Faul, Erdfelder, Lang & Buchner, 2007). For regression analysis ($f^2=.15$, $\alpha=.05$, power = .85) minimum estimated total sample size was 76.

Materials and procedure

The analysis in Chapter 4 Part II focuses on the distal data collected from the PRS1. The PRS1 measured the TPB constructs in addition to related distal factors (see Chapter 4, Part I for details of the survey and procedure). Only those distal factors used in the present analysis are described.

Theory of Planned Behaviour measures

The same measures used in Chapter 4, Part I for the TPB constructs, attitudes, subjective norms, perceived behavioural control and intentions were used for the current analysis (see pages 153-154). Cronbach reliability coefficient in the present sample (179 men, 623 women) for attitudes, subjective norms, perceived behavioural control and intentions was $\alpha=.94$, .87, .74, and .89 respectively.

Distal factors

Life course: Respondents indicated their age in years, marital status (0=single, 1=married/cohabitating) and the total number of years married/together.

Childbearing attribute: Respondents' indicated their gender (0=male 1=female), sexual orientation (0=bi-sexual, gay/lesbian, homosexual, prefer not to say, 1= heterosexual), fertility history (0=never given birth/fathered a child, 1=have given birth/fathered a child) and the strength of their desire to have a/another child (ten-point response scale, with higher scores indicating stronger desire).

Four items adapted from Tough, Tofflemire, Benzie, Fraser-Lee and Newburn-Cook (2007), Miettinen and Paajanen, (2003), Van Balen and Eimbo-Kempe (1995) were used to measure the perceived costs of childbearing (e.g., children cause worry and strain). Factors were rated according to the respondents' decision to have a (another) child on a five-point response scale (1=*strongly disagree*, 5=*strongly agree*). The mean across all items was taken to give an overall score for costs of childbearing with higher scores indicating perceived higher costs. Cronbach reliability coefficient in the present sample was $\alpha = .74$ (175 men, 621 women).

Respondents gender role orientation was measured using six items (five-point response scale; 1=*strongly disagree*, 5= *strongly agree*) adapted from the International Social Survey Programme (ISSP, 2002) and measures related to motherhood (Holton, Fisher & Rowe, 2009). The six items reflected traditional gender roles (e.g., a preschool child is likely to suffer if the mother works). The means across all items was calculated with higher scores indicating more traditional gender role orientation. Cronbach reliability coefficient in the present sample was $\alpha = .70$ (176 men, 623 women).

Respondents were additionally asked to rate on a five-point response scale (1=*strongly disagree*, 5=*strongly agree*) how much they agreed with the single statement: ‘women should take care of contraception’ and who they thought should make the decision about five contraceptive and childbearing issues (e.g., whether to have medical termination, whether to use contraception). The five items concerning reproductive control were adapted from the sixth phase of the Demographic Health Survey (2008–2013) and the ISSP (2002). Items were measured on five-point response scales (1=*always my partner*, 5= *always me*) and the mean across items was calculated to give an overall control of reproduction scale. Higher scores meant more personal control over reproductive issues. Cronbach reliability coefficient in the present sample was $\alpha = .70$ (174 men, 620 women).

Research attribute: Respondents indicated their level of education (none, primary, secondary, post-secondary/college [0=below university level], undergraduate, postgraduate [1=at least university level]), employment status (full time, part time, unemployed, student, retired) and how interested they were in nine areas of research (e.g., marriage, sport, fitness) on a five-point response scale (1=*not at all interested*, 5=*extremely interested*). Mean rating across all items were computed to give an overall score of interest in research, with higher scores indicating higher interest. Cronbach reliability coefficient in the present sample was $\alpha = .78$ (176 men, 623 women).

Data analysis

Bivariate correlation analysis was used to preliminary examine the associations between the distal factors, the TPB principal constructs and intentions. The distal factors

that were either significantly associated with the TPB principal constructs or intentions were then examined using multiple regression analysis. Multiple regression analysis was used to assess whether the distal factors add to the TPB in predicting intentions or whether their association with intentions was mediated by the TPB principle constructs. Intention to participate was used as the dependent variable. In the first step (Model 1), the distal factors were entered. In the second step (Model 2) the TPB principal constructs, attitudes, subjective norms and perceived behavioural control were entered. In the third step (Model 3) gender interactions were entered. When the block of interactions was significant (as indicated by a significant change in R square; ΔR^2) individual main effects were examined and displayed using simple slope analysis (Baron & Kenny, 1986). Where the distal factors were continuous variables simple slopes were computed using the average plus or minus one standard deviation. Only significant interactions are shown in the tables (see Appendix N for full regression table). Statistics were Pearson correlation coefficients (r) and standardised beta coefficients (β) due to variables in the regression analysis having different units of measurement. The probability value of .05 was considered significant. Partial mediation was examined using Sobel tests (Sobel 1982).

Results

Overview

Results are presented in four sections. Section I presents results for preliminary analysis into whether the distal factors were correlated with either the TPB principal constructs or intentions and thus whether they were eligible for further analysis. Section II presents the results for whether the distal factors add to the TPB's ability to predict intentions. Section III presents the results for whether the associations between distal

factors and intentions were mediated by the TPB principal constructs and section IV presents the results for whether the associations between the distal factors and intentions were moderated by gender.

Section I. Preliminary analyses

The Bivariate correlation matrix (Table 4.2.1) revealed that each of the distal factors were significantly associated with at least one of the TPB principal constructs and/or intentions. Having ever given birth or fathered a child was significantly associated with all the TPB variables while higher education was only associated with intention and traditional gender role only with subjective norms. Interest in research had the highest correlation of all the distal factors with intentions and attitudes, while desire for a child and age had the highest association with subjective norms and perceived behavioural control respectively.

Table 4.2.1

Pearson Correlation Matrix (r) among the distal factors, the TPB constructs and intentions for the sample (N=799)

Distal factors	TPB constructs			
	Attitudes towards participation in childbearing research	Subjective norms about participation in childbearing research	Perceived behavioural control about participation in childbearing research	Intentions towards participation in childbearing research
<i>Life course</i>				
Age	-.01	-.24***	.11**	.09**
Married/Cohabiting ^a	.12**	-.08*	.06	.15***
Years together	.04	-.14***	.09*	.12**
<i>Childbearing attribute</i>				
Gender	.13***	-.02	.06	.09***
Given birth/fathered a child	.10**	-.12**	.10**	.21***
Sexuality ^c	.07*	.08*	.07*	.04
Desire for a child	.30***	.29***	.00	.26***
Costs of childbearing	-.18***	-.06	-.04	-.16***
Women should take care of contraception	.00	.08*	-.03	-.07*
Who decides about contraception	-.07*	-.11**	.09*	-.07
Traditional gender role	.06	.17***	-.05	.07
<i>Research attribute</i>				
At least university education	.06	-.02	.05	.08*
Employment status ^b	.02	.11**	-.05	-.03
Interest in research	.36***	.22***	.02	.32***

Note: Gender 1= female, ^a reference category = single, ^b reference category= student, ^creference category = bi-sexual, gay/lesbian, homosexual, prefer not to say.

* $p < .05$, *** $p < .001$, ** $p < .01$

Section II. Do distal factors add to the prediction of intentions?

Table 4.2.2 shows summary statistics for the main effects of distal factors and the TPB principal constructs in a multiple regression on intentions to participate in childbearing research with gender interactions.

In total 22.2% of variance in intentions to participate in childbearing research was accounted for by the distal factors (Model 1, Table 4.2.2) with an adjusted r square of .20, ($F(14,735)=10.52, p<.001$). Four of the distal factors were found to be associated directly with intentions to participate in childbearing research. Women, respondents who had given birth/fathered a child, desired a child and had higher interest in research were more likely to intend to participate in childbearing research.

Section III. Do the principal constructs of the TPB mediate the relationships between distal factors and intentions?

When the principal constructs of the TPB were added into the regression (Model 2, Table 4.2.2), the total amount of variance in intentions accounted for increased to 47.3% (Model 2) with an adjusted r square of .46 ($F(17,735)=18.40, p<.001$). The TPB principal constructs attitudes and perceived behavioural control were found to be positively and significantly associated with intention to participate. Introduction of the TPB constructs fully mediated the relationships between the desire for a child, gender and the TPB construct intentions. Neither of these distal factors remained significant after the introduction of the TPB principal constructs. Specifically, the association between desire for a child and intention was fully mediated by attitudes (Sobel test statistic =4.09, $SE=.04, p<.001$) and perceived behavioural control (Sobel test statistic =2.58, $SE=.04, p<.01$). The association found between gender and intentions was also fully mediated by

attitudes (Sobel test statistic =2.82, $SE=.04$, $p<.01$) and perceived behavioural control (Sobel test statistic =2.15, $SE=.04$, $p<.05$).

The distal factors having had a birth/fathered a child and having a higher interest in research remained significantly associated with intentions after the introduction of the TPB principal constructs. However their standardised beta weights were reduced. Sobel (1982) tests revealed that the association between given birth/fathered a child and intentions was partially mediated by attitudes (Sobel test statistic =3.75, $SE=.04$, $p<.001$) and perceived behavioural control (Sobel test statistic =2.08, $SE=.04$, $p=.04$). The association between interest in research and intentions was additionally partially mediated by attitudes (Sobel test statistic =9.04, $SE=.04$, $p<.001$).

Section IV. Do the associations between the distal factors and intentions differ for men and women?

Inclusion of gender interactions for the distal factors (Model 3, Table 4.2.2) increased the total amount of variance in intentions accounted for to 48.7% with an adjusted r square of .47 ($F(30,722)= 22.89$, $p<.001$). However, because the block of interactions was not significant, individual main effects are not presented.

Table 4.2.2

Multiple regression analysis with intention to participate in childbearing research as the dependent variable and distal factors (Model 1) and TPB constructs (Model 2) as the predictors with gender interaction (Model 3).

Distal factors	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
<i>Life course</i>									
Age	.00	.06	.00	.01	.05	.01	-.01	.10	-.01
Married/cohabiting ^a	.16	.08	.08	.01	.07	.01	.01	.15	.00
Years together	-.02	.05	-.02	.01	.04	.01	.04	.09	.04
<i>Childbearing attribute</i>									
Gender	.23	.08	.10**	.12	.07	.05	.06	.22	.03
Given birth/fathered a child	.51	.11	.23***	.34	.09	.15***	.20	.20	.09
Sexuality ^c	-.06	.08	-.03	-.08	.06	-.03	-.24	.18	-.11
Desire for a child	.17	.04	.18***	.05	.03	.05	.07	.07	.08
Costs of childbearing	-.02	.04	-.02	.00	.04	.00	.09	.08	.07
Women take care of contraception	-.05	.03	-.05	-.05	.03	-.05	-.15	.06	-.16*
Who decides about contraception	-.05	.05	-.04	-.04	.04	-.03	-.35	.10	-.26**
Traditional gender role	.05	.05	.03	.04	.04	.03	.23	.09	.15*
<i>Research attributes</i>									
At least university education	.11	.06	.06	.05	.05	.03	.03	.14	.02
Employment status ^b	.02	.03	.02	-.00	.03	-.00	.02	.05	.02

Table 4.2.2

Multiple regression analysis with intention to participate in childbearing research as the dependent variable and distal factors (Model 1) and TPB constructs (Model 2) as the predictors with gender interaction (Model 3) (continued).

Distal factors	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>B</i>	<i>SE B</i>	β
Interest in research	.47	.05	.30***	.19	.05	.12***	.19	.10	.12*
<i>TPB constructs</i>									
Attitudes				.60	.04	.52***	.60	.04	.52***
Subjective norms				.05	.04	.04	.06	.04	.04
Perceived behavioural control				.13	.04	.10***	.14	.04	.10***
<i>Interactions</i>									
Decision*Gender							.36	.11	.24**
Traditional *Gender							-.24	.11	-.14*
ΔR^2		.22***			.25***			.02	
<i>F</i>		15.08			38.75			22.89	

Note. Gender (1=women), *B*=unstandardised beta, *SE B* =standard error, β = standardised beta, ^amarried/cohabiting compared against being single, ^b employed (0) student (1), ^cHeterosexual (1) compared to bi-sexual, gay/lesbian, homosexual, prefer not to say (0). Only significant interactions are shown.

* $p < .05$, *** $p < .001$, ** $p < .01$

Discussion

The extension of the TPB clearly showed that life course, childbearing attributes and research attributes contributed to understanding intentions to participate in childbearing research. However, there was little compelling evidence to support the role of distal factors in the intention-behaviour relationship beyond that specified by the TPB. The distal factors were found to account for 22% of the variance in intentions to participate in childbearing research but the introduction of the principal constructs of the TPB were found to partially or fully mediate these associations. Distal factors should not be included in the TPB model (Ajzen, 1991). However, they can inform how attitudes, norms and perceived behavioural control may be shaped by person and context factors.

The distal factors associated with the principal constructs of the TPB in the Pearson correlation matrix were all indicative of pronatalism and research orientation. Significant associations centred on issues of childbearing (e.g., desire for a child) and research (e.g., education). Favourable attitudes and higher intentions were shaped by factors reflecting the two categories of the behaviour under investigation, namely childbearing and research. Life course factors indicating reproductive readiness (e.g., marital status), positive childbearing attributes (e.g., desire for a child) and positive research attributes (e.g., interest in research) were suggested to predispose an individual's orientation towards childbearing research. For subjective norms, significant correlations indicated the perceived social pressure to participate in childbearing research to be elicited by having a higher interest in research, desiring a child or by having not begun or completed ones childbearing goals. For example, the pronatalism norms encouraged by traditional gender role orientation increased the likelihood of perceiving social pressure to participate. Although few significant associations were identified between the distal

factors and perceived behavioural control, those identified suggested that having control over ones childbearing choices (e.g., personally making the decisions about contraception, heterosexual) having childbearing experience (e.g., given birth/fathered a child) and being at the right age significantly increased self efficacy when it came to participating in research on childbearing. The association between age and perceived behavioural control may be reflective of the childbearing component of the behaviour because younger individuals may not feel that they have the capacity to have children.

The results of the regression analysis supported the TPB proposal that distal factors work primarily through their association with the principal constructs attitudes, subjective norms and perceived behavioural control (Ajzen, 1991). Notwithstanding this, the associations found between the distal factors and intentions, while partially and fully mediated by the TPB principal constructs, could help ascertain a profile of individuals who would most benefit from behaviour change interventions aimed at increasing research behaviour. For example, the association found for having given birth/fathered a child was partially mediated by attitudes and perceived behavioural control about participation in childbearing research. Further, interest in research was found to be partially mediated by attitudes. These results suggests that individuals who have already begun their childbearing career and have higher interest in research are more predisposed to participate in research on a parallel subject and perceive more control over the decision of whether or not to participate. Although a proportion of this association can be explained by the principal constructs attitudes and perceived behavioural control, without the inclusion of distal factors in the TPB model, the true effect of these factors would be missed.

The lack of significant associations between the distal factors and intentions once the principal constructs had been added to the regression analysis suggests that the distal

factors selected may have been too similar to the principal constructs of the TPB. For example, individuals who have high desire for a child are more likely to have favourable attitudes and perceive themselves to have more control over whether or not they participate compared to individual who have less desire and are therefore less likely to perceive their participation in childbearing research as personally relevant. The constructs that were partially mediated by the TPB constructs were also similar to the principal constructs of the TPB. However, their similarity was with the components of the behaviour (i.e., childbearing and research) rather than with the behaviour as a whole (i.e., participation in childbearing research). Therefore, mediation and regression coefficients demonstrate the distal factors that were of less similarity to the principal constructs to be the most informative when identifying individuals who do and do not intend to participate in childbearing research. Individuals who are less likely to intend to participate are identified to be those who have less interest in research and have not yet begun their childbearing careers. Consequently, results suggest that the childbearing research base is lacking the attitudes, opinions and behaviour of individuals for whom childbearing is less pertinent to their current life stage and for whom interest in research is lower.

Accordingly, although interventions could aim to modify the perceptions of childbearing research of all people, results suggest that interventions aimed at enhancing favourable attitudes towards participation in childbearing research would be of most benefit to research if they focused on changing the perceptions of men without children who have less interest in research.

Although interventions focusing on changing the attitudes of particular groups may elicit the desired intentions and behaviour change, in applied situations it is not always easy or ethical to do so (Bray, McCartney, Dunbar & Thoulas, 2009). By implementing interventions, an individual's choice and subsequent freedom is restricted.

For example, the smoking ban implemented in England and Wales in 2007 restricted people's smoking behaviour, thus ethically, restrictions were placed on their rights to behave in accordance with their attitudes. However, interventions aimed at cessation of smoking behaviour have been shown to have the biggest overall impact, as well as the ability to narrow health inequalities (Bray et al., 2009). The smoking ban not only decreased the number of smokers in England and Wales but also reduced the effects of second hand smoke. Ethical issues surround the idea of implementing interventions in populations that do not want to change their behaviour (i.e., participation in childbearing research). Further, individuals cannot be forced to perform a given behaviour (Singer, Robert, Bossarte, 2006). However, in the case of increasing male participation in childbearing research, informed decision-making could be encouraged through the provision of information. Men have been shown to have lower knowledge of fertility issues compared to women. For example, they have been shown to be unclear about when in the menstrual cycle conception is the most likely to occur in addition to feeling that their knowledge about fertility could be improved (Ekelin, Akesson, Angerud & Kvist, 2012). Therefore, in opting not to participate in research in this area one can wonder whether this behaviour is based on fully informed decision-making. The provision of accurate, persuasive information about the benefits of participation in childbearing research could therefore encourage informed decision-making which in turn could potentially increase favourable attitudes, intentions and thus behavioural engagement in childbearing research (Petty & Cacioppo, 1986).

In light of these results, the most relevant use of the distal factors may be identifying the variables and groups that can be targeted by interventions to influence the critical TPB constructs for the given situation (in the childbearing case, attitudes). When it comes to designing interventions to increase male participation in childbearing research

the interventions should be targeted to be appealing to men not yet at the life stage for having children (i.e., without children, who have less desire for a child and are not in stable relationships). Unlike women, men may not have had the socialisation that would make the relevance of childbearing obvious to them. Men have typically been regarded as important economically and thus uninvolved in fertility except to provide sperm and to stand in the way of contraceptive use (Watkins, 1993). Men have been socialised to 'work outside the home whereas women are responsible for activities associated with the production of children' (Watkins, 1993, p.361; Miller, 2011). Indeed, one may argue that male socialisation would discourage a view of childbearing as relevant and this group therefore would be of need of re-education on this matter. For example, parenthood has been shown to be considered more important and relevant to women and that men are more likely to abstain from childbearing (Ekelin et al., 2012). Further, childbearing issues are not spread evenly throughout the lives of men as they are for women (Agadjanian, 2002). The biological ability to have children and reproductive issues are a consideration for women from a relatively young age and throughout their reproductive careers as a result of menstruation and their primary role in contraceptive use (Marsiglio, 1991). Therefore, men are likely to feel that many aspects of the reproductive realm are not relevant to them (Marsiglio, 1991). Consequently, male procreative consciousness (i.e., cognitive and affective activity in the reproductive realm) and responsibility is likely to be more dynamic and fragmented in character than women's. Therefore, tailoring interventions to men who are yet to begin their childbearing career is likely to be more effective in terms of generating procreative consciousness and responsibility which in turn will ensure an all encompassing picture of the childbearing preferences and behaviours of men is obtained through increasing male participation in childbearing research.

Strengths and limitations

The aims of this research were largely achieved. This is the first study looking at the distal factors that may impact directly on the principal constructs of the TPB and intentions in the context of male participation in childbearing research. A relatively large sample size, low missing data and items and subscales demonstrating satisfactory reliability suggest high quality data.

The current study relied on a cross-sectional design therefore, the direction of the associations found between the variables should be considered with caution, as causality cannot reliably be concluded. All variables were measured at the same time therefore cause cannot be distinguished from consequence: higher interest in research may cause people to intend to participate in childbearing research but the reverse may equally be true. Further, while the distal factors were found to be associated with intentions and the principal constructs, their actual influence on behaviour cannot be ascertained in the current analysis. With intentions being the proximal determinant of behaviour it is assumed that a significant change in intentions would elicit behaviours change.

Sample representative must also be considered. With the majority of the respondents being students with high levels of education results may be specific to this particular population and thus a replication of the research in non-academic settings may be required in order for the results to be generalisable. Studies examining the TPBs predictive ability in explaining walking intentions have found that among students perceived behavioural control emerged as the only significant predictor of intentions (Eves, Hoppea & McLaren, 2003; Scott, Eves, French & Hoppe, 2007). However, among the general public, walking intentions were found to be predicted by both attitudes and perceived behavioural control, with attitudes having the highest predictive ability

(Rhodes, Brown & McIntyre, 2006). Consequently, with previous research showing the relationships between the TPB constructs to vary according to population the results of the current study are suggested to be likely to change if the study was replicated in non-academic settings. Further, with research being prominent within university settings, participation may be reflective of a community specific norm rather than a general behaviour.

Conclusion

Results from Chapter 4 indicate lack of participation in childbearing research to be determined by attitudes towards the behaviour more than any other construct. Further, attitudes towards participation in childbearing research were shown to be shaped by the perceived relevance of the behaviour to current life stage and reproductive readiness. Therefore in line with the TPB, interventions aimed at increasing male participation in childbearing research should give priority to the enhancement of favourable attitudes for specific groups such as men who are childless with less interest in research. Increasing male participation through the development and implementation of interventions is fundamental to generating an up-to-date, all encompassing picture of male childbearing preferences and behaviours. This in turn could help identify the male contribution to contemporary fertility in addition to identifying unmet needs in policy and research focusing on men.

CHAPTER 5: The effect of persuasive messages on attitudes, intentions and behavioural participation in childbearing research

Introduction

Findings from Chapter 4 showed the main determinant of intentions to participate in childbearing research to be attitudes towards the target behaviour. This was the case for men and women. However, men were shown to have significantly less favourable attitudes than women. Thus, the lower rates of male participation in childbearing research were shown to most likely be a product of self exclusion. The Theory of Planned Behaviour (TPB; Ajzen, 1991) proposes that the factor with the highest relative weight in the intention behaviour relationship should be the target of modification in order to bring about change in intentions and behaviour. Consequently, results from Chapter 4 point to the modification of attitudes as being the mechanism that would most likely bring about change in intentions and behavioural participation in childbearing research. Further, the results showed the strength of the associations between the TPB principal constructs and intentions to vary as a function of distal attitudes, namely pronatalism and research orientation. Thus, interventions aimed at increasing favourable attitudes towards participation in childbearing research should focus on increasing the personal relevance of the behaviour. Although the TPB can be used to identify the targets of behaviour change interventions, it is limited in its ability to be an effective process model because it does not delineate exactly how to change the factor/s and thus subsequent intention and behaviour.

The study of attitudes and attitude change through persuasive communication has a long standing history in social psychology (e.g., Ross, 1908) and over the years numerous attitude change theories have been developed. The different theoretical orientations have however resulted in conflicting research findings. In an attempt to integrate the various theoretical approaches to attitude change and explain the conflicting findings, Petty and Cacioppo (1986) proposed the Elaboration Likelihood Model (ELM). Since its development, the ELM has been widely used in persuasion research and remains one of the most influential dual-processing models of persuasion.

The ELM (Figure 5.1) is an information processing theory of persuasion that attempts to provide an integrative framework for understanding the antecedents and consequences of attitude change. The ELM proposes a process rather than a variable approach to persuasion. The process approach provides researchers with a means of predicting and explaining how attitudes are formed and changed based on the amount and nature of thinking a person does in response to a persuasive message. Therefore, the ELM delineates exactly how to manipulate attitudes (the construct that had the highest relative weight in the intention behaviour relationship in Chapter 4) in order to elicit behaviour change. Furthermore, the ELM provides more insight about elaboration and thoughtful cognitive processing than a variable approach such as the TPB. Variations in persuasive effect are posited to be a function of how people yield to a persuasive communication and the degree to which they engage in elaboration or issue-relevant thinking (Petty & Cacioppo, 1986). As such, while many theories of persuasion have typically focused on one route to persuasion (e.g., Kruglanski & Thompson, 1999; Thompson Kruglanski & Spiegel, 2000), the ELM proposes two routes: the central route and the peripheral route (Petty & Cacioppo, 1986). The central route involves effortful cognitive activity (i.e., high elaboration) in which the message recipient draws upon prior experience and

knowledge to scrutinise and evaluate all of the information presented in support of the advocated position (e.g., arguments desirability, feasibility of the suggested behaviour; Crano & Prislin 2006; Thompson, Kruglanski & Spiegel, 2000; Webb, Sniehotta & Michie, 2010).

In order for this high elaboration or thoughtful cognitive processing to occur, the recipient must possess sufficient motivation and ability to think about the merits of the message. Motivation refers to the personal relevance of the message, while ability concerns the recipient's ability to comprehend the meaning of the message (Petty & Cacioppo, 1986). According to the ELM there are a variety of variables that can influence or moderate persuasion by affecting either motivation or ability. Factors affecting motivation include whether the message is perceived to be personally applicable to the recipient in terms of interest (Petty & Cacioppo, 1979), whether the message is perceived to be a personal responsibility and whether the person enjoys thinking (i.e., need for cognition; Cacioppo & Petty, 1982; Cacioppo, Petty & Morris, 1983). Studies have shown that people with a high need for cognition report more central processing of the message than those who have a low need for cognition (Cacioppo, Petty, Feinstein & Jarvis, 1996). In a review of over 100 empirical studies examining individual differences in the need for cognition, Cacioppo et al. (1996) found that a high need for cognition was associated with numerous tendencies associated with central processing. Respondents were found to be more likely to attend to the message, form complex attributions and scrutinise the information being presented (Cacioppo et al., 1996). Further, Cacioppo et al. (1996) found that individuals high in need for cognition were significantly more likely to recall more information about the message.

Factors affecting ability include how much distraction is present in the persuasive context (Eagly & Chaiken, 1993; Osterhouse & Brock, 1970; Petty & Cacioppo, 1986;

Petty, Wells & Brock, 1976) and whether the recipient has sufficient knowledge to understand the message content (Laczniak, Muehling & Carlson, 1991; Wood, Kallgren & Priesler, 1985). For example, in a sample of 68 university students Regan & Cheng (1973) found that distraction in the form of exposing the respondents to music while receiving a persuasive message significantly impacted their ability to accurately recall the message arguments. Whereas distraction has been found to hinder elaboration, prior knowledge enhances an individual's ability to comprehend the meaning of a message, thus increasing elaboration (Laczniak, Muehling & Carlson, 1991; Wood et al., 1985). However, knowledge is only effective to the extent that it is accessible. When knowledge is low or inaccessible, people are more reliant on heuristics or the presence of an argument put forward by an expert source (Crano & Prislin, 2006; Wood & Kallgren, 1988). Consequently, if contextual and individual factors increase a person's motivation and ability to think about the underlying arguments of a message, attitude change is based on a more thoughtful systematic assessment of relevant information. This enables central processing and thus enduring attitude (and potentially behaviour) change (Petty & Cacioppo, 1986; Wegener & Carlston, 2005).

In contrast to the central route, the peripheral route to persuasion involves attitude change without active cognitive processing (i.e., low elaboration). Here attitude change is either a result of an elicited affective state (e.g., happiness) that becomes associated with the advocated position (e.g., Staats & Staats, 1958) or a judgement of the validity of the message based on simple inferences or heuristics (Gayle, Beede, Proud & Schultz, 2010). For example, a message from an expert can be judged by the heuristic 'experts are generally correct' without the person allocating much effort to assessing the actual merits and implications of the information provided (Chaiken, 1987; Crano & Prislin, 2006). Peripheral processing consequently occurs when motivation and/or ability are low and is

unlikely to result in enduring attitude change. Further, attitudinal responses formed as a result of peripheral processing are less resistant to counter pressures and less likely to impel behaviour than those formed as a result of central processing. In a study on eating disorder prevention, girls who were shown a brief prevention videotape on dieting and body image were more likely to positively change their attitudes compared to girls who had received no intervention (Withers, Twigg, Wertheim & Paxton, 2002). The implementation of the intervention resulted in significantly less body dissatisfaction, lower intentions to diet and higher knowledge about weight and dieting behaviour. However, these changes only resulted immediately post intervention and were not maintained until follow up. Follow up scores (i.e., one month later) showed that while the intervention group made greater changes, only the change in knowledge remained significant (Withers et al., 2002). Although these results show peripheral processing to be less effective than central processing, peripheral processing is shown to be quite effective in the short term (Gayle et al., 2010; Withers et al., 2002). Furthermore, although the ELM depicts central and peripheral routes to be mutually exclusive (Figure 5.1), the ELM actually posits an elaboration likelihood continuum with persuasion often involving a combination of central and peripheral processing. At the low end of the continuum, peripheral route processes are primarily responsible for attitude change, whereas at the high end of the continuum, central route processes are primarily responsible. At most points along this continuum however, attitudes are influenced in part by both central and peripheral processes (Petty, Haugtvedt & Smith, 1995).

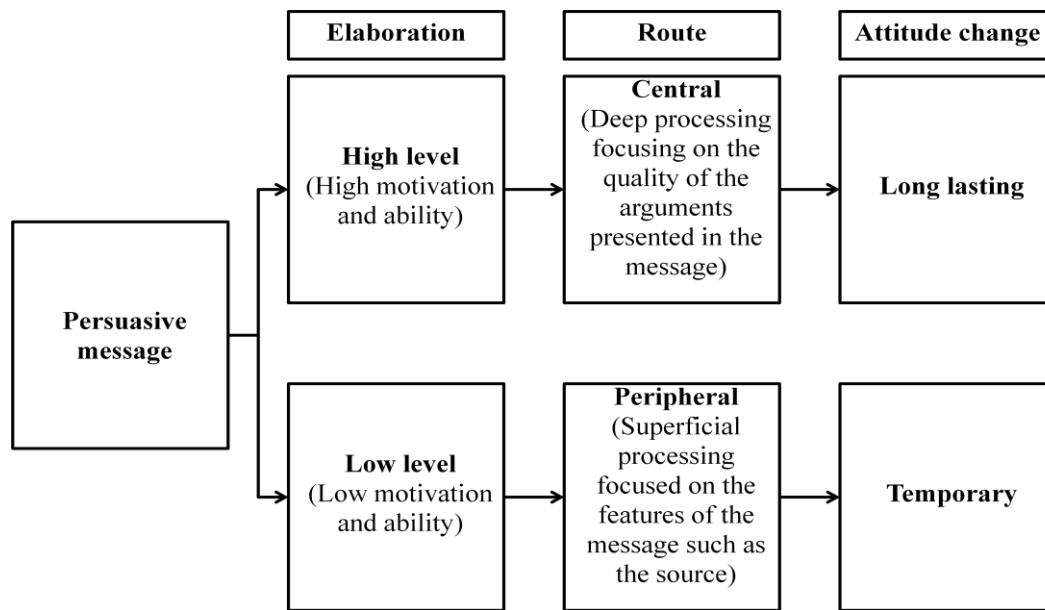


Figure 5.1. The Elaboration Likelihood Model. Adapted from Petty, R. E., Cacioppo, J.

T., Kasmer, J. A., & Haugtvedt, C. P. (1987). A reply to Stiff and Boster.

Communication Monographs, 54, 257–263.

Persuasive communication

Persuasive communication can be categorised as either emotional or rational, based on the appeal of the message. Emotional appeals aim to strategically influence the recipient indirectly increasing a given behaviour through eliciting either positive or negative emotions (Calder & Gruder, 1989). Rational appeals contain facts about the behaviour and relate to the audiences interests (Kotler & Armstrong, 1991; Stafford, 1993). Rational appeals assume that the recipient of the message will make logical decisions based on the arguments presented (Holbrook & O’Shaughness, 1984). Consequently rational appeals have been found to be more effective in eliciting high elaboration when the recipient’s motivation and ability are high (Petty & Cacioppo, 1986). Emotional appeals on the other hand, have been found to be more effective when the recipient’s motivation and/or ability are low (Petty & Cacioppo, 1986).

The applicability of the message to the given population is therefore important in determining how a message will be processed. For example, pregnant women are more likely to be motivated to process a message about the dangers of caffeine for unborn babies than adolescents are about substance abuse prevention (Webb et al., 2010). Consequently, it has been suggested that interventions aimed at changing the attitudes of motivated individuals (e.g., pregnant women) should be directed towards the quality of the arguments presented (central route). In contrast, interventions aimed at changing the attitudes of less motivated individuals (e.g., adolescents) should be designed to appeal to the recipients understanding through entreaty and the provision of credible sources (peripheral route; Webb et al., 2010). Research findings are however inconsistent as to which type of appeal is more effective. Emotional advertising has been found to be more effective and memorable than rational advertising (Page, Thorson & Heide, 1990). Page et al. (1990) found that television commercials that induced emotion in viewers were better recalled than commercials neutral in emotional impact. Further, Aaker, Stayman and Hegerty (1986) found a positive relationship between the level of warmth created by a commercial and the attitude towards the advert. Notwithstanding this, in a study of 524 persuasive television commercials, rational appeals resulted in higher effectiveness ratings than emotional appeals (Aaker & Norris, 1982). Such inconsistent findings have resulted in researchers questioning whether emotional and rational appeals are mutually exclusive (e.g., Pechman & Stewart, 1989; McGuire, 1969). According to recent developments in the neurobiology, psychology and philosophy of emotions, in order to be practically rational we need to have emotions (Roeser, 2006). Consequently, although rational appeals do not have to include an emotional context/appeal explicitly, the recipient's emotions could act as normative guides for making judgements about the appeal of the message (Rosser, 2006).

A vast amount of research demonstrates that people are influenced by messages in different ways (Bryant & Zillmann, 2002). Therefore, one of the most important aspects of persuasive communication is to know the audience. There is increasing evidence that the presentation of tailored information can increase the potential for attitude and behaviour change (Kreuter, Oswald, Bull & Clark, 2000; Noar, Harrington & Aldich, 2009; Nowak, Shamp, Hollander, Cameron, Schumann & Thorson, 1999). Overall, tailoring aims to provide people with relevant, more targeted information so that people can learn more effectively and make better and more informed decisions (Colineau & Paris, 2009). It seeks to enhance motivation and ability by matching the context of messages to people's information needs and interests. This can be achieved by framing the information in a context that is meaningful to the person, using design and production elements to capture the individuals attention and providing information in the amount, type and through the channels of delivery preferred by the individual (Kreuter et al., 2009). As such, tailoring has been found to increase the amount of cognitive attention/elaboration given to the stimuli by the recipient.

Tailored health education documents have been customised for individual readers in accordance with their medical conditions, demographic characteristics, personality profiles and other related factors. These documents have been shown to be more effective than generic leaflets in generating behaviour change. For example, tailored smoking cessation letters have been found to have a positive effect on the stimulation and maintenance of smoking cessation behaviour (Strecher, Kreuter, Den Boer, Kobrin, Hospers & Skinner, 1994). Among the respondents who had received the tailored health education documents, 30.7% reported smoking cessation after six months compared to 7.1% in the control group (Strecher et al., 1994). Similarly, Campbell, DeVellis, Strecher, Ammerman, DeVellis and Sandler (1994) found that tailored nutrition messages

significantly improved dietary behavior, decreasing the total fat and saturated fat scores by 23% in the tailored group compared to 9% in the control group. Tailored leaflets addressing the specific mammography screening and risk status of women in addition to perceptions about breast cancer and mammography have also been found to be more effective than standard leaflets (Skinner, Stretcher & Hospers, 1994). Specifically, tailored leaflets sent to patients' homes were more likely to be read and remembered than standard leaflets (Skinner et al., 1994). As such, the depth and nature of message processing is suggested to be affected by self referential thinking. Linking the persuasive message to some aspect of the recipients self (e.g., values, self identity) has been found to increase persuasion (Fleming & Petty, 2000). In a study of weight loss materials, those receiving tailored messages generated significantly more personal connections to the material, than those receiving non tailored material (Kreuter et al., 1999). Further, Burnkrant and Unnava (1989) found that simply changing the pronouns in a message from the third person (e.g., he, she) to the second person (e.g., you) were sufficient to increase personal involvement and processing of the message. Similarly, Rothman, Salovey, Turvey and Fishkins (1993) found that persuasive communication emphasising a woman's own responsibility for getting a mammogram (e.g., eight out of 10 lumps that *you* might find will not be breast cancer), had more of an impact on the use of mammography screening than a communication emphasising external responsibility (e.g., eight out of 10 lumps *a doctor* might find will not be breast cancer). Consequently, if the receiver can relate to the message, evaluate the argument being presented through high attention and self reference, the persuasive communication is more likely to be processed centrally.

Developing a persuasive document

In light of the reviewed literature, the development and design of a persuasive message attempting to change an individual's behaviour in a non-coercive way is critical to whether persuasion will occur (Hoeken, 1998). Creating a persuasive document involves numerous considerations in terms of what information to include and how to present it. A considerable amount of cognitive energy is required to read a persuasive document particularly if central processing is desired (Krahmer, Dorst & Ummelen, 2004; O'Keefe & Jensen, 2008). High elaboration involves people attempting to access relevant associations and experiences from memory in addition to scrutinising and elaborating the message provided. Further, people use cognitive recourses to derive an overall evaluation of, or attitude towards, the recommendation presented by the persuasive document (Petty & Cacioppo, 1986). Consequently, gaining the attention and interest of the recipient is of central importance in the process of persuasion, particularly if people with a low need for cognition are the population of interest. Generally speaking persuasive documents are more likely to elicit attention and interest if they contain new information that links to the reader's previous knowledge but contradicts the reader's expectations (O'Keefe, 1999). Incongruity violates expectancies inducing surprise, raising involvement, promoting cognitive elaboration and thus increasing the likelihood of persuasion (Karmarker & Tormala, 2010; Miniard, Kenneth, Dickson & Rao Unnava, 1991). While the attention of the recipient is naturally drawn by new information (Sbisa, 1999) the information presented should be relevant to the recipient. Information that is completely foreign may be deemed as irrelevant and will thus draw less attention (Hilligoss & Rieh, 2008; Wodak, 2007).

Another issue for capturing the attention of the reader applies to the amount of information and the way in which it is presented. Some studies have tested rather lengthy

narrative documents (e.g., Green & Brock's, 2000, use of a multiple page story).

However, the majority of studies use narratives that are much shorter (e.g., Kopfman, Smith, AhYun & Hodges, 1998; Slater, Buller, Waters, Archibeque & LeBlanc, 2003) as it is thought that shorter texts have a greater chance of capturing and retaining the attention of the recipient throughout the persuasive message (Cacioppo, Petty & Morris, 1983; Rimer & Kreuter, 2006). The medium through which the persuasive message is presented to the recipient has also been shown to influence how it will be processed. Chaiken and Eagly (1976) found that message comprehension was more likely if the message was presented in a medium that allowed reflection and was self-pacing (e.g., magazine) rather than in a medium like television that involved little audience involvement or control. Similarly, persuasive messages presented in experimental conditions that have time restrictions have also been suggested to decrease the respondents' ability to accurately and effectively process the information being presented (Petty et al., 1976). Time restrictions may act as a source of distraction in the persuasive context, having negative consequences for the level of processing. As such it is important to include information in the persuasive message that can be processed in situations where high levels of processing are restricted such as a credible source. The presence of a source and its perceived credibility is likely to be more effective in generating attitude change when the persuasive message is less personally relevant or when distractions impact ability to comprehend the meaning of the message (i.e., when the receiver is engaging in peripheral processing; Cacioppo & Petty, 1981; Pornpitakpan, 2004; Wilson & Sherrell, 1993). Thus, message characteristics should encourage the occurrence of at least peripheral processing.

The source of the message and whether it contributes to how the message is processed has received a great amount of attention in persuasive literature. Research

consistently indicates that high credibility sources elicit more attitude change than low credibility sources because the recipient is more likely to accept the content or arguments of the message (e.g. Petty & Cacioppo, 1986; Berlo, Lemert & Mertz 1969; McCroskey & Teven, 1999). A source can be considered credible based on two characteristics: expertise and trustworthiness. A medical doctor is likely to be credible because of their expertise and knowledge, while psychologists might be considered credible because they are perceived to be honest and motivated to help others. Some researchers have highlighted ambiguity in terms of whether trustworthiness or expertise is more influential than the other (O'Keefe, 2002). However, results demonstrate that in fact, whether the emphasis is on expertise or trustworthiness, high source credibility has the same persuasive effect resulting in more favourable attitudes (Mills & Jellison, 1967; Petty & Wegener, 1998; Pornpitakpan, 2004; Rhine & Severance, 1970; Tormala, Brinol & Petty, 2007).

While source credibility is important, the presentation and contents of the message is crucial for both peripheral and central processing. First, how explicit the message is in terms of what conclusion the recipient is desired to reach after exposure to the persuasive message has been central to persuasive research (O'Keefe, 1999). Persuasive messages that have unambiguous conclusions or recommendations have been found to be more effective than those that are more general or implicit. Implicit conclusions encourage recipients to figure out the conclusion on their own thus promoting thoughtful cognitive processing. However, they also allow the attention of the recipient to waver (Sawyer & Howard, 1991). Implicit conclusions allow the recipient to form their own conclusion based on the information provided (Kardes, Kim & Lin, 1994). Nevertheless, implicit conclusions can also result in the receiver failing to form a conclusion or reaching the wrong conclusion (Ahearne, Gruen & Saxton, 2000; Sawyer & Howard, 1991).

Notwithstanding this, recent research on conclusion explicitness in advertising has found that for individuals with high need for cognition, implicit conclusions resulted in more favourable brand attitudes and purchase intentions than explicit conclusions. Kardes, et al. (1994) suggest that explicit conclusions allow little scope for individual interpretation which can result in less favourable evaluations and distrust.

The second issue concerning the contents and presentation of the message is whether to deal with opposing viewpoints in the argument. A one-sided argument focuses only on supporting the communicator's point of view whereas a two-sided argument presents both sides. If a two-sided argument is presented, the information in favour of the communicator's point of view has to outweigh that of the other in order for effective persuasion to occur in the desired direction. Meta-analyses on the research on one or two-sided arguments and their effectiveness for persuasion have shown that two-sided messages are more persuasive than one-sided messages (O'Keefe, 1999). Two-sided arguments promote message scrutiny and thoughtful cognitive processing (Petty, DeSteno & Rucker, 2001). Consequently, a two-sided argument is important for gaining attention and encouraging thoughtful cognitive processing. However, it is important to ensure that the influence of the main argument is not overshadowed (O'Keefe, 2003). This ensures that the desired message is the source of persuasion.

Assessing cognitive responses to persuasive communication

Numerous ways to assess the cognitive responses to persuasive communications have been suggested. Hovland, Lumsdaine & Sheffield (1949) proposed mechanical assessment of attitudes where respondents were asked to press buttons to indicate their agreement or disagreement with an advocated message. Lingle and Ostrom (1979; 1981) suggest a reaction time procedure to assess cognitive responses during impression

formation. Such methods have advantages within experimental psychology (e.g., easy to implement and gather data). However, an important limitation is that people have more (and various types of) thoughts that cannot be captured by such tests. Consequently, spontaneous thoughts are not recorded and are therefore unattainable for analysis. Spontaneous cognitive responses have tended to be gathered by listing, reporting and recalling procedures (Cacioppo & Petty, 1981). Respondents are either instructed to list (write) or report aloud their thoughts that occurred to them before, during or after attending to the stimulus. The written procedure (i.e., thought-listing technique) is slower than the verbal procedure but can be administered easily and is relatively private allowing respondents to report their thoughts in a non threatening environment (Cacioppo & Petty, 1981).

Cognitive responses gathered from the thought-listing technique are used to assess whether or not central processing occurred. Respondents or judges rate the nature of the listed thoughts according to three dimensions (i.e., polarity, origin and target). According to Cacioppo & Petty (1981), if the arguments generate favourable thoughts about the message (i.e., higher polarity scores), the respondent elaborates the information provided (i.e., higher origin scores) and the cognitive responses are concerned with the content of the message (i.e., higher target scores), central processing and thus persuasion will occur. A detailed discussion of the procedures for administering the thought-listing technique and quantifying the resulting data can be found elsewhere (e.g., Cacioppo & Petty, 1981)

Present study

The aim of the present study was to develop a persuasive message about the benefits of participation in childbearing research using the Elaboration Likelihood Model. The specific goals were to assess whether the implementation of this persuasive message

would increase 1) favourable attitudes 2) intentions and 3) the likelihood of participating in childbearing research. To achieve the research goals, men and women were recruited to an online experimental study involving two time points. At time one (T1) respondents were randomly allocated to one of three conditions: the Control Group (CG), the General Persuasive Group (GPG) and the Personalised Persuasive Group (PPG). Respondents in the GPG and PPG were presented with a persuasive message after which they listed their thoughts (i.e., thought-listing task) and evaluated the persuasive message on a number of predefined items (e.g., how attractive, attention grabbing, informative the message was). The persuasive message in the PPG task focused on childbearing research with an emphasis on the role of men. In the GPG, the persuasive message focused on childbearing research with an emphasis on the role of people in general. Respondents in the CG did not receive a persuasive message. Respondents provided data about background characteristics and the Theory of Planned Behaviour (TPB) constructs attitudes and intentions were measured. In the second phase of the study (T2), two weeks later, all respondents were invited to participate in another childbearing survey. The T2 questionnaire included general questions about factors that would influence the decision to have a/another child in addition to the same items that measured attitudes and intentions at T1. Whether or not the respondent participated at T2 was used as a measure of research behaviour; the difference between T1 and T2 attitudes and intentions as the measure of attitude and intention change and evidence of high elaboration and effortful analysis of the persuasive message (i.e., higher frequency of positive, externally orientated and stimulus thoughts) from the thought-listing task as a measure of central processing. For the purpose of prediction the time interval between the two measures was two weeks, keeping it at a minimum but allowing for an assessment into whether the

persuasive message had an effect on attitudes, intentions and research behaviour in the short-term.

It was hypothesised that there would be a significant interaction between condition, time and gender. Specifically men in the PPG (compared to men and women in the CG and GPG) were hypothesised to be more likely to process the persuasive message centrally because the message was tailored to increase their motivation and ability to process the message. Childbearing is generally perceived to be a female issue (McDonald, 2000) therefore women in the GPG (compared to women in the CG and PPG and men in the GPG and CG) were hypothesised to process the message centrally. Central processing was hypothesised to result in more favourable attitudes, higher intentions and an increased likelihood of research behaviour at T2.

Method

Participants

Eligible participants were men and women aged 18 years and older from universities across England and Wales (see Procedure for recruitment process). No other inclusion/exclusion criteria were applied. A power calculation using Cohen's *d* was computed to identify minimum sample size for intended analyses. For Factorial Analysis of Variance (ANOVA) minimum estimated total sample was 966. The final sample was of 1,154 (289 men, 865 women).

Table 5.1 shows background characteristics of the total sample at T1 ($N=1,154$) and the subsample that participated at T2 ($n=474$). The mean age of respondents at T1 was 30 years, the majority were married or cohabitating, heterosexual, had not given birth/fathered a child, had achieved at least a university level of education and were

students. Men were significantly older, more likely to be single and less likely to be students compared to women. For the subsample who participated at T2 individuals were significantly older ($t(1150) = 3.31, p = .001$), were more likely to be married ($\chi^2(1) = 15.77, p < .001$) and to have at least a university level of education ($\chi^2(1) = 5.84, p < .05$) compared to those that dropped out of the study. Additionally, being single was associated with lower participation at T2 ($\chi^2(1) = 14.67, p < .001$). For the subsample, there was no significant gender difference in years of age and in terms of whether or not they were students.

Table 5.1

Descriptive statistics for background characteristics, t-test and chi-square for men and women according to total (N=1154) or subsample (n=474)^a

Variable	Total sample T1				Subsample T2			
	Total sample (N=1154)	Men (n=289)	Women (n=869)	Gender test statistic <i>t/χ²</i>	Total sample (n=474)	Men (n=102)	Women (n=372)	Gender test statistic <i>t/χ²</i>
Age (<i>M ± SD</i>)	30.54 (11.63)	32.71 (12.25)	29.81 (11.33)	3.68***	31.89 (11.57)	32.80 (12.65)	31.64 (11.36)	.90
Marital status ^b								
Married/cohabiting (<i>n (%)</i>)	579 (50.2)	105 (36.7)	508 (58.7)	101.12***	271 (57.2)	26 (25.5)	245 (65.9)	53.28***
In a relationship not cohabiting (<i>n (%)</i>)	109 (9.4)	71 (24.6)	72 (8.3)	5.08*	43 (9.1)	12 (11.8)	31 (8.3)	1.14
Single (<i>n (%)</i>)	466 (40.4)	181 (62.6)	285 (32.9)	79.27***	160 (33.8)	64 (62.7)	96 (25.8)	48.85***
Years together (for those partnered) (<i>M (SD)</i>)	10.16 (9.48)	11.01 (10.54)	9.99 (9.27)	1.03	10.69 (9.50)	11.79 (10.47)	10.53 (9.36)	.79
Heterosexual (<i>n (%)</i>) ^c	1014 (88.3)	256 (89.2)	758 (88.0)	.28	419 (88.8)	89 (88.1)	330 (88.9)	.06
Given birth/fathered a child (<i>n (%)</i>) ^d	348 (30.2)	99 (34.3)	249 (28.8)	3.37	155 (32.7)	34 (33.3)	121(32.5)	.02
At least university level (<i>n (%)</i>) ^e	908 (78.8)	233 (80.6)	675 (78.1)	.81	389 (82.2)	83 (81.4)	306 (82.5)	.07
Student (<i>n (%)</i>) ^f	637 (55.2)	138 (47.8)	499 (57.7)	9.26**	239 (50.4)	57 (55.9)	182 (48.9)	3.12

Note. N and n=Sample size, *M*= mean, *SD* = standard deviation. t-test for continuous data, chi-square for categorical data.

^aSample size varies per variable due to missing data; ^b dummy variables, single includes widowed, in a relationship was computed from respondents indicating they were single but had been in a relationship for a given period of months and/or years; ^c heterosexual compared to bi-sexual, gay, lesbian, homosexual, prefer not to say; ^d includes currently pregnant, ^e at least university level education compared to below university level of education; ^f student compared to being employed (full and part time employment).

p*<.05, *p*<.01, ****p*<.001

Materials

The survey was a two part longitudinal survey of 18–74 year old men and women from universities across England and Wales. At T1 respondents were asked to complete an online survey about their attitudes and intentions towards participation in childbearing research. Constructs measured in the survey were generated from the Theory of Planned Behaviour (Ajzen, 2006). The survey consisted of between 14 and 27 questions depending on experimental condition and was divided into four sections. The first section of the survey asked about background information (e.g., age, marital status). The second asked about intentions to participate in childbearing research and the third section asked about attitudes towards participation in childbearing research. For the experimental conditions (i.e., GPG, PPG) section three had additional questions. Respondents were firstly presented with and asked to read a persuasive message about the benefits of participating in childbearing research. The persuasive message was developed in line with the principal suggestions of the Elaboration Likelihood Model (Petty & Cacioppo, 1986) and previous research on persuasive messaging. The persuasive message was presented in the form of a newspaper article. After attending to the newspaper article, respondents were asked to complete a thought-listing task and rate the persuasive communication using predetermined questions. For all respondents regardless of condition, section four asked respondents to rate how relevant they thought participation in childbearing research was for men and women (see Appendix O for a copy of the attitude change questionnaire).

At T2 all individuals were sent another survey about childbearing. The second survey had 31 questions and was divided into four sections. The first section of the survey asked about background information. The second section asked about desires and intentions to have a/another child in addition to a second measurement of intentions to

participate in childbearing research. The third section asked about attitudes towards participation in childbearing research and the fourth section asked about factors that may impact decisions to have a/another child (i.e., costs of childbearing). The second survey included the same measures of attitudes and intentions as the first questionnaire (see Appendix P for copy of the second attitude change questionnaire). The phrasing of both surveys was adapted so that they would be applicable to men and women who had/had not had children.

Time one (T1) measures

Background information: Respondents were asked to indicate their gender (0=female, 1=male), age (in years), level of education (none, primary, secondary, post-secondary/college [0= below university level], undergraduate, postgraduate [1=at least university level], employment status (full time, part time, unemployed, student, retired), marital status (0=single, 1=married/cohabiting), total years together², sexual orientation (0=bi sexual, gay/lesbian, homosexual, prefer not to say, 1=heterosexual) and whether they had given birth/fathered a child (0=No, 1=Yes, or I am/my partner is currently pregnant).

Intentions: Respondents were asked to indicate their intentions to participate in childbearing research if a new project was announced on three items (i.e., I expect to participate, I would intend to participate, I would want to participate). Items were adapted from Ajzen (2006) and measured on a five point response scale (1=*strongly disagree*, 5=*strongly agree*). Scores were averaged to give an overall intention scale with higher

² Where respondents indicated that they were single but additionally indicated they had been in a relationship for a certain amount of time (i.e., years together) they were presumed to be in a relationship but not cohabiting.

scores indicating greater intention to participate in childbearing research. Cronbach reliability coefficient in the present sample was $\alpha=.85$ (289 men, 865 women).

Attitudes: Eight items adapted from Francis et al. (2004) were used to assess behavioural beliefs about participation in childbearing research. Items were measured on a six-point response scale, with positive or negative end points (e.g., 1= *unfavourable*, 6= *favourable*). Five items measured outcome evaluations (e.g., for me participation in childbearing research is, 1=*bad*, 6= *good*) and three measured instrumental beliefs (e.g., for me participation in childbearing research is, 1=*harmful*, 6=*beneficial*). Scores were averaged across items to create a composite attitude scale as per Francis et al. (2004). Higher scores indicated more favourable attitudes towards participation in childbearing research. Cronbach reliability coefficient in the present sample was $\alpha=.88$ (289 men, 865 women).

Persuasive communication: The persuasive message was developed according to the recommendations of the ELM and previous research. Research shows that people are influenced by messages differently as a result of their differing levels of motivation and ability (Bryant & Zillman, 2002). Therefore the persuasive message was developed to encourage the respondents to engage in at least peripheral processing. Consequently, although the persuasive message centred on a subject that was considered to be personally relevant to university students and staff (i.e., the validity of results drawn from research) and was overall designed to induce central processing, the message also contained features such as heuristics (e.g., credible source). This design was thought to allow persuasion to occur even for individuals with low levels of motivation and/or ability.

The persuasive message was presented to the respondents in the form of a newspaper article. The newspaper article was delivered online and was designed to be self-paced in order to gain and retain the attention of the reader (Petty et al., 1976). Additionally, delivering the persuasive message online allowed the recipient of the message to process the message at their own pace in their own favoured environment. This enhanced the probability of message comprehension and reflection even in situations when environmental factors (e.g., distraction) threaten the probability of central processing occurring. The newspaper article employed a catchy heading: ‘People no longer want to have children’. This was used to obtain the attention of the reader because it was thought to be personally relevant to the majority of the recipients. Previous research has found that 95% of people intend to have a child in the future (Kemkes-Grottenthaler, 2003). Therefore, although childbearing may not have been a predominant consideration at the time the message was received for all the respondents (due to life course and reproductive readiness) the message content was not completely foreign and thus was thought to attract attention in addition to promoting the personal relevance of childbearing.

The heading was followed by a lead paragraph and a short (340 word) two-sided argument. A short two sided argument was used to ensure that the respondents’ attention was retained throughout the message in addition to promoting message scrutiny and thoughtful cognitive processing (O’Keefe, 1999). The main argument was put forward by what would be considered a credible, trustworthy source (i.e., Dr Rawles, a health psychologist at the University Hospital of Wales), reducing the possibility that the main argument was not overshadowed. Furthermore, the take home message was explicit: ‘Participation in childbearing research is beneficial and worthwhile for all’. The use of the explicit conclusion was thought to ensure that the attention of the recipient did not waver.

However, the conclusion also left room for subjective interpretation because it did not explicitly state that the recipient should participate in childbearing research in the future. This was thought to promote thoughtful cognitive processing in addition to ensuring that the respondent did not fail to reach the right conclusion.

Overall, the content of the persuasive message was the same for the PPG and GPG. Where the persuasive message differed between the two experimental conditions was in terms of the audience at which the message was directed. The GPG's persuasive message was targeted at the general population whereas respondents in the PPG received a persuasive message targeted at men. The collective noun 'people' that was used throughout the GPG message was substituted for the noun 'men' in the persuasive message presented to the respondents in the PPG (see Appendix O page 451 for the GPG message and page 452 for the PPG message). Substituting the noun 'people' for the noun 'men' was used as a method of tailoring the message to the needs of men. With childbearing being perceived to be largely a female subject and responsibility, targeting the message to men directly was thought to increase the motivation and ability of men and thus increase the likelihood of central processing (Kreuter et al, 2000). Respondents in the CG did not receive any message.

Thought-listing task: After reading the persuasive message, respondents in the GPG and the PPG were asked to write down any thoughts that occurred to them while attending to the message/article. The instructions and coding procedures for the thought-listing task were adapted from Cacioppo and Petty (1981). Respondents were given 10 lines to list their thoughts, and they were asked to write separate thoughts on each line.

“We are interested in what you were thinking about while you were reading the article. Below contains a form we have prepared for you to record your thoughts and ideas. Simply write down the first idea in the first box, the second idea in the second box, etc. Please put only one idea or thought in a box. You should try and record only those ideas that you were thinking while you were reading the article. Please state your thoughts and ideas as concisely as possible. We have deliberately provided more space than we think most people will need to insure that everyone would have plenty of room to write the ideas they had. Don't worry if you are unable to fill every space”.

To assess whether the article was processed centrally or peripherally each of the cognitive responses obtained from the thought-listing technique were coded for polarity, origin and target (Cacioppo & Petty, 1981). The polarity dimension was a measure of the degree to which the response was in favour or opposed to the persuasive message and was divided into three subgroups: negative message-related thoughts (-1), neutral thoughts (0) and positive message-related thoughts (1). Thoughts were coded as negative when they mentioned some specific negative feature or consequence of the proposal or they were more globally critical of the message advocacy. Thoughts were coded as neutral when they were neither in favour or opposed to the persuasive message. Thoughts were coded as positive when they mentioned some specific positive feature or consequence of the proposal. Additionally, thoughts were coded as positive when they were more globally supportive of the message advocacy. The origin dimension was a measure of the primary source of the information contained in the responses and was additionally divided into three subgroups: externally orientated thoughts (-1), neutral thoughts (0) and modified externally orientated thoughts (1). Thoughts were coded as externally orientated when they were statements or paraphrases of the information provided in the persuasive message. As with the polarity dimension, thoughts were coded as neutral when they were unable to be traced to the information in the persuasive message. Thoughts were coded as modified externally orientated thoughts when they were reactions to, or elaborations of

the information presented in the persuasive message. The target dimension was a measure of the respondent's attention and was again divided into three subgroups: source thoughts (-1), neutral thoughts (0) and stimulus thoughts (1). Thoughts were coded as source thoughts when they were statements pertaining to the source of the stimuli (e.g., the experimenter), the channel through which the message was communicated (e.g., newspaper article) and the recipient of the message. Neutral codes were assigned to thoughts that were irrelevant to the persuasive message and thoughts were coded as stimulus thoughts when they pertained to the situation or issues highlighted by the message (see Table 5.4 for coding classification and examples of cognitive responses). The responses for the three dimensions were summed to give an overall score for polarity, origin and target (range for each dimension, -10 to 10). Higher scores indicated more positive, modified externally orientated and stimulus thoughts. Additionally, an overall sum score for the level of processing was computed from the scores of the three dimensions, polarity, origin and target. Higher scores represented more central processing of the persuasive message. If messages were centrally processed a higher frequency of positive, modified externally orientated and stimulus thoughts were expected.

Message evaluation: Respondents in the GPG and the PPG were asked to rate the persuasive message on 13 cognitive (e.g., how easy was the newspaper article to understand), affective (e.g., how attractive was the newspaper article) and behavioural criteria (e.g., how likely is it that you would show the newspaper article to people you know). The 13 items were adapted from Kreuter et al. (2000) and each item was measured on a seven-point response scale with anchor statements at the extremes (e.g., 1= *not at all attractive*, 7= *very attractive*). Where applicable items were reversed and scores were averaged across items to give a mean evaluative rating of the persuasive message.

Higher scores indicated more positive evaluation of the message. Cronbach reliability coefficient in the present sample was $\alpha = .83$ (183 men, 564 women).

Relevance of participating in childbearing research: All respondents regardless of condition were asked to rate how relevant they thought participation in childbearing research was for a) men and b) women on a seven-point response scale (1 = *highly irrelevant*, 7 = *highly relevant*).

Time two (T2) measures

Time two measures included items that were directly related to the experimental manipulation (i.e., attitudes, intentions, research behaviour) in addition to items that were incidental to the experimental manipulation (i.e., childbearing motivation, preconception preparation, perceived costs of childbearing). Items that were incidental to the experimental manipulation were included to examine whether the experimental manipulation influenced childbearing preferences and decision-making in general.

Attitudes and intentions towards participation in childbearing research: The eight items adapted from Francis et al. (2004) and the three adapted from Ajzen (2006) which were used in the initial survey were re-administered at T2 to measure attitudes and intentions towards participation in childbearing research. Items for attitudes were measured on a six-point response scale and scores were averaged across items to give an overall attitude scale. Intentions were measured on a five-point response scale and scores were averaged to give an overall intention scale. Higher scores indicated more favourable attitudes and higher intentions towards participation in childbearing research. Cronbach reliability

coefficient in the present sample for attitudes and intentions was $\alpha = .92$ and $\alpha = .87$ (102 men, 372 women) respectively.

Research behaviour: Two weeks after the completion of the first survey, respondents were sent an email asking for their participation in a second childbearing survey. Whether or not respondents participated in the second study (T2) was used as a measure of research behaviour (0=did not participate, 1=did participate).

Background information: The background information collected at T2 was age (in years), whether the respondent had given birth/fathered a child (0=No, 1=Yes/I am and or my partner is currently pregnant) and whether they planned to have a/another child in the future (0=No, 1= Yes).

Preconception preparation: Respondents were asked to rate how important they thought it was to achieve eight goals before having a/another child (e.g., finish education, be in a stable relationship) on a five-point response scale (1=*not at all important*, 5=*extremely important*). Scores were averaged across items to give an overall scale of the importance of preconception preparation. Higher scores indicated more importance. Cronbach reliability coefficient in the present sample was $\alpha = .81$ (102 men, 371 women).

Perceived childbearing costs: Participants were asked to rate to what extent they agreed with six concerns about having a/another child (e.g., having a/another child would interfere with my career) on a five-point response scale (1=*strongly disagree*, 5=*strongly agree*). Scores were averaged across items with higher scores meaning more perceived costs of childbearing. Cronbach reliability coefficient in the present sample was $\alpha = .74$

(102 men, 371 women). The factors measuring childbearing preconditions and costs were adapted from Heaton, Holland and Jacobson (1999), Langdridge, Connolly and Sheeran (2007), Tough Benzies, Fraser-Lee and Newburn-Cook (2007) and Lampic, Skoog Svanberg, Karlström and Tydén (2006).

Childbearing motivation: Respondents were asked about their desire (0=*no desire*, 10=*strong desire*) and intention (0=*no intention*, 10=*strongly intend*) to have a/another child. Respondents were additionally asked the same questions in relation to their partner (if applicable). Questions were adapted from Benzies, Tough, Tofflemire, Frick, Faber and Newburn-Cook (2006) Tough et al. (2007) and Lampic et al. (2006).

Research design

The current study had a longitudinal, 3 (Condition: CG, GPG, PPG) X 2 (Time: T1, T2) X 2 (gender) mixed factorial design with time as the repeated measures factor.

Procedure

Three surveys, one for each condition, were uploaded using SurveyTracker software (Training Technologies, 2008). The surveys were randomised so that when respondents clicked on the URL link they were directed to one of the three questionnaires. Recruitment was done through contacting different departments/faculties of 38 universities across England and Wales via email. The universities were asked whether they would be willing to circulate the survey request via email to their students and staff (see Appendix Q for email). Included in the email circulated to students and staff was a sentence about the survey (“The study is about what men think about

childbearing issues”) and a URL link. Clicking on the URL took the participants to a description of the survey and a consent form. To continue to complete the survey participants had to indicate that they were 18 years of age or older and consented to participate. Questions were presented in sections and once a respondent clicked to move to the next page they were unable to go back and change their answers. The survey took between five and 15 minutes to complete depending on which experimental group respondents had been randomly assigned to. Throughout the questionnaire, respondents had the option to click out and close the questionnaire with no data being submitted. Once they came to the final page, a more detailed explanation of the study was provided with the option to submit their data if they wished.

Due to the outcome variables being impact on attitudes, intentions and research behaviour the respondents were not informed that there would be a second part to the study. All respondents regardless of experimental condition were asked to leave their email address as a way of consent to take part in the first survey. Ensuring all respondents left an email address at T1 was integral to the study due to its prospective design. Unknown to the respondents the email address provided would be used to contact them two weeks later to ask for their participation in another childbearing survey (T2). This allowed a measure of observed behaviour to be obtained and allowed examination into whether or not the implementation of the persuasive message affected attitudes, intentions and research behaviour. Additionally, having a two week interval between the persuasive message and the follow up questionnaire was thought to ensure respondents did not remember the exact sequence of responses they provided in the initial questionnaire about their attitudes and intentions. This allowed a more reliable analysis into whether positive attitudes and intentions were formed and retained. The email sent at T2 included a brief description of the questionnaire (“Approximately two weeks ago you completed a

questionnaire about participation in childbearing research. We are now contacting you to ask.....”) and a URL link. In order to match the data gathered at T1 and T2 respondents were again asked to provide their email address as a form of consent in the second study. Participants received a more detailed explanation of the study, including the need for deception, when they submitted their data (or withdrew from the survey). The Ethics Committee at the School of Psychology, Cardiff University carried out the ethical review and approved the study.

Data analysis

A total of 1,162 responses were downloaded into SPSS of which six were deleted due to duplication and two were deleted due to having more than 50% of missing data. Descriptive statistics were used to profile the sample on background information. T-tests (t), analysis of variance (F) and chi-square (χ^2) analysis were used for gender comparisons and comparison between conditions (as relevant based on units of measurements). Internal reliability was assessed using Cronbach alpha coefficient (α). Where applicable multiple items measuring the same construct (e.g., attitudes towards participation in childbearing research) were used to create composite variables (mean across all items).

Three researchers from the Fertility Studies at Cardiff University Research Group, blind to condition, coded each response from the thought-listing task. Each respondent could have up to ten thoughts. Each thought was coded once on each of the three dimensions. Inter-rater reliability was computed by calculating Cohen's Kappa (K) for dimension belongingness. Cohen's Kappa is a measure of inter-rater reliability which assesses the extent to which two coders agree or assign the same code to the same item. Kappa scores are classified as follows: 0-.20 slight agreement, .21-.40 fair agreement,

.41-.60 moderate agreement, .62-.80 substantial agreement and .81-1.0 almost/perfect agreement as per Cohen (1960, 1968).

For the main analysis into the impact of the experimental manipulation (persuasive message) on attitudes and intentions towards participation in childbearing research across time, a 3 (Group: CG, GG, PPG) x 2 (Time: Baseline, two-week Follow-up) x 2 (gender) mixed factorial Analysis of Variance (ANOVAs) where time was the repeated measure was conducted. For analysis into whether condition had an effect on research behaviour at T2, chi-square (χ^2) tests were conducted. Additionally, for analysis of the impact of the message and other study variables (i.e., costs of childbearing, preconception preparation, and childbearing motivation) a series of mixed and between design ANOVAs were conducted, as required. For the analysis of the thought-listing technique and thus whether central processing occurred, the mean for polarity, origin and target dimensions was computed. Additionally, the mean score for the responses for the three dimensions was computed to give an overall processing score. Taking the mean score instead of the sum when carrying out the ANOVAs for whether or not central processing occurred, allowed for verbosity in cognitive responses to be accounted for. Where significant interactions were obtained, simple comparisons were conducted. Effect size was Partial Eta Squared (η_p^2). The total sample ($N=1154$) was used for the analysis examining manipulation checks and impact of the message. Where the analysis of the impact of the message concerned only the experimental conditions, analysis was carried out on the individuals in the PPG and GPG ($n=747$). Because the main outcome measures were whether attitudes and intentions changed from T1 to T2 the sample for these analyses was restricted to the respondents who participated at both waves of the study ($n=474$).

Results

Overview

Results are presented in five sections. Section I presents results for recruitment outcome. Section II presents the results for manipulation checks. Section III presents the results for message impact. Section IV presents results for the effect of condition on the main outcomes of attitudes, intentions and childbearing research behaviour. Section V presents results on general measures of childbearing issues.

Section I. Recruitment outcome

Of the 38 universities contacted, 30 (78.9%) were willing to circulate the survey to their students and staff (see Figure 5.2 for survey distribution according to university, region and department/faculty) and did so. Of the universities that did distribute the survey, six (20.0%) provided university level consent but individual departments were not willing to circulate the survey mainly due to having a department policy of not circulating requests. Eight universities did not provide consent and therefore did not circulate the survey (see Table 5.2). The final sample consisted of a total of 1,154 men and women. More women ($n=865$) than men ($n=289$) participated with an overall female to male ratio of 3:1.

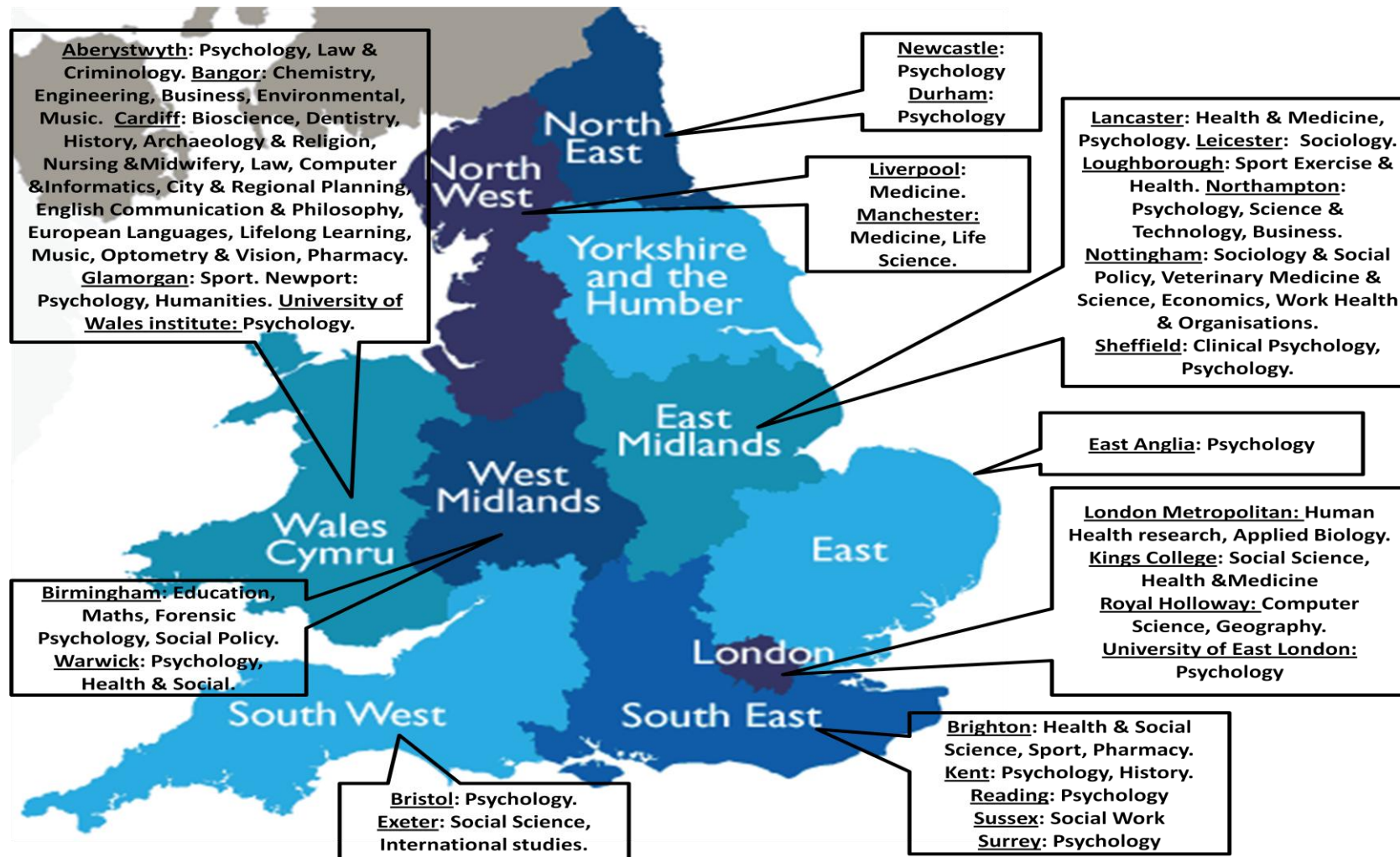


Figure 5.2. Universities in England and Wales that distributed the survey to their students and staff according to geographical region and university department or faculty.

Table 5.2

Reasons for non-participation among universities that did not circulate the survey (n=14) according to department/faculty.

University	Department/Faculty	Reason for not circulating
Aberystwyth	Geography & Earth Sciences	Not applicable to the students
Birmingham	English Language	Not applicable to the students
Brighton	Nursing & Midwifery	Ethics
Cardiff	Business, Architecture	Policy not to circulate survey requests
Essex	Psychology	Policy not to circulate survey requests
Kent	English	Policy not to circulate survey requests
Leeds	Medicine	Policy not to circulate survey requests
Plymouth	Psychology	Policy not to circulate survey requests
Portsmouth	Humanities & Social Science	Policy not to circulate survey requests
Sheffield	Sociology	Policy not to circulate survey requests
Southampton	Health Science, Social & Human Science	Policy not to circulate survey requests
Sussex	Social Work & Care, Psychology	Policy not to circulate survey requests
Swansea	Business & Economics	Not applicable to the students
UCL	Psychology	Policy not to circulate survey requests

Note: UCL=University College London

Section II. Manipulation checks

Randomisation showed the total number of participants at T1 to be equally distributed in the three conditions. Furthermore, randomisation was extendable across gender (when considered separately) because the number of men and women was equal in the three conditions (Figure 5.3).

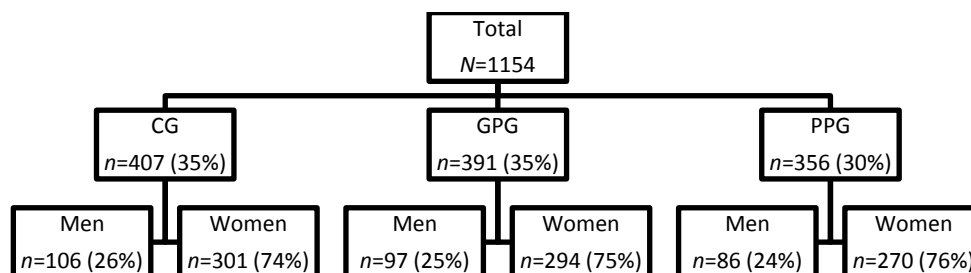


Figure 5.3. Random allocation to condition for total sample and for men (n=289) and women (n=869).

Randomisation was further tested by examining whether there was a significant difference between the three conditions in terms of sample characteristics (see Table 5.3). Analysis showed that respondents were evenly distributed in the three conditions according to sample characteristics at T1. There was however a significant difference between the three conditions in terms of whether the respondents were married/cohabiting or single. Specifically, Univariate Analysis of Variance showed that respondents in the CG were more likely to be married/cohabiting compared to respondents in the PPG ($p < .001$) and GPG ($p < .001$). Further, respondents in the GPG were significantly more likely to be married/cohabiting compared to respondents in the PPG ($p < .01$). For the subsample participating at T2, respondents in the CG were found to be significantly more likely to be married/cohabiting compared to respondents in the PPG ($p < .001$) and GPG ($p < .05$). Additionally, respondents in the GPG were significantly more likely to be married/cohabiting compared to respondents in the PPG ($p < .05$). However, no significant difference was found between respondents in the PPG and GPG ($p = .14$) in terms of whether or not they were single.

Table 5.3

Descriptive statistics for background characteristics, F-test and chi-square for total (N=1154) and subsample (n=474)^a according to condition

Variable	Total sample T1 (N=1154)				Subsample T2 (n=474)			
	Control Group (CG) (n=407)	General Group (GPG) (n=391)	Personal group (PPG) (n=356)	Group test statistic F/χ^2	Control Group (CG) (n=177)	General Group (GPG) (n=150)	Personal group (PPG) (n=147)	Group test statistic F/χ^2
Age ($M \pm SD$)	30.80 (11.99)	30.20 (11.43)	30.61 (11.44)	.27	32.51 (12.18)	31.82 (11.62)	31.20 (10.77)	.52
Marital status ^b								
Married/cohabitating (n (%))	273 (67.1) ^g	181 (46.3) ^h	125 (35.1) ⁱ	81.17***	125 (70.1) ^g	86 (57.3) ^h	61 (41.5) ⁱ	26.75***
In a relationship not cohabiting (n (%))	32 (7.9)	38 (9.7)	39 (11.0)	2.18	13 (7.3)	11 (7.3)	19 (12.9)	3.84
Single (n (%))	102 (25.1) ^g	172 (44.0) ^h	192 (53.9) ⁱ	68.75***	40 (22.6) ^g	53 (35.3) ^h	67 (45.6) ^h	19.21***
Years together (for those partnered) (M (SD))	9.37 (9.32)	10.78 (9.61)	10.77 (9.57)	1.88	10.27 (9.44)	11.56 (9.67)	10.35 (9.46)	.55
Heterosexual (n (%)) ^c	346 (85.4)	348 (89.7)	320 (90.1)	5.13	153 (86.9)	132 (88.0)	134 (91.8)	2.01
Given birth/fathered a child (n (%)) ^d	126 (31.0)	113 (28.9)	109 (30.6)	2.31	62 (35.0)	49 (32.7)	44 (29.9)	.95
At least university level (n (%)) ^e	314 (77.3)	304 (77.7)	290 (81.5)	2.28	146 (83.0)	122 (81.3)	121 (82.3)	.15
Student (n (%)) ^f	228 (56.0)	216 (55.2)	193 (54.2)	4.29	87 (49.2)	76 (50.7)	76 (51.7)	2.49

Note. N and n=Sample size, M= mean, SD = standard deviation. F-test for continuous data, chi-square for categorical data.

^a Sample size varies per variable due to missing data; ^b dummy variables, single includes widowed, in a relationship was computed from respondents indicating they were single but had been in a relationship for a given period of months and/or years; ^c heterosexual compared to bi-sexual, gay, lesbian, homosexual, prefer not to say; ^d includes currently pregnant, ^e at least university level education compared to below university level of education; ^f student compared to being employed (full and part time employment). Numbers with different superscripts are significantly different.

* $p < .05$, ** $p < .01$, *** $p < .001$

Section III. Assessment of message impact

This section presents results for the analysis of whether condition had an impact on a) the perceived relevance of participating in childbearing research for men and women, b) the mean rating of the article and c) route/level of processing (i.e., thoughts listed).

a) The effect of condition on perceived relevance of participating in childbearing research for men and women

A 3 (condition: CG GPG, PPG) X 2 (gender) X 2 (participation in childbearing research relevance: men, women) mixed factorial analysis of variance with relevance as the repeated measure was computed to examine whether the message affected perceived relevance of childbearing research. Analysis showed that the main effects of gender ($F(1, 1132)=.90, p=.34$) and condition ($F(2, 1132)=2.08, p=.13$) were not significant. Additionally, the interactions between relevance and gender ($F(1, 1132)=.97, p=.33$), relevance, gender and condition ($F(2, 1132)=1.66, p=.19$) and condition and gender ($F(2, 1132)=.32, p=.73$) were not significant.

However, there was a significant main effect of relevance ($F(1, 1132)=168.19, p<.001$). Respondents rated participation in childbearing research to be more relevant to women than to men ($\eta_p^2=.13$). In addition, there was a significant interaction between relevance and condition ($F(2, 1132)=24.36, p<.001$). Simple comparisons revealed that the respondents in all groups rated participation in childbearing research to be more relevant to women than to men (see Figure, 5.4): the PPG rated participation in childbearing research to be significantly more relevant to women than to men ($F(1, 1132)=10.25, p<.01, \eta_p^2=.01$) as did those in the GPG ($F(1, 1132) = 39.47, p<.001, \eta_p^2$

=.03) and those in the CG ($F(1, 1132)=178.77, p<.001, \eta_p^2=.14$). However, when comparing the perceived relevance of participation in childbearing research for men and women within each group, the PPG demonstrated a smaller difference ($t(353)=2.93, p<.01$) compared to the GPG ($t(382)=7.37, p<.001$) and CG ($t(400)=13.92, p<.001$).

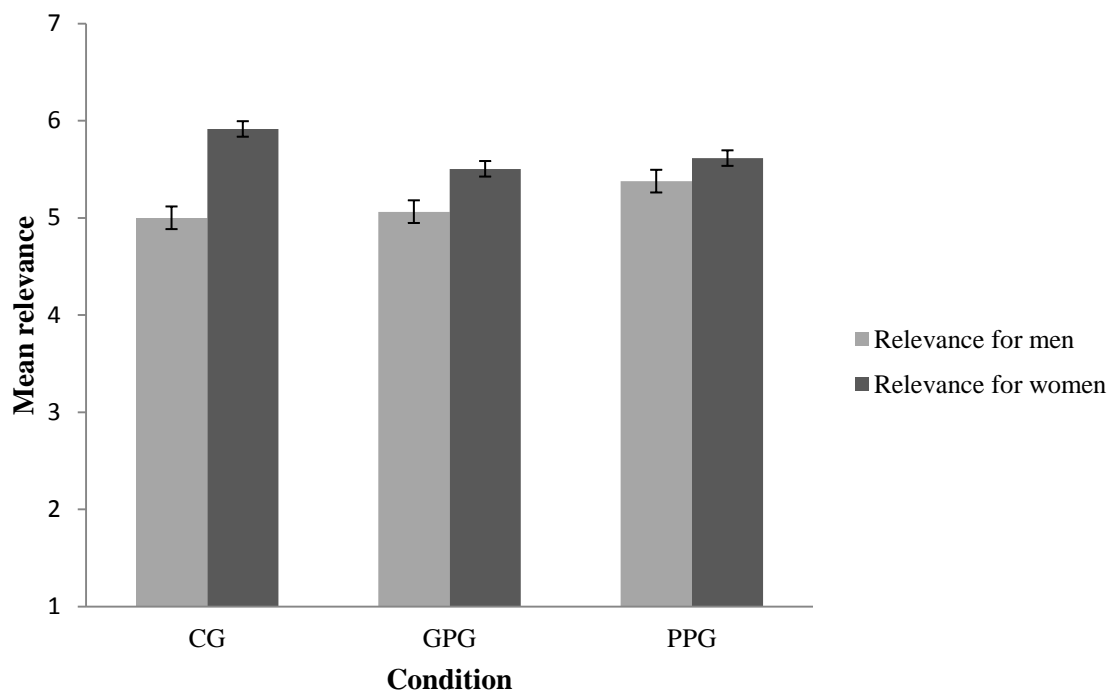


Figure 5.4. Mean perceived relevance of participation in childbearing research as a function of condition. Error bars represent standard errors.

b) *The effect of condition on mean ratings of article*

A 2 (condition: GPG, PPG) X 2 (gender) factorial analysis of variance on mean ratings of how favourable the persuasive message was evaluated to be showed that the main effects of gender ($F(1, 742)=.49, p=.48$) and condition ($F(1, 742)=.04, p=.84$) were not significant. However there was a significant interaction between gender and condition ($F(2, 742)=4.27, p<.05$). Men in the GPG evaluated the persuasive article significantly

less favourably than women ($F(2, 74)=4.06, p<.05, \eta_p^2=.01$) whereas there was no difference in the evaluation of men and women in the PPG ($F(1, 742)=.88, p=.34$) (see Figure, 5.5).

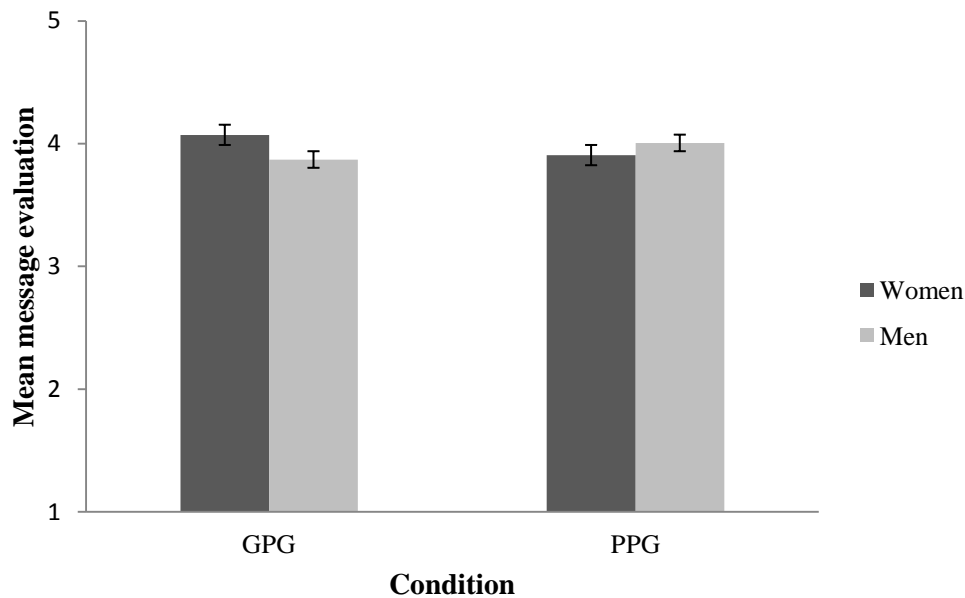


Figure 5.5. Mean message evaluation as a function of gender and condition. Error bars represent standard errors.

c) The effect of condition on route of information processing (thought-listing technique)

Of the 747 respondents in the PPG ($n=356$) and GPG ($n=391$) a total of 689 ($n=328$ 92.1% PPG, $n=361$ 92.3% GPG, respectively) respondents listed thoughts. Each thought was classified according to polarity, origin and target dimensions (see Table 5.4 for classification for listed thoughts and examples). Because respondents could provide up to 10 thoughts, the number of thoughts listed by each respondent could range from 1 to 10. Kappa scores yielded substantial agreement for polarity ($K=.75$), origin ($K=.82$) and target ($K=.78$) dimensions.

Table 5.4

Classification for listed thoughts and examples from the cognitive responses obtained

Dimension & subscales	Classification	Example ¹
Polarity		
Negative thoughts (-1)	Statements that are negative towards the persuasive message	<ul style="list-style-type: none"> - Dr Rawls also claimed that the uni's study only took in account white middle-class men and that other classes or races would not think the same. I strongly disagree: no 20 year old men want to have child (Female, 18, UK, PPG). - As a single gay man with no intention of becoming a parent I am not entirely sure that the final comment of the study holds true (Male, 41, UK, PPG) - Sweeping statements (Male, 45, UK, GPG)
Neutral thoughts (0)	Statements that neither favour or oppose the persuasive message	<ul style="list-style-type: none"> - I was distracted (Female, 30, UK, GPG) - I want children (Female, 33, UK, GPG) - 3 children would probably be enough (Male, 20, UK, GPG) - food (Female, 33, UK, PPG)
Positive thoughts (+1)	Statements that are positive toward or supportive of the persuasive message	<ul style="list-style-type: none"> - Yes research is needed - not a simple picture (Female, 42, UK, GPG) - There needs to be more representative data on how varying socio-economic and cultural factors within modern society affect men's decisions and choices to want to have children (Male, 23, UK, PPG) - agreed with Dr. Rawles about insufficient representation of all social classes (Male, 45, UK, GPG)
Origin		
Externally orientated thoughts (-1)	Statements or paraphrases of information provided in the persuasive message	<ul style="list-style-type: none"> - I am aware that more people are putting lifestyle before family life (Female, 20, UK, GPG) - Fewer people are choosing to have children earlier (Female, 18, UK, GPG) - Middle class men are less likely to have children (Female, 20, UK, PPG)
Neutral thoughts (0)	Statements not traceable to the persuasive message	<ul style="list-style-type: none"> - Uninterested (Male, 20, UK, GPG) - True (Female, 23, UK, GPG) - thought about current partner (Female, 27, UK, PPG)

Table 5.4

Classification for listed thoughts and examples from the cognitive responses obtained (continued)

Dimension & subscales	Classification	Example¹
Modified externally orientated thoughts (+1)	Statements that are reactions to the information provided in the persuasive message	<ul style="list-style-type: none"> – Why is this all about men? (Female, 38, UK, PPG) – Were the findings from the study generalised to all men in general or in Western societies? There is a possibility of culture bias (Female, 18, UK, PPG) – although I agree with the previous research regarding people are choosing to put their lifestyle choices before having children, this is not clear-cut and personal experience does show that it is due to a huge number of factors (Female, 43, UK, GPG)
Target Source thoughts (-1)	Statements pertaining to the source of the stimuli, the channel through which the message was communicated and the recipient of the message	<ul style="list-style-type: none"> – Which newspaper? (Female, 41, UK, PPG) – wasn't sure it was real (Female, 36, UK, PPG) – This article relates to women and the gender has been changed for the purposes of this study (Female, 35, UK, GPG).
Neutral thoughts (0)	Thoughts that are irrelevant to the target or persuasive message	<ul style="list-style-type: none"> – The world needs less children (Male, 46, UK, GPG) – The drilling in ceiling being annoying (Female, 30, UK, GPG) – the age of your parents is important, young or old relatively (Female, 25, UK, GPG)
Stimulus thoughts (+1)	Statements pertaining to the situation or issue of the persuasive message	<ul style="list-style-type: none"> – With the current economic status of this country it is no wonder than there are fewer people having children. They simply cannot afford them (Female, 21, UK, GPG) – Why did the researchers focus only on men? I suppose it takes two to have a child! (Male, 39, UK, PPG) – that many people today are selfish and do not want children because it gets in the way of their lifestyle (Male, 46, UK, GPG)

Note: ¹Each cognitive response is followed by the gender, age, country of residence and experimental condition of the respondent in parentheses.

Table 5.5 shows that overall a total of 2,873 ($n=1,382$ PPG, $n=1,491$ GPG) thoughts were listed by the respondents. For the polarity and origin dimensions the majority of the thoughts were classified as neutral. However, the majority of the thoughts listed by the respondents for the target dimension were classified as stimulus thoughts. Further, individuals in the GPG were less likely to list stimulus thoughts compared to individuals in the PPG.

Table 5.5

Number (and percentage) of total thoughts listed for the three dimensions according to condition

	Total (N=2,873)	PPG (n=1,382)	GPG (n=1,491)
Polarity n (%)			
Negative	324 (11.3)	152 (11.0)	172 (11.5)
Neutral	1,875 (65.3)	886 (64.1)	989 (66.3)
Positive	674 (23.4)	344 (24.9)	330 (22.2)
Mean polarity M (SD)	.13 (.37)	.16 (.37)	.10 (.37)
Origin n (%)			
Externally orientated	288 (10.0)	130 (9.4)	158 (10.6)
Neutral	1,707 (59.4)	803 (58.1)	904 (60.6)
Modified externally orientated	878 (30.6)	449 (32.5)	429 (28.8)
Mean origin M (SD)	.22 (.25)	.25 (.37)	.19 (.34)
Target n (%)			
Source	366 (12.7)	189 (13.7)	177 (11.9)
Neutral	1,066 (37.1)	457 (33.1)	609 (40.8)
Stimuli	1,441 (50.2)	736 (53.2)	705 (47.3)
Mean target M (SD)	.38 (.43)	.40 (.44)	.35 (.43)

Figure 5.6 shows the number of thoughts listed for the different dimensions according to gender and condition. A total of 521 women ($n=272$ GPG, $n=249$ PPG) and 168 men ($n=89$ GPG, $n=79$ PPG) listed their thoughts about the persuasive message. Women listed a total of 2,190 ($n=1,132$ GPG, $n=1,058$ PPG) thoughts while men listed a total of 683 ($n=359$ GPG, $n=324$ PPG) thoughts. For both men and women, the majority of the thoughts listed were classified as neutral for the polarity (65.6%, 65.2%, respectively) and origin (61.2%, 58.9% respectively) dimensions. For the target dimension, the majority of the thoughts were classified as stimulus thoughts by men (47.3%) and women (51.0%).

A similar pattern was found for men and women according to experimental condition. For men and women in the GPG the majority of thoughts were classified as neutral for polarity (63.2%, 67.3% respectively) and origin (60.7%, 60.6%, respectively). For the target dimension, the thoughts listed by men and women in the GPG were however more likely to be classified as stimulus thoughts (46.5%, 47.5% respectively). For men and women in the PPG, thoughts were more likely to be classified as neutral for the polarity (68.2%, 62.9% respectively) and the origin (61.7, 57.0% respectively) dimensions. Again however, for the target dimension the thoughts of men and women were more likely to be classified as stimulus thoughts (48.2%, 54.8% respectively). There was a slightly higher frequency of stimulus thoughts in the PPG group for men and women compared to in the GPG group (see Figure 5.6). Overall, women had higher mean scores for polarity ($M=.14$, $SD=.36$), origin ($M=.23$, $SD=.36$) and target ($M=.40$, $SD=.42$) dimensions compared to men ($M=.09$ $SD=.39$, $M=.18$ $SD=.35$, $M=.32$ $SD=.46$, respectively).

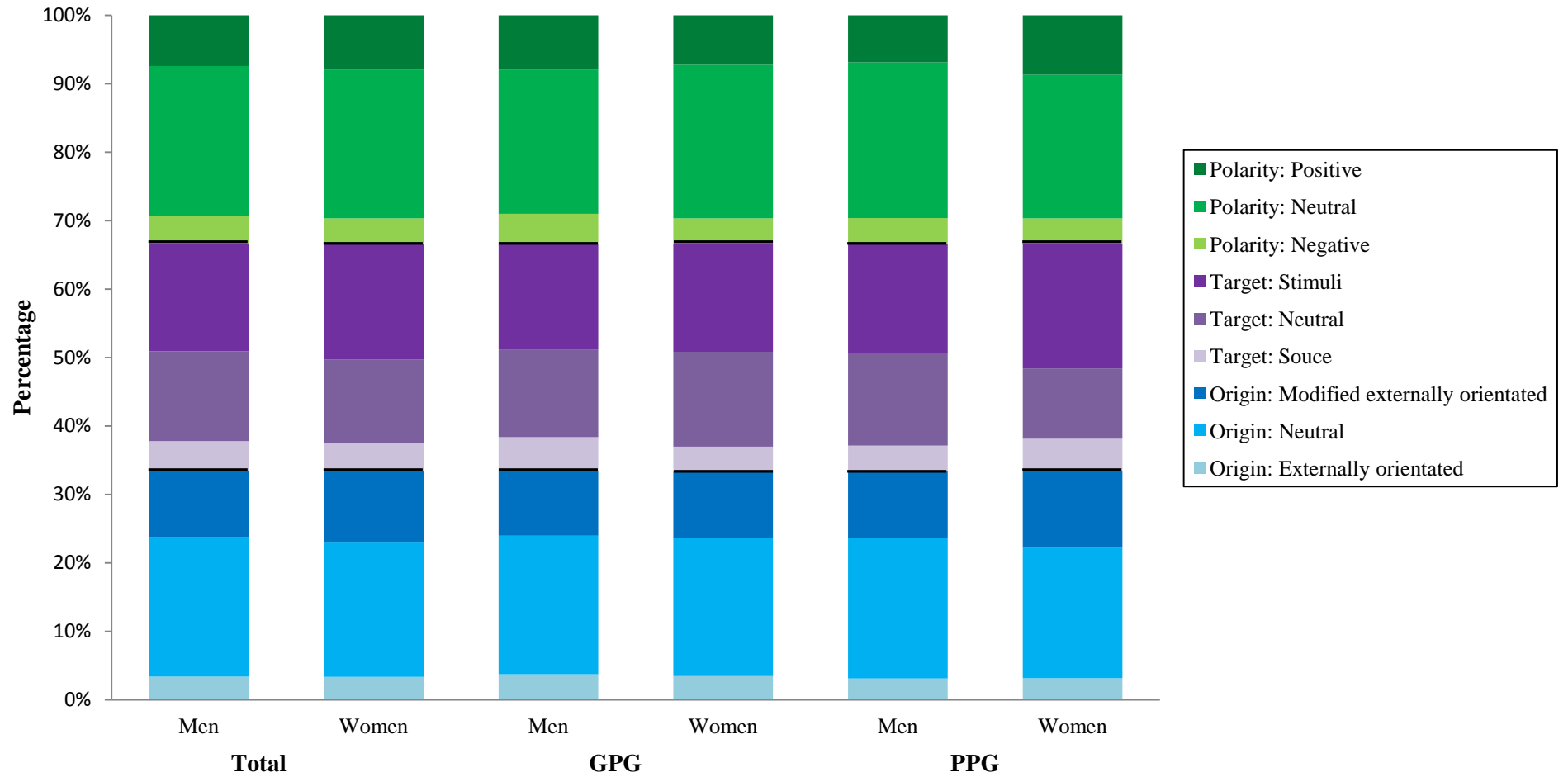


Figure 5.6. Percentage of thoughts listed for the three dimensions and their sub-groups according to the gender and condition

A 2 (Condition: PPG, GPG) X 2 (gender) factorial analysis of variance on the mean of polarity scores was computed. Analysis showed that the main effects of condition ($F(1, 685)=1.36, p=.24$) and gender ($F(1, 685)=2.31, p=.13$) were not significant. Additionally, the interaction between gender and condition was not significant ($F(1, 685)=1.41, p=.24$).

A 2 (Condition: PPG, GPG) X 2 (gender) factorial analysis of variance on mean origin scores showed that the main effects of condition ($F(1, 685)=2.18, p=.14$) and gender ($F(1, 685)=2.84, p=.09$) were not significant. Further, the interaction between gender and condition was not significant ($F(1, 685)=.16, p=.69$).

A 2 (Condition: PPG, GPG) X 2 (gender) factorial analysis of variance on the total sum of target scores showed that the main effect of condition ($F(1, 685)= 1.20, p=.27$) was not significant. In addition there was no significant interaction between gender and condition ($F(1, 685)=.11, p=.74$). However there was a significant main effect of gender ($F(1, 685)=4.36, p<.05$). Women had significantly higher target scores compared to men ($\eta_p^2=.01$).

To examine whether condition and gender had a significant effect on whether or not the message was processed centrally overall, a 2 (condition: PPG, GPG) X 2 (gender) factorial analysis of variance on mean scores for polarity, origin and target combined was computed. Analysis showed that the main effect of condition ($F(1, 685)= 2.99, p=.08$) was not significant. The interaction between gender and condition was also not significant ($F(1, 685)=.77, p=.38$). However there was a significant main effect of gender ($F(1, 685)=6.24, p<.05$). Women had significantly higher scores for processing of the message compared to men ($\eta_p^2=.01$).

Summary

In summary, manipulation checks and analysis of the impact of the message revealed that randomisation was successful except for there was more single people in the PPG. Individuals in the PPG were also found to be more likely to perceive the message to be equally relevant to men and women. Mean ratings of how favourable the message was evaluated revealed that women rated the GPG message significantly more favourably than men. No significant difference was found between men and women in terms of how favourably the PPG message was evaluated. For the effect of condition on route of processing, women had significantly higher target and overall level of processing scores.

Section IV. The effect of experimental manipulation on the main outcomes

This section presents results for the analysis of whether condition had an impact on a) attitudes towards participation in childbearing research, b) intentions to participate in childbearing research and c) research behaviour.

a) The effect of condition on attitudes towards participation in childbearing research

Table 2.6 shows the descriptive statistics for attitudes towards participation in childbearing research at T1 and T2 according to condition and gender. Individuals in the CG had significantly less favourable attitudes at T1 compared to individuals in the PPG ($p=.01$). No significant differences were found between the three conditions in terms of attitudes at T2. However there were significant gender differences for attitudes at T1 and T2. Men had significantly less favourable attitudes towards participation in childbearing research compared to women.

Table 5.6

Means (and standard deviations) for attitudes towards participation in childbearing research at T1 and T2 according to condition and gender

	Total	CG	GPG	PPG	Men	Women	t statistic
Attitude T1	3.12 (.71)	3.05 (.64) ^{a,b}	3.12 (.78) ^{a,b}	3.20 (.71) ^b	2.97 (.76)	3.17 (.69)	4.14***
Attitude T2	3.22 (.76)	3.15 (.77)	3.25 (.77)	3.29 (.72)	3.08 (.78)	3.27 (.75)	2.18*

Note: *M*= mean, *SD*= Standard deviation. t statistic for gender difference tests. Numbers with different superscript letters are significantly different.

*** $p < .001$, ** $p < .01$, * $p < .05$.

A 3 (Condition: CG, GPG, PPG) X 2 (Time: baseline, time 2) X 2 (gender) mixed ANOVA, with time as the repeated measure on attitudes towards participation in childbearing research was computed. Analysis showed no significant main effect of time ($F(1, 468)=2.50, p=.12$) or condition ($F(2, 468)=1.79, p=.17$). Additionally the interactions between time and condition ($F(2, 468)=.28, p=.755$), time and gender ($F(1, 468)=.36, p=.55$) and time, gender and condition ($F(2, 468)=.38, p=.68$) were not significant. However, there was a significant main effect of gender ($F(1, 468)=6.01, p<.05$). Men had significantly less favourable attitudes towards participation in childbearing research compared to women ($\eta_p^2=.01$).

b) The effect of condition on intentions towards participation in childbearing research

Table 2.7 shows the descriptive statistics for intentions to participate in childbearing research at T1 and T2 according to condition and gender. No significant difference was found for intentions between the three conditions. However there was a

significant gender difference for intentions at T1. Men had significantly lower intentions to participate compared to women.

Table 5.7

Means (and standard deviations) for intentions to participate at T1 and T2 according to condition and gender

	Total	CG	GPG	PPG	Men	Women	t statistic
Intention T1	3.36 (.88)	3.42 (.86)	3.30 (.91)	3.37 (.86)	3.27 (.92)	3.39 (.86)	2.13*
Intention T2	3.33 (.89)	3.24 (.93)	3.34 (.89)	3.41 (.82)	3.20 (.92)	3.36 (.87)	1.627

Note: *M*= mean, *SD*= Standard deviation. t statistic for gender difference tests.

*** $p < .001$, ** $p < .01$, * $p < .05$.

A 3 (Condition: CG, GPG, PPG) X 2 (Time: baseline, time 2) X 2 (gender) mixed ANOVA, with time as the repeated measure on intentions to participate in childbearing research was completed. Analysis showed that the main effects of time ($F(1, 468)=1.84$, $p=.18$) condition ($F(2, 468)=2.14$, $p=.12$) and gender ($F(1, 468)=2.69$, $p=.13$) were not significant. Additionally the interactions between time and condition ($F(2, 468)=.30$, $p=.74$), time and gender ($F(1, 468)=.00$, $p=.99$) time, gender and condition ($F(2, 468)=.31$, $p=.74$) and gender and condition were not significant ($F(2, 468)=2.79$, $p=.06$).

c) The effect of condition on research behaviour

Of the sample participating at T1 474 participated at T2 with attrition being 59%. Significantly more women ($n=372$) than men ($n=102$) participated at T2 with an overall ratio of 4:1 ($\chi^2(1)=5.32$, $p < .05$). Figure 5.7 shows T2 participation rates according to gender and condition. Condition had no significant effect on whether or not the

respondents participated at T2 ($\chi^2(2)=2.18, p=.34$). The number of women participating at T2 was evenly distributed in the three conditions with 44% in the PPG and CG and 40% of those in the GPG participating at T2. For men, participation at T2 was less evenly distributed with 42% of those who participated at T2 being in the CG, 32% being in the GPG and 31% being in the personalised persuasive group. For men, the highest rate of attrition was found in the PPG while for women the highest rate of attrition was found in the GPG (Figure 5.7). Chi-square tests revealed that the disparity in the research behaviour of men and women across the three conditions was not significant ($\chi^2(2)=2.84, p=.24$; $\chi^2(2)=1.17, p=.56$, respectively).

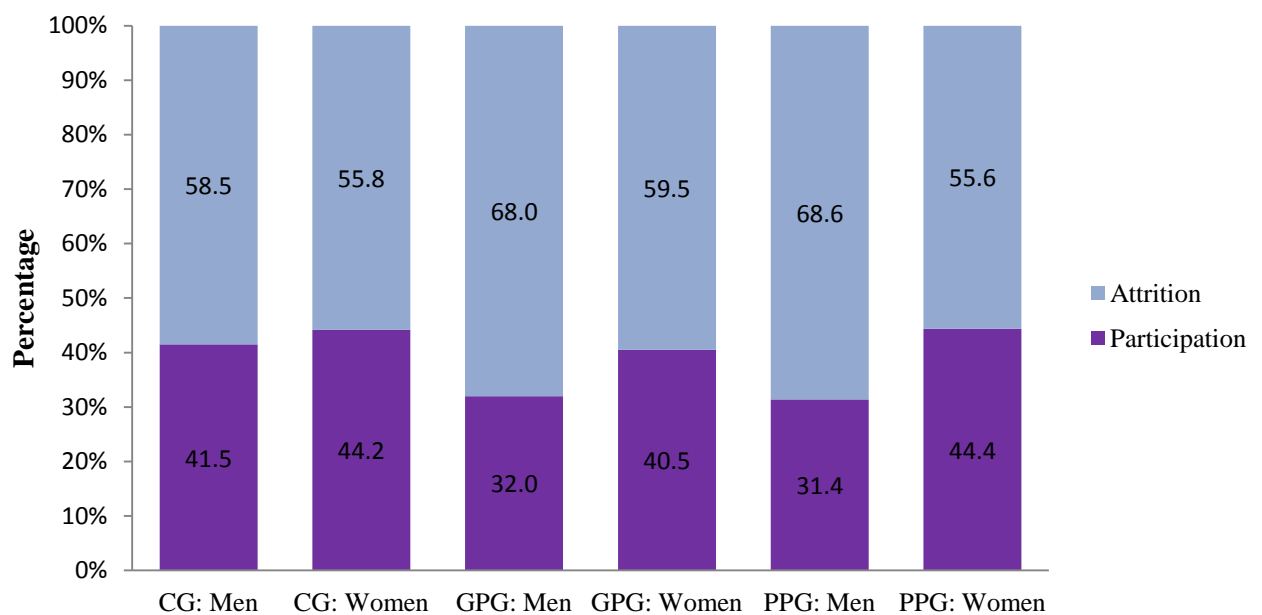


Figure 5.7. Percentage of participation and attrition at T2 according to gender and condition

Summary

In summary the results for the main experimental manipulation showed no significant effect of condition on attitudes, intentions and research behaviour. There was

however a significant main effect of gender on attitudes and research behaviour. Men had significantly less favourable attitudes and lower participation rates at T2 compared to women.

Section V. The effect of condition on childbearing preferences and decision-making

This section presents results for the analysis of whether condition had an impact on a) preconception preparation, b) perceived costs of childbearing and c) childbearing motivation.

a) The effect of condition on preconception preparation

A 3 (condition: CG GPG, PPG) X 2 (gender) factorial analysis of variance on preconception preparation was computed. Analysis showed that the main effects of gender ($F(1, 467)=.97, p=.32$) and condition ($F(2, 47)=.44 p=.65$) were not significant. Additionally, the interaction between gender and condition was not significant ($F(2, 467)=1.59, p=.20$).

b) The effect of condition on childbearing costs

A 3 (condition: CG GPG, PPG) X 2 (gender) factorial analysis of variance on childbearing costs was computed. Analysis showed that the main effect of condition was not significant ($F(2, 467)=.98, p=.38$). Additionally, the interaction between gender and condition was not significant ($F(2, 467)=2.16, p=.18$). However there was a significant main effect of gender ($F(1, 467)=5.74, p<.05$). Men rated the costs of childbearing significantly lower than women ($\eta_p^2=.01$).

c) The effect of condition on childbearing motivation

A 3 (condition: CG GPG, PPG) X 2 (gender) factorial analysis of variance on childbearing desire showed that the main effects of gender ($F(1, 467)=.06, p=.81$) and condition ($F(2, 467)=.77, p=.46$) were not significant. Additionally, the interaction between gender and condition was also not significant ($F(1, 467)=1.71, p=.18$). This was also the case for partner's desire. The main effects of gender ($F(1, 347)=1.40, p=.24$) and condition ($F(2, 347)=.06, p=.94$) were not significant nor was the interaction between condition and gender ($F(2, 347)=.25, p=.78$).

A 3 (condition: CG GPG, PPG) X 2 (gender) factorial analysis of variance on intention to have a child showed that the main effects of gender ($F(1, 463)=.00, p=.95$) and condition ($F(2, 463)=.59, p=.56$) were not significant. In addition, the interaction between gender and condition was not significant ($F(2, 463)=1.74, p=.18$). No significant effects were found for partner's intention to have a child. The main effects of gender ($F(1, 343)=.79, p=.37$) and condition ($F(2, 343)=.24, p=.79$) were not significant nor was the interaction between gender and condition ($F(2, 343)=.43, p=.65$).

Summary

In summary the results for the items incidental to the experimental manipulation revealed that condition had no significant main effect on preconception preparation, childbearing costs or childbearing motivation. There was however a significant gender difference for childbearing costs. Women perceived higher costs to childbearing compared to men.

Discussion

There is a large amount of literature on methods to increase cooperation in surveys. However, rarely has this literature been guided by a set of theoretical principles (e.g., Couper & Groves, 1991; Williams, Entwistle, Haddow & Wells, 2008). Consequently, the current research makes important advances on previous research by designing and implementing a persuasive message about the benefits of participating in childbearing research using the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986). The implementation of the persuasive message targeted at men was found to increase the perceived relevance of participation in childbearing research. However, this increase in perceived relevance did not equate to an increase in favourable attitudes and intention towards participation in childbearing research or an increase in research behaviour.

The ELM proposes that attitude change is likely to occur if the message is processed centrally by the individual. This process is largely determined by the perceived relevance of the message (i.e., motivation) and the recipient's ability to comprehend the meaning of the message (i.e., ability). Analysis of the cognitive responses revealed that the majority of the responses were neutral and that condition did not affect depth of information processing i.e., groups processed the message in a similar way. This suggests that the message was most likely processed peripherally resulting in less enduring attitude change (Petty & Cacioppo, 1986). Moreover, results suggest that although individuals may have been orientated towards the stimulus (i.e., higher number of stimulus scores) the message may not have been sufficiently compelling to elicit favourable thoughts (i.e., higher number of positive thoughts) about the contents of the message and elaboration of these thoughts (i.e., higher number of modified externally orientated). This could have

been the bi-product of the message being insufficient in terms of its ability to match to the respondent's level of motivation and ability to process the message (Petty & Cacioppo, 1986). This is suggested to be the case particularly for men. Women were found to be significantly more orientated towards the persuasive messages (i.e., higher target scores) and overall engage in more elaborative thinking compared to men. Women have more of a primary role in childbearing (Firsco, Weden, Lippert & Burnett, 2011; Marsiglio, 1991) and are therefore likely to have high levels of motivation and ability when it comes to processing messages about childbearing. Men on the other hand have less of an integrated role in childbearing. Men have been shown to have low levels of fertility knowledge compared to women (Bunting, Tsibulsky & Boivin, 2012) with Banks (2001) suggesting that the male maxim of 'strength in silence' makes men reluctant to obtain information. Therefore, lack of fertility knowledge may mean that men do not possess the necessary motivation and ability to scrutinise and evaluate childbearing information (Crano & Prislin, 2006).

The implementation of the persuasive message was however found to increase the perceived relevance of male participation in childbearing research in the PPG group especially. Framing information in a context that is meaningful to men is therefore suggested to be an effective way to increase the perceived relevance and positive perceptions of the behaviour (Kreuter, 1999). Theoretically, an increase in the perceived relevance of the behaviour should increase motivation, central processing and thus attitude change (Petty & Cacioppo, 1986). However, given the absence of condition effects for the main experimental manipulation, results suggest that motivation and ability are not the only factors that affect whether persuasion occurs. Attitude formation and change is subject to individual differences (Cacioppo, Petty, Feng Kao & Rodriguez, 1986). Consequently, respondent characteristics may have affected the way in which the

messages were processed. Descriptive statistics showed that overall individuals participating in the research at T1 had favourable attitudes and high intentions towards participation in childbearing research. This suggests that the respondents participating in the current study were already predisposed to participate. As such the persuasive message may have been too weak to positively contribute to existing dispositions towards the behaviour.

This proposition is strengthened by the descriptive statistics that showed participation at T2 was more likely to occur if individuals were more pronatalist and research orientated, consistent to the findings of Chapter 4. Participation at T2 was more likely among individuals who were older, married/cohabitating and had higher levels of education. Consequently, these results suggest that a favourable disposition towards participation in childbearing research (e.g., attitudes) in addition to life course factors that mirror childbearing readiness (e.g., marital status) or research orientation (e.g., education) contribute to whether or not individuals participate (Goyder, 1987) and continue to participate in each phase of the research. These results also provide insight into the possible reasons for why increased relevance did not translate into more favourable attitudes, intentions and research behaviour. Although participation in childbearing research may be perceived to be more relevant to men after the implementation of the persuasive messages, men may not personally apply this relevance to themselves. For example, men (and women) in the PPG group were more likely to be single. Therefore perceived relevance may not translate into favourable attitudes, intentions and research behaviour because these individuals are not ready or do not have the optimal conditions in which to start childbearing. Therefore it is likely that the perceived relevance of participation in childbearing research interacted with life course variables to influence attitudinal and behavioural dispositions towards the behaviour. As such results suggest

that persuasive messages aimed to increase the rate of male participation in childbearing research should not only be targeted at men but should also be tailored more specifically to the needs of men in terms of life course and reproductive readiness.

The design and content of the persuasive message may have additionally contributed to the way in which the message was processed. Previous research has shown persuasion to be more likely to occur if the message contains a two-sided argument (O'Keefe, 1999). Although the current research employed a two-sided argument, the choice of arguments and the way in which they were presented may have impacted message processing. For example, previous research has suggested that persuasive communication is likely to have the best results when communicators align normative messages to work in tandem rather than in competition with one another (Cialdini, 2003). In the current study, descriptive norms (e.g., 'people no longer want to have children') based on the behaviour of other people were placed with injunctive norms which are based on what other people are likely to approve or encourage (e.g., 'participation in childbearing research is beneficial and worthwhile to all'). Consequently, the two arguments could have been too competitive. Furthermore, individuals may have attended to the arguments that did not contain the desired take home message (i.e., descriptive norms) as it has been previously suggested that individuals are more likely to accommodate to descriptive norms, compared to injunctive norms (Cialdini, 2003). Whether this was the case was partially examined by investigating whether or not condition had an effect on other study variables reflecting childbearing preferences and decision-making. The descriptive norm argument highlighted that people are choosing alternative lifestyles over parenthood. Therefore, if individuals attended more to this side of the argument it was expected that a decrease in the importance of preconception preparation and the perceived costs of childbearing would be observed in addition to an

increase in childbearing motivation. However, there was no significant difference between the conditions for these study variables highlighting that the employed arguments were unlikely to be the source of why the persuasive message lacked effect. Nonetheless, the persuasive message may not have had an effect on these items because the primary content of the message was concerned with childbearing research rather than childbearing per se. Therefore although the content of the message contained issues relevant to childbearing they may not have been aligned closely enough to childbearing in order to elicit a persuasive effect and change the respondents' childbearing preferences (Petty & Cacioppo, 1986). Further, the true effects of the persuasive messages on these study items cannot be confidentially ascertained because these items were not measured prior to the implementation of the message, especially as the respondents in the PPG were more likely to be single. Moreover, the desired take home message was put forward by the credible source increasing the likelihood that it would be the source of persuasion.

Designing the persuasive message to be self-paced and delivered online may have impacted message processing. Delivering the message online aimed to minimise the possibility of factors such as distraction (e.g., time constraints) impacting message processing. However, by allowing the respondents to complete the questionnaire in their own environment factors such as distraction could not be controlled for. Furthermore, there was no way of ensuring that the respondents actually attended to the message presented to them as the experimenter was not present during its implementation. The lack of condition effect may also have been due to the message length. Although shorter messages have been suggested to have a greater chance of capturing and retaining the attention of the recipient (Rimer & Kreuter, 2006), they may also limit the recipient's ability to become actively involved in the message. This may limit the respondent's

ability to systematically assess the information, thus reducing the possibility of central processing.

Moreover, the lack of condition effects for the analysis carried out in the current chapter suggests that there may have been an insufficient difference between the content of the persuasive messages directed at the two groups. This proposition is reinforced by post-hoc results that showed collapsing the two experimental conditions (GPG, PPG) had positive effects on the dispositions towards participation in childbearing research of men and women. Specifically, providing people with information (whether personalised or not) was shown to elicit the desired attitude and intention change compared to when no information was provided (see Appendix R for results). Notwithstanding this, the provision of information had no significant effect on whether or not the respondents participated at T2. This suggests that the change in attitudes and intentions was not strong enough to elicit actual behaviour. However, lack of behaviour change could have been the result of the persuasive message having an explicit conclusion that left room for interpretation. A conclusion that was completely explicit, stating that the recipient should participate in childbearing research in the future could have significantly increased the likelihood of the respondents forming positive attitudes and intentions in addition to increasing the likelihood of behaviour participation in childbearing research.

The ELM is a model used to delineate how to change attitudes. Therefore with condition having no significant effect on attitudes towards participation in childbearing research any changes that had occurred in intentions and behaviour would have been somewhat unexpected. According to the Theory of Planned Behaviour (TPB; Ajzen, 1991) a significant change in attitudes would result in corresponding change in intentions which in turn would influence behaviour (Ajzen, 1991). As such, results reinforce the TPB proposition of strong concordance between attitudes and behaviour. For example,

men were found to have significantly less favourable attitudes towards participation in childbearing research and have higher drop-out rates from the research compared to women. Notwithstanding this, the discrepancy between the participation rates of men and women was greater for uptake of research rather than for continuing research. This, in addition to the results which suggest individuals participating in childbearing research to be already predisposed to participate, suggests that more needs to be done in terms of attracting men into the research on childbearing rather than to retaining their participation. The persuasive message may therefore have been more powerful if it had been delivered at the point of recruitment. This earlier provision might be better because it would have affected *uptake of research* by individuals who were not predisposed to participate in childbearing research whereas the present design would mainly have affected *sustained research participation* amongst men that had already chosen to uptake the research.

Strengths and limitations

The design capitalised on predicting future observed behaviour and allowed for a confident interpretation of whether the persuasive messages affected the attitudes, intentions and research behaviour of men and women. Using a two week interval between surveys allowed enough time to ensure that the respondents did not remember the way in which they had initially rated their attitudes and intentions towards participation in childbearing research and thus the potential biases in self report measures were minimised. However, the message may not have been sufficiently strong or processed in the way that could satisfactorily address whether other messages could have been more effective.

A number of researchers have examined ways to increase survey response. For example, the provision of token incentives (e.g., payment) for potential participants along with invitations to participate have been found to be more effective than the promise of a reward upon completion of the survey (Dillman, 2000). Further, letters sent in advance of the questionnaire (Martin, Bennett, Freeth & White, 1997) and interview scripts that are persuasive (Couper & Groves, 1991) have also been found to be effective in terms of increasing co-operation. However these studies have rarely been guided by a set of theoretical principles (Couper & Groves, 1991). Thus, the current research provides important insight into the effectiveness of the ELM as a framework for the development and implementation of a persuasive message aimed to increase male participation in childbearing research.

A large sample size at T1, recruited from across England and Wales and low missing data suggests data is likely to be representative of typical British university students and staff and therefore the results obtained are likely to be generalisable to other academic samples. The sample is however not representative of the general population in terms of background characteristics such as education level. Participation in research is a requirement of most universities and most university students and staff are used to participating in research. Application of the research in non-academic settings would therefore provide more insight into how the general public respond to persuasive messages about participation in research. This would additionally provide more insight into whether or not participation in childbearing research is a result of having a predisposition towards research behaviour.

There were a number of methodological limitations in the current study. Previous research suggests that people are most likely to respond to research on a topic that is attractive in terms of its inherent features (Groves, Pressor, Dipko, 2004). Consequently,

asking for participation in 'childbearing' research may have deterred men from participating. The word childbearing may be perceived by men to be inherently a female subject. Thus, changing the subject of the survey may increase participation by making the subject more applicable to men. Another limitation concerns when the principal constructs of the TPB were measured. Previous research on the effect of persuasive messages has involved analysis of the outcome measures immediately after the implementation of the persuasive message (e.g., Wither et al., 2002). This research design ensures that short term attitude change is recorded. Consequently, with results of the current study indicating the persuasive messages were likely to have been processed peripherally obtaining a measure of attitudes and intentions immediately after the persuasive message could have increased the validity of these results. The experiment could have additionally included items to directly measure individual characteristics such as motivation, ability and need for cognition. This would have allowed for a more confident interpretation of the results obtained.

Because the persuasive message was not present at the time when the targeted behaviour (i.e., research behaviour) was performed the message salience may have been weakened by the time the respondents were invited to take part in the second survey, two weeks later (Cialdini, 2003). Future research therefore needs to examine how the message could be structured to maximise the likelihood that the motivational components of the message are salient up until and at the time of the target behaviour. Moreover, future research should examine whether the implementation of the persuasive message at the initial recruitment stage of the research has a significant positive effect on increasing the number of men participating in childbearing research. This research should additionally examine the differences between populations at various stages of their reproductive career to assess whether individual characteristics impact message processing.

Future research should also examine whether or not implementing the persuasive message in an experimental setting where the experimenter was present enhances persuasion. Having the experimenter present during message implementation may increase the likelihood of the recipient attending to the message and decrease the possibility of distraction occurring. Furthermore, although the persuasive message was developed in line with previous research and with the help of a journalist to ensure that the respondents perceived it to be a true newspaper article, future research should carry out further pilot work to make sure that the persuasive elements incorporated in the message achieved their aims.

Conclusion

The findings from Chapter 5 provide important insight into potential effective ways to increase male participation in childbearing research. Interventions aimed at increasing male participation in childbearing research need to focus on recruiting men who are not predisposed towards childbearing or childbearing research. Such interventions need to focus on encouraging men to see participation in childbearing research to be personally relevant to themselves regardless of reproductive life stage. Viewing childbearing and participation in childbearing research to be personally applicable is likely to translate into favourable attitudes, intentions and research behaviour. In order to maximise the potential effects of such interventions, qualitative data should be gathered from men on what would most likely persuade them to participate in childbearing research and what factors they regard to be impacting their participation.

CHAPTER 6: General Discussion

The aim of the studies presented in this thesis was to better understand the representation and inclusion of men in childbearing research. Specifically, to better understand the childbearing preferences and behaviours of men, establish reasons as to why men have disproportionately low participation rates in research on childbearing compared to women, identify who and what could be a target of behaviour change interventions aimed to increase male participation in childbearing research and identify whether the implementation of such interventions increase participation. The current chapter will present an overview and integration of the main research as well as its strengths and limitations. Theoretical considerations and research implications will also be discussed.

Men and childbearing research

The present research comes at a time when the lack of men in research on childbearing is recognised internationally as a potential problem impacting our understanding of childbearing preferences and behaviour (Dodoo, Lou & Panayotova, 1997; United Nations International Conference on Population and Development (ICPD), 1995). With dramatic changes in childbearing decision-making and family formation being observed across the world, the childbearing preferences and behaviours of men are now being considered to be relevant to the debate concerning these changes (Jamieson, Milburn, Simpson & Wasoff, 2010). Although research with men is increasing it remains modest in comparison to research including/concerning women. The overall female orientated approach to the study of childbearing and the lower participation rates of men

means there is a lack of knowledge about what underlying factors drive the decision of whether and when to begin parenthood for men. The results of the present thesis reveal that there are important differences between the childbearing preferences and behaviours of men and women (Chapters 2 & 3) and that action can be taken to help incorporate men into this specific field of health research (Chapters 4 & 5).

The results of the current thesis showed men to be overall more traditionally orientated than women, regarding their role in childbearing to be that of the breadwinner. Men were found to strive towards the achievement of pronatalist environments in which to have a child, wanting high relationship stability (e.g., marriage) and a source of income to support their family before beginning parenthood. Women on the other hand were found to strive towards the achievement of independence in the form of education, career and income security (Chapter 2). Such results highlight the complexity of the childbearing process in addition to the incompatibility between the childbearing preferences and behaviours of men and women.

The complexity of the decision of whether and when to begin parenthood is demonstrated to emerge from the perceived costs of childbearing along with contextual (e.g., marital status) and life course factors (e.g., age) that reflect reproductive life stage and childbearing readiness. Specifically, the childbearing decisions of men and women were found to be based on whether they had achieved certain life goals and the perceived impact childbearing could have on their lifestyle relevant to their current life stage (Chapters 2 & 3). How men and women perceive and overcome the potential costs of childbearing was shown to be linked to uncertainty reduction through nesting: the need to prepare for parenthood/the arrival of a child through the fulfilment of previously implemented preconditions (Chapter 3). Crucially, the importance placed upon the preconditions of parenthood was found to vary as a function of source and area of

uncertainty for that individual. For example, if the decision to enter parenthood elicited uncertainty within the public sphere (e.g., labour force participation, education), individuals were found to place more importance on the economic preconditions of parenthood. These findings support the Value of Children Theory (Friedman, et al., 1994) that proposes that all rational actors are motivated to reduce uncertainty in their lives and that in situations of uncertainty the course of action with the highest expected value in reducing that uncertainty is taken. Placing higher importance on the fulfilment of preconditions is therefore a presumed attempt by the individual to reduce the uncertainty elicited by the prospect of having a child in order to obtain or retain the optimal conditions for themselves and their child. Therefore, although it is evident from the current thesis that parenthood is a desired goal by the majority of people (Katz-Weise, Priess & Hyde, 2010), it is also a goal that appears to be considered only when other life goals have been realised and uncertainty has been reduced.

The conflict experienced in the trade off between family and alternative life goals has been attributed to be one of the primary causes of contemporary childbearing trends that show fluctuating fertility rates that are below replacement level (Frejka & Sobotka, 2008), an advanced age at first birth (Office of National Statistics (ONS), 2008) and an increase in the number of voluntarily childless people (ONS, 2007). These trends have been attributed to the preferences and behaviour of women only. However, the results of the current thesis demonstrate that men also experience conflict in the trade off between childbearing and alternative lives, and childbearing uncertainty. Further, although similarity was evident in the factors that were identified as influencing the preconception decision-making processes and behaviours of men and women (Chapter 2), important gender differences were identified. These are fundamental findings in terms of explaining contemporary fertility trends. For example, Chapter 2 found men to be more likely to

postpone childbearing until an older age compared to women. Such decisions made by men could make women involuntarily delay childbearing until an older age. Therefore, the childbearing preferences and behaviours of men could help account for why women are beginning parenthood at older ages. Furthermore, they could also help account for why more and more individuals are seeking assisted reproduction (Wyndham, Figueira & Patrizio, 2012). Men may delay childbearing until their partner's biological ability to conceive naturally is compromised as there is a steep decline in female fertility after the age of 34 (Bretherick, Fairbrother, Avila, Harbord & Robinson, 2010). Therefore, the childbearing preferences and behaviours of men may be influencing childbearing trends more than previously thought.

In contemporary society we are witnessing an ever-increasing shift in gender role attitudes. More and more men and women are approving of wives and mothers working along with the idea that men should help out around the home (Kaufman, 2000; Miller, 2011). However, the decreasing male breadwinner household has also resulted in some men viewing parenthood negatively as meaning more responsibility, obligation and less freedom (Jamieson, Milburn, Simpson & Wasoff, 2010). Consequently, although men are shown to want children and approve of gender equality, their commitment to childbearing and the accompanying responsibilities are shown to be low, remaining largely economic (Chapter 2; Miller, 2011). The results of the current thesis show men to be preparing for parenthood in much the same way as 50 years ago. Women continue to bear the majority of the household responsibilities (Office of National Statistics (ONS), 2003), making more compromises when it comes to parenthood compared to men. Therefore, it is of little surprise that the current thesis finds women to overall perceive higher costs to childbearing and experience more uncertainty in terms of the effects of childbearing to their economic independence. With men being shown to be reluctant to have increased

responsibilities within the home (Jamieson et al., 2010) and women being shown to be increasingly egalitarian, disagreement between spouses in terms of their roles within the family is likely to be increased. This disagreement could in turn negatively impact childbearing preferences and behaviour. Incompatibility between the childbearing preferences and behaviours of men and women are likely to be a source of uncertainty for men and women preparing the nest for the arrival of a child. Consequently, if compromise cannot be met between spouses it is likely that childbearing will be postponed until each spouse has fulfilled their life goals and reduced uncertainty in their lives. Furthermore, the disagreement that may arise as a result of men being reluctant to take on more responsibility within the family home may threaten marital stability, the very thing men desire to have in place before beginning parenthood.

Although the results of the current thesis demonstrate that childbearing goals could be jeopardised by the importance individuals place on the achievement of alternative life goals and the disagreement this may elicit between spouses, it is important that recognition is given to the results that show childbearing to be a time dependant process. The importance placed on the achievement of alternative to childbearing and the reduction of uncertainty in particular life domains (e.g., labour force) was found to be negatively associated with the individuals life stage (i.e., age) and childbearing success (i.e., duration of time trying to conceive). Thus over time, an individual's priorities change and more importance is placed on the project of having a child. Thus in line with the research reviewed in Chapter 2, results demonstrate that for men and women there comes a time when childbearing takes precedence over other alternative life goals and aspirations (Heaton et al., 1999). These results reassert childbearing to be a life goal desired by the majority of people in most countries (Kemes-Grottenthaler, 2003) and emphasises the need to ensure that parenthood goals are not jeopardised.

Male participation in childbearing research

There is evidence that men make important contributions to the decision of whether and when to begin parenthood. However, the available research is not only limited in number but also in terms of the representation of men because male participation rates in childbearing research are disproportionately low compared to sex ratio in the total population. The studies in this thesis are the first in the literature to provide a comprehensive, theoretical assessment of the determinants of male participation in childbearing research in addition to investigating effective ways of increasing male participation.

When given the opportunity to participate in childbearing research, men were consistently shown to actively choose not to participate. The ratio of female to male participation in Chapters 4 and 5 was 4:1 and 3:1 respectively. Further, the archival data used in Chapter 3 showed an overall 9:1 female to male participation rate. These results replicate previous research that shows the rate of male participation to be far lower than that of female and supports the proposal that men are active nonrespondents when it comes to participating in research (Rogelberg, Conway, Sederburg, Spitzmuller, Aziz & Knight, 2003). The use of the Theory of Planned Behaviour (TPB; Ajzen, 1991) in Chapter 4 provides specific insight into why men exclude themselves from childbearing research. The TPB is a well established theory of human motivation that states that the proximal determinant of behaviour (i.e., intentions) is dependent on the person's attitudes, subjective norms and perceived behavioural control. This was found to be the case in Chapter 4. Specifically, intentions to participate in childbearing research were determined by attitudes more than any other construct. This was the case for men and women. However, men were found to have significantly less favourable attitudes towards participation in childbearing research. Consequently, results suggest that lack of male

participation was due to their self exclusion from the research as a result of less favourable attitudes rather than being due to social change and researcher exclusion. In keeping with the proposal of the TPB (Ajzen, 1991) results from Chapter 4 therefore point to the modification of attitudes as being the mechanism that would most likely bring about intention and potentially behaviour change (Ajzen, 1991). Notwithstanding this, intentions to participate in childbearing research did not account for a significant amount of variance in childbearing research behaviour. Furthermore, goodness of fit statistics for the TPB model applied to the research behaviour of the total subsample were inconsistent. Consequently, the role of intentions as the proximal determinant of this behaviour was refuted. Moreover, because of the non-significant association between intentions and behaviour it is not clear whether the modification of attitudes as suggested by the TPB would be strong enough to elicit a change in behaviour. However, it should be noted that model tests were carried out only on people already willing to provide their email address for future research. Therefore, the intentions of the test sample may have been restricted.

The inclusion of factors beyond those specified by the TPB (i.e., distal factors) in Chapter 4, Part II were shown to add little to the TPB's predictive ability. Overall the distal factors accounted for 22% of the variance in intentions to participate in childbearing research. Further, their associations with intentions were partially or fully mediated by the TPB principal constructs attitudes and perceived behavioural control. Therefore, contrary to the results of Chapter 2, the results from Chapter 4, Part II refute the proposals for the inclusion of distal factors in the TPB model. However, in line with previous research, distal factors were shown to be important for the identification of critical target groups for behaviour change interventions (Bruijn Kremers, Van Mechelen, & Brug, 2005b). The inclusion of distal factors was found to provide important insight into how the TPB principal constructs were shaped by individual and contextual factors.

Variables reflecting life course, childbearing attributes and research attributes were clearly shown to contribute to understanding attitudes and intentions towards participation in childbearing research. Specifically, favourable attitudes and higher intentions were indicated to be shaped by factors reflecting pronatalism (e.g., desire for a child) and research orientation (e.g., education level). As such (non)response in childbearing research was shown to be determined by the perceived personal relevance of childbearing surveys to current life stage and childbearing readiness. The results therefore highlight that the childbearing research base is not only lacking the opinions of men but it is lacking the opinions of men for whom childbearing and research are of less interest and relevant to current life stage. Consequently, results highlight the importance of trying to establish effective ways of increasing the participation of this particular group of individuals i.e., men without children with less desire for a child and less interest in research. This would ensure their views were also represented in research and other endeavours based on this research.

From the results of Chapter 4 it is apparent that men will choose not to participate in childbearing research unless they know about the personal and wider benefits of participating (e.g., generalisable findings, provision of health services). In addition, results point to the need to encourage men to personally apply these benefits to themselves, regardless of whether or not childbearing is salient to their current life stage. This was partially demonstrated to be achieved through the implementation of a persuasive message aimed at increasing favourable attitudes, intentions and participation in childbearing research. Chapter 5 showed that the implementation of a persuasive message about the benefits of participating in childbearing research increased the perceived relevance of the behaviour. Men and women were found to rate participation in childbearing research to be more relevant to men than women after receiving the

persuasive message targeted at men, compared to when they received the general persuasive message (targeted at people) or received no message at all. Thus, findings show that framing information in a context that is meaningful to the target population is an effective way to increase the perceived relevance and positive perceptions of the behaviour (Kreuter, 1999). Notwithstanding this, the persuasive message was found to have no significant effect on attitudes, intentions and behaviour. The contents of the message may not have been strong or persuasive enough to elicit the translation of perceived relevance into attitude, intention and behaviour change. It is also likely that while men perceive the behaviour to be relevant they do not personally apply this relevance to themselves. Similarly to the results of Chapter 4, individual characteristics reflecting life stage and childbearing readiness are suggested to inhibit this process.

The results from Chapter 4 and 5 suggest that the men who are most likely to participate in the research on childbearing are those who are interested in the research subject (Groves, Cauldini & Couper, 1992). Overall the men participating at T1 in both studies had favourable attitudes and high intentions to participate. Further, although there was variance in the behaviour of those participating at T1 with a high proportion of men choosing not to participate at T2, it is arguable that in a population who had lower attitudes and intentions, attrition would have been significantly higher. Further, recruitment outcome in Chapters 4 and 5 showed that once the participation of men had been obtained it was largely retained and similar to women's throughout the different phases of the research. Although male participation rates were significantly lower than women's at T2, the results showed the highest discrepancy in the participation rates of men and women to be at the initial recruitment stage of the research. Consequently, results suggest that more needs to be done in terms of attracting men to the research on childbearing. This could potentially be done by encouraging men to not only perceive

participation in childbearing research as relevant to men but by encouraging men to personally apply this relevance to themselves regardless of whether or not childbearing is salient in their lives.

Theoretical considerations

The results from the current thesis show the decision of whether and when to begin parenthood to be a complex time dependent process influenced by individual, social and environmental factors. Results support the proposition put forward by Myers (1997) that no single theory of childbearing is adequate in terms of its ability to explain and capture the complexity involved in childbearing preferences and behaviour.

The decisions regarding childbearing are dynamic. They depend on psychological, social, economic and demographic factors. The Theory of Planned Behaviour (Ajzen, 1991) is one of the most widely used theoretical frameworks in psychological research on childbearing. Results from Chapter 2 showed the theory to be adequate in terms of its ability to predict individual behaviour from intentions but it was unable to capture how environmental (e.g., a higher number of siblings) and individual characteristics (e.g., age, personality) influenced the constructs of intentions and behaviour. Ajzen (1991) acknowledges that these distal factors may contribute to a given behaviour but their influence is thought to be primarily indirect, operating through the three principal constructs attitudes, subjective norms and perceived behavioural control (Fishbein, 2000). However, findings from Chapter 2 showed the distal factors to play important roles in predicting childbearing intentions and behaviour directly. The limited number of constructs in the TPB is therefore highlighted as being a potential problem when predicting and explaining childbearing intentions and behaviour because the direct

influence of numerous important factors is not acknowledged in the motivational sequence.

Paradoxically, the validity of using extended formulations of the TPB, such as Miller's theory of childbearing (Miller, 1994) to explain childbearing preferences and behaviours is reinforced. Extended formulations of the TPB have generally highlighted the limited nature/number of the constructs included in the TPB and have therefore added additional distal factors to try and increase its predictive ability (Barber, 2001; Miller, 1994). The extended formulations of the TPB (e.g., Miller, 1994) are demonstrated to provide a more encompassing picture of the factors that influence and determine childbearing preferences and behaviour (Chapter 2). This is likely to be due to these theories being developed and employed to specifically explain childbearing behaviour. While extended formulations of the TPB provide more insight into the various factors impacting childbearing, they provide little insight into why the factors have the influence they have. The question of why is demonstrated to be adequately answered by the Value of Children Theory (Friedman, Hecter & Kanazawa, 1994) in Chapter 3. This economic theory encompasses the potential individual and environmental influences on childbearing. It examines the decisions made by individuals and attempts to explain why they were made. Childbearing behaviour is proposed by the Value of Children Theory to be the result of rational actors seeking to reduce uncertainty in their lives (Friedman et al., 1994). The source of this uncertainty is demonstrated to be adequately traceable through survey research in the current thesis (Chapter 3) and previous research. For example, postponement of childbearing has been linked to the perceived uncertainty of the effect of childbearing to one's participation in the labour force, particularly for women (Miettinen & Paajanen, 2005). Further, uncertainty about one's ability to be able to meet the financial demands of children has been linked to individuals placing more importance on

the achievement of economic preconditions (e.g., regarding income and employment stability to be important) before beginning parenthood (Chapter 3; Friedman et al., 1994).

The ability of the TPB to accurately predict behaviour from intentions was brought into question in Chapter 4. The proposition that intentions are the proximal determinant of behaviour was refuted by the results in Chapter 4 as intentions only accounted for 1% of the variance in research behaviour. Further, less than half of the variance in intentions towards participation in childbearing research was accounted for by the principal constructs attitudes, subjective norms and perceived behavioural control. Therefore in line with previous research and Chapter 2, results suggest that the inclusion of distal factors is necessary to increase the predictive ability of TPB and provide a more encompassing picture of the behaviour under investigation (e.g., Jackson, Smith & Connor, 2003; Bruijn, Kremers, Mcchelen & Burg, 2005a; 2005b). However, in contrast to the results from previous research and Chapter 2, the inclusion of distal factors in Chapter 4 Part II were found to add little to the TPBs ability to accurately predict intentions to participate in childbearing research. Notwithstanding this, the inclusion of distal factors was found to add important insight into whom and what could be the target of behaviour change interventions aimed to increase participation in childbearing research. Further, the distal factors examined in Chapter 4 could have been too similar to the TPB principal constructs (particularly attitudes and perceived behavioural control) and thus this could explain why they failed to have a direct relationship with intentions and to be in line with the results of Chapter 2.

The employment of the TPB model in Chapter 4 was nonetheless found to be effective in terms of its ability to identify the target construct of modification for behaviour change interventions. Attitudes were found to consistently have the highest relative weight in the intention behaviour relationship. Thus, changing attitudes was

highlighted to be the mechanism that would most likely elicit intention (and potentially behaviour) change. This finding is fundamental to the research trying to increase male participation in childbearing research specifically and in research in general. Although the employment of the TPB is an effective way of identifying the construct/s for change, it is limited in terms of its ability to delineate how to change the construct/s (attitudes in the case of participation in childbearing research) and bring about intention and behaviour change. As a result, the ELM (Cacioppo & Petty, 1981) was employed in Chapter 5 to examine whether attitude, intention and research behaviour change could be elicited through persuasive messaging.

Most of the research on increasing participation in surveys focuses on the persuasive effect of the provision of incentives (e.g., payment; Church, 1993; Bentley & Thacker, 2004). Persuasive messages have rarely been used to try and increase survey response (Couper & Groves, 1991). Furthermore, seldom has the research on survey (non)response been conducted with a theoretical paradigm and thus the effectiveness of such interventions cannot be reliably judged. Accordingly, Chapter 5 made important advances on previous research by using the Elaboration Likelihood Model (ELM; Petty & Cacioppo, 1986) to theoretically drive the development and implementation of a persuasive message. However, results from Chapter 5 question the applicability and validity of the employment of ELM in the childbearing context. The ELM proposes that attitude change is likely to occur if the message is processed centrally by the individual. Central processing requires the individual to engage in thoughtful deliberation about the arguments desirability and the feasibility of the suggested behaviour (Crano & Prislin, 2006) while attending to the message. This process is largely determined by the perceived relevance of the message (i.e., motivation) and the recipient's ability to comprehend the meaning of the message (i.e., ability). The results of Chapter 5 show the persuasive

message that was developed in accordance with the recommendations of the ELM to have little effect on attitudes, intentions and research behaviour. Therefore, the ELM is suggested to be unsuccessful for delineating change in the childbearing context.

Notwithstanding this, the ELM would argue that attitude change failed to occur because central processing was not elicited by the message (Cacioppo & Petty, 1980). As such, the ELM potentially accounts for why the increase in the perceived relevance of participation in childbearing research for men and women did not translate into attitude, intention and behaviour change. Any effect of the persuasive message would have been short lived as a result of peripheral processing. Although lack of condition effects could be explained by the fact that the persuasive message was processed peripherally, overall the ELM fails to provide alternative explanations as to why the persuasive message may not have had the desired effect (Eagly & Chaiken, 1993) and why perceived relevance did not translate into attitude, intention and behaviour change. This is of particular relevance to the research on persuasive messaging in the current thesis. The ELM overlooks the potential effects individual characteristics (e.g., age, gender) could have on message processing (Underwood & Shaughnessy, 1975) in addition to failing to explain why the message arguments may have been too weak. Results gathered using the ELM simply describe what occurred i.e., the message failed to be processed centrally. Previous research has reduced the impact of this limitation by including survey or experimental measures that examine the circumstances under which the persuasion occurs. For example, research on persuasion with the employment of the ELM has measured level of ability and motivation (Chebat, Gelinac-Chebat, Hombourger & Woodside, 2003), distraction (Petty, Wells & Brock, 1976) and individual differences such as need for cognition (Cacioppo, Petty & Morris, 1983) in addition to route of processing. These

measures provide further insight into the way messages are processed and the circumstances under which message processing occurs.

The TPB, the childbearing theory put forward by Miller (1994) the Value of Children Theory (Friedman et al, 1994) and the ELM (Petty & Cacioppo, 1986) all provide insight into the childbearing preferences and behaviour of men and women in addition to highlighting effective ways of generating behaviour change. Moreover, the theories provide insight into how individual, environmental and social factors may contribute to contemporary reproductive trends. However, in order to get an all encompassing picture of childbearing preferences and behaviours the theories have to be used in conjunction with one another. This may be the outcome of the employment of theories that were not specifically designed to examine preferences and behaviour in the childbearing context (i.e., TPB, ELM). The development of an interdisciplinary childbearing model is therefore a promising strategy to capture the complexity of the childbearing process. An interdisciplinary model would acknowledge and capture the numerous demographic, individual, environmental and social determinants of childbearing that have been highlighted to be important by the current set of studies. Furthermore, with the available childbearing theories being developed and tested primarily on women, an interdisciplinary model developed from the perspectives of men and women could provide more insight into male childbearing preferences and behaviours in addition to explicitly incorporating a gender perspective into the research on childbearing.

Key methodological Issues

Through the completion of the set of studies presented in this thesis two common methodological issues arose. The first is in regards to sampling issues and the second is in regards to research design. Both methodological issues warrant further discussion.

Sampling issues

The major methodological weaknesses of the research presented in this thesis were sampling issues. Having a representative sample is an important consideration when conducting research (Heiman, 1999). If the characteristics and behaviours of the respondents are not accurate reflections of those found in the general population of interest, potential biases may impact on assumptions or conclusions drawn. Gaining a representative sample is however very difficult and in most cases costly.

In the present set of studies recruiting men was incredibly difficult. This difficulty was also demonstrated by the archival data used in Chapter 3. The International Fertility Decision Making Study (IFDMS; Bunting, Tsibulsky & Boivin, 2012) was a large scale international study of childbearing decision-making that used numerous recruitment methods across a number of different countries (Bunting, Tsibulsky & Boivin, 2012). Recruitment methods were designed to meet one of the primary aims of the survey which was to recruit men. However, despite these significant efforts the ratio of female to male participation was 9:1. There was a similar lack of success in the set of studies carried out in this thesis. A poor response rate of men in Chapter 4 lead to numerous universities being contacted during the development of the survey used in Chapter 5 to ask for their assistance in getting the survey more widely distributed. Further, numerous University departments other than psychology were contacted to try and increase the number of male respondents and the representativeness of the sample. These efforts were however

somewhat unsuccessful as the ratio of female to male participation was 3:1. The requests sent to some of these universities/departments were, on a few occasions, dismissed on the basis of the perceived irrelevance of childbearing research to the interests of their mainly male students and staff (e.g., business and economics). Such decisions may act as actual constraints (i.e., low behavioural control) for men because men are not given the opportunity to decide whether or not to participate (Ajzen, 1991).

The lower rates of male participation in Chapters 4 and 5 brings into question sample representativeness and generalisability of the findings. For Chapters 4 and 5 men and women were recruited from universities. Recruiting men and women from universities across England and Wales increased the likelihood that the findings would be nationally representative. Furthermore, findings from Chapter 5 replicated those of Chapter 4 (e.g., men had significantly less favourable attitudes towards participation in childbearing research). However the conclusions drawn from academic samples may not be applicable to individuals beyond the university setting. The studies in Chapters 4 and 5 did not provide data on the socio-economic status of the respondents and it is not known whether the respondents were representative of different socioeconomic categories or other important demographic characteristics (e.g., country of origin) that might have impacted on findings. Future research should therefore look to further validate the findings by conducting the research beyond the university setting, across countries and across populations from different socio-economic backgrounds.

Another sampling issue concerns the size of the subsamples used for data analysis in Chapters 4 and 5. This was of particular concern in Chapter 4. Investigation into whether or not the Theory of Planned Behaviour accounted for the variation in research behaviour of men and women was carried out on the 288 respondents who participated at T1 and left their email address. When broken down according to gender only 49 of the

sample population who had the opportunity to participate at T2 were male. This is problematic for structural equation modelling (SEM) as although the recommended total sample size of 200 was achieved the unequal samples of men and women may have caused problems for the analysis of invariance across gender. Although the implications of having unequal sample sizes for invariance analysis are not widely understood (Byrne, 2001), unequal samples are likely to reduce the validity of the results and the reliability of the fit statistics generated. Additionally, only 17 men actually participated at T2. Consequently, the small sample of men may have resulted in a lack of statistical power. This could help account for why the principal construct of the TPB (i.e., intentions) did not explain a significant proportion of the variance in research behaviour.

Sampling issues were also evident in the systematic review presented in Chapter 2. For example, the majority of the included studies sampled men and women who were white, highly educated and had good socio-economic stability. Additionally, high dropout rates reduced sample diversity further as most of the studies reviewed found underprivileged, African American and Hispanic individuals were more likely to drop out (e.g., Liefbroer, 2005; Myers, 1997). The lack of variability in sample characteristics may have been exacerbated by the fact that the review was conducted on quantitative research only. The qualitative research that was excluded tended to be more cross culturally diverse, with a high proportion of studies being conducted in less well developed countries.

Design issues

Chapters 4 and 5 were prospective in nature and while this is a more reliable technique for assessing cause and effect the survey interval periods may have impacted on the results obtained. The TPB recommends a minimum period of three months

between assessments of attitudes, subjective norms, perceived behavioural control, intentions and behaviour (Ajzen, 2006). However, this interval period may have been too long for the examination into whether changes in research behaviour occurred. Previous research examining the predictive ability of the TPB has generally used self report measures to capture behaviour change after a three month interval period (e.g., Armitage, 2005). This research has found that behaviour can be reliably predicted using the TPB. However, Chapter 4 demonstrates that the TPB was unable to accurately account for variation in research behaviour. The total amount of variance in research behaviour accounted for by the TPB constructs was only 1%. This may have been larger if the constructs were measured at closer time points or if the same time points were used but self report measures were employed instead of observing actual behaviour change. However, a longer period of time between the surveys may have also allowed for more variance in behaviour to be captured. Furthermore, because only those who were interested in participating in childbearing research were sampled at T2 the TPB constructs may have been less relevant than if the entire T1 sample had been invited to participate.

The interval period for the survey in Chapter 5 was only two weeks which may have been too short a period of time. The respondents may not have participated at T2 due to perceiving the survey to be the same one that they had already completed. Two weeks is arguably too short a period to accurately measure behaviour change according to the recommendations specified by the TPB. However, the literature on persuasive communication proposes that it is a reliable time frame for measuring whether the implementation of a persuasive message changes attitudes. Attitude change is overall relatively short lived (Petty & Cacioppo, 1986) and thus, in order to capture attitude change, surveys have to be implemented shortly after exposure to the persuasive communication. In contrast to TPB research, persuasive research generally involves

respondents completing attitude scales before and immediately after the implementation of the persuasive communication (Withers, Twigg, Wetheim & Paxton, 2002). Although an effective way to assess short term attitude change, this method does not control for the respondents being able to remember and replicate their initial responses. Thus, having a two week interval between the measurements of attitudes and intentions ensured that the respondents did not provide the exact same answers they gave at T1. Furthermore, two weeks was considered short enough to capture short-lived (peripheral processing) and longer lasting (central processing) attitude change.

Another methodological issue evident in Chapter 4 is that only the email addresses from individuals willing to receive information about future surveys were collected at T1. This meant that not all the respondents had the opportunity to participate at T2. This could have reduced the power of the statistical analysis and could account for why no significant association was found between intentions and research behaviour. Consequently, selection bias (i.e., selecting only those who left their email address) could have given rise to restriction of range on intentions due to those leaving their email address having significantly higher intentions. Individuals who were not given the opportunity to participate due to not leaving their email address may have participated if they were given the opportunity to do so. Nonetheless, allowing individuals to voluntarily leave their email address granted a measure of behavioural intention to be obtained for T1. Further, in Chapter 5 all the respondents were asked to leave their email address as a form of consent but response rates were similar to those in Chapter 4. This suggests that little difference would have been found if all the respondents had had the opportunity to participate at T2.

A methodological problem that could have affected recruitment for Chapters 4 and 5 concerns the word 'childbearing'. Respondents were invited to participate in

research on ‘childbearing’. This may have deterred men from participating in the research. Childbearing is defined as the process of giving birth to a child (Treffry, 2001). However, in this thesis childbearing referred to the decisions surrounding and the actions of trying to conceive, achieve a pregnancy or father a child, as is customarily used in fertility research (e.g., Barber, 2001). Words are open to subjective interpretation and consequently the respondents’ interpretation may not have been synonymous with the researchers’ interpretation. Although an explanation of what the researchers meant by childbearing was provided in the survey information sheet (e.g., ‘by childbearing we mean...’), this came after the respondents took an action to receive more information about the study. Providing an interpretation of what the word childbearing meant at an earlier stage (e.g., in the recruitment email) could have potentially resulted in a higher number of men participating in the research.

Whether the interpretation of the word childbearing may have had an impact on the participation of men was examined by carrying out a post-hoc survey. Men and women were invited to take part in a five-minute online survey that asked them to write what the word childbearing meant to them (see Appendix S). Additionally, respondents were asked to provide background information about themselves (e.g., age, marital status, whether they had given birth/fathered a child). More women ($n=17$) than men ($n=13$) participated in the survey. Of the men participating four (30.8%) did not associate childbearing with female characteristics or behaviours. These men referred to childbearing as being the choices surrounding the parenthood decision and the responsibilities of having children, for example:

“Childbearing is the choices made with regard to having children, particularly those made when in a couple between a future father and mother or even a same sex relationship. For example, age to start having children is a key choice - in relation to this” (Male, 26, married/cohabiting, fathered a child).

“Responsibility, hard work, selflessness, increasing the already too big global population” (Male, 27, married/cohabiting, no child).

For the other nine men (69.2%), the word childbearing was associated with female characteristics and behaviours such as being pregnant or giving birth to a child, for example:

“Childbearing means to give birth or the action of giving birth”
(Male, 31, single, no child).

“Bearing a child. The 9 months prior to birth”
(Male, 25, married/cohabiting, no child).

“For me it is a Dickensian word with a modern meaning of 'fertile'. I suppose what it really means is 'pregnant' It is not a word I ever hear anymore and is very out-dated” (Male, 40, single, no child).

“Someone who is pregnant” (Male, 30, married/cohabiting, partner was pregnant).

Women were more likely than men to attach female connotations to the word childbearing, for example:

“The process of carrying a foetus to term and giving birth”
(Female, 25, single, no child).

“It means having a child, possibly the best and most important thing I’ll ever do. It also means massive changes to my body, putting on weight. It feels like a very medical term and makes me think of hospitals and procedures” (Female, 30, married/cohabiting, no child).

“Capable of being pregnant and giving birth to an infant”
(Female, 26, married/cohabiting, no child).

“Being pregnant, having a child inside you” (Female, 30, married/cohabiting, currently pregnant).

Only two (11.8%) of the 17 women who participated did not attach a gender specific meaning to the word childbearing:

“Having a child/starting a family” (Female, 36, married/cohabiting, no child).

“Having children, and all the positive (mainly!) aspects of that” (Female, 28, single, no child).

Results from the pilot study therefore suggest that compared to men, women were more likely to associate the word childbearing with female characteristics and behaviours. However, approximately half of the men did attach female connotations to the word. Interpretation of the word childbearing could therefore be an explanation as to why men participated less than women in Chapter 4 and 5. Nonetheless, previous research using the same recruitment methods and sample population as those used in Chapter 4 but using ‘starting families’ as the research topic instead of ‘childbearing’ was found to result in a very similar recruitment outcome (Kalebic, 2012). Kalebic (2012) examined factors influencing the decision to start a family among Cardiff University students and staff and found more women ($n=945$) than men ($n=185$) participated. Consequently, these results suggest that recruitment emails without the word childbearing being used would also result in a higher proportion of women participating in the research than men. However, more qualitative research needs to be conducted on the meaning of words used to refer to fertility and parenting to men and women to be confident that the word childbearing did and does not have an impact on the participation rates of men in childbearing research.

Methodological issues were also present in the studies included in the systematic review (Chapter 2). Overall, there were very few prospective studies. Consequently, although causality is established, this is restricted to a small number of studies ($n=11$). Furthermore, the majority of the studies in the review were initiated in the 1980s.

Therefore, it is not clear whether or not the findings are applicable to contemporary childbearing behaviour. The childbearing preferences and behaviours of men and women were gathered using surveys that were somewhat outdated in terms of the applicability of the items measuring lifestyle choices because though recently published, they were using archival data collected primarily during the 1980s or early 1990s. For example, Barber (2001) initiated data collection in 1980 and in assessing attitudes towards competing alternatives to childbearing asked respondents to rate how important seven items were. The seven items included 'a colour television and a high quality stereo'. These items are outdated (as the majority of people today have at least one of these items), particularly when considering the study was conducted in America, a well-developed country. When making conclusions about the childbearing preferences and behaviours of men and women from the results of these studies, caution should be taken in terms of their applicability to contemporary childbearing preferences and behaviour. Another methodological issue that became evident when reviewing the literature on childbearing preferences and behaviour was to do with construct measurement. Where studies differed in discipline, so did measurement methods and thus comparability of results obtained was complex due to the heterogeneity of the research.

The cross-sectional design of the International Fertility Decision Making Study (IFDMS; Bunting, et al., 2012) also poses problems for interpretation of results because cause and effect cannot be reliably established. Although results suggest contextual and individual factors influence the importance of the preconditions of parenthood, it is equally possible that having parenthood preconditions influence contextual and individual factors. For example, the results from Chapter 3 showed economic preconditions were considered more important to highly educated individuals with employment. However, it is feasible that having economic preconditions increases the importance of high education

and employment. Additionally, the preconditions were composite variables computed from a number of items (e.g., finishing education, being personally ready). These items were rated by the respondents in terms of their importance when deciding to begin parenthood. With the respondents in the survey all currently trying to conceive, the importance of these factors may have been considered retrospectively (i.e., how important they were prior to actively trying) by the respondents. Consequently, the results for the importance attached to the preconditions of parenthood from Chapter 3 may be more representative to individuals who have not yet begun to actively try to conceive rather than to individuals who are currently trying to conceive.

Future research

Several issues arising from the present research warrant further investigation. It is clear from the results obtained by the current set of studies that research on identifying the best way to recruit men into research needs to continue. Future research attempting to increase the participation of men in childbearing research should examine whether the effect of persuasive messages can be improved by changing when and the way in which the message is presented. In Chapter 5, the persuasive message was presented towards the end of the first survey. However, the largest discrepancy between the participation rates of men and women was evident at the initial recruitment stage of the study. Consequently, the implementation of a persuasive message may have been more effective if presented during the recruitment stage of the study. With the results from Chapters 4 and 5 showing that people are more likely to respond to survey requests when they are of personal interest, it is important to try and recruit those for whom childbearing is not of personal interest. This could potentially be done by implementing persuasive messages at the initial stage of recruitment. This would expose all individuals to the persuasive message

and not just individuals who are already more likely to participate. Further, presenting the persuasive message at the same time as the survey request would increase the likelihood that the message salience is not demised over time. In line with this, it is important to understand what study advert/s men would respond to. Developing the post-hoc research on what the word childbearing means to men and women further would be an important part of this research. This would allow a more reliable in-depth analysis into whether the word childbearing acts as a deterrent for men when it comes to participating in the research. Additionally, focus groups could be conducted with men to discuss what words other than childbearing could be used at the initial recruitment stage of research on childbearing. Such focus group discussions would provide insight into what words men would be most attracted and likely to respond to. Further, this could lead to research examining the effectiveness of changing the word childbearing to those gathered from focus group discussions. This would allow examination into whether or not these connotations of childbearing actually increase the participation rates of men.

Future research also needs to focus on implementing the persuasive messages in different populations to examine further the effect of the persuasive message according to relevance of childbearing and research to current life stage and reproductive readiness. This would enable one to achieve a more complete picture of whether persuasive messages would be more or less effective at different life stages (e.g., age, parity, marital status). Further qualitative data gathered before and during the development of the persuasive message would enable persuasive messages to be adapted to the needs and interests of particular groups of men. The results from such research would provide insight into whether or not targeted fertility information to different populations at different stages of life would be necessary in order to disseminate the importance of participation in childbearing research. Further, such results could provide important

insight into effective ways of enhancing fertility related knowledge and increasing the participation of men (and women) in childbearing research and reproductive health services. The current thesis demonstrates that men may not regard fertility information as applicable to them if they are not yet thinking about starting a family. Therefore publicising the importance of men thinking about childbearing at all stages of life could ensure that the future childbearing plans of men and women are realised. For this reason, future research should also investigate optimum ways in which information and education concerning fertility issues could be targeted at populations at different life stages. Only by investigating how this information is processed at different ages and different life stages will it be possible to ascertain the best possible ways to educate people about these issues.

Perhaps an area of future research that should be conducted prior to research on how to increase male participation in childbearing research concerns why men seem to be lagging behind in terms of gender role change. From the results obtained from the current set of studies it is evident that men want children but they continue to regard their role in childbearing to be that of the male breadwinner. Men are preparing for parenthood in much the same way as 50 years ago. The reasons for this are not clear. However, what is clear is that with increased egalitarian gender roles in society, it is unlikely that men can continue to have such a narrow role within the family. Therefore future psychological research needs to examine the reasons why the traditional male gender role is still regarded to be important. Previous research has suggested that the societal limitations impact on male involvement in family responsibilities. For example, Miller (2011) in examining men's narratives and practices around first time fatherhood, found men to perceive and want more involvement in child care responsibilities. However, childbearing policies (i.e., paternity leave) limit the amount of time men can actually spend with their families and reinsert normative gender behaviours (Miller, 2011). Consequently, future

qualitative research should continue to examine the childbearing intentions and behaviours of men in order to gain a clearer understanding of their childbearing preferences and behaviours, in addition to ensuring that childbearing policies support the values, intentions and behaviours of men (Marsiglio, 1991). Such research should concentrate on how men perceive their roles and responsibilities in childbearing, in addition to how society shapes masculinity (Marsiglio, 1991). Such research could potentially provide additional fundamental insight into how men see themselves as procreative beings. This in turn could help us gain a clearer understanding of why men have lower participation rates in this specific field of health research as it is likely that their lack of commitment (intentional or not) to childbearing beyond that of breadwinner is impacting their participation in corresponding research. In order to gain a clearer understanding of whether or not gender role orientation impacts male participation in research, future research should also incorporate literature reviews of male participation rates in research in general not just participation in childbearing research. For example, such research would provide important insight into whether or not male participation rates are lower in all areas of research or confined to research that is female orientated.

Further, gathering couple level data on childbearing preferences and behaviour with a particular emphasis given to gender role orientations could provide insight into how spouses negate gender roles within the family and how these roles influence couple communication and decision-making in the context of childbearing. Such research could help harmonise the childbearing preferences and behaviours of men and women and thus ensure that childbearing goals are not jeopardised..

Implications

The research presented in this thesis showed men overall wanted to be fathers but did not want to be involved beyond being the breadwinner of the family. Men were shown to strive towards the fulfilment of traditional pronatalist environments in which to have a child. However, if men continue to see their role within the family to be that of the breadwinner, as egalitarian gender roles in society increase, couple disagreement is also likely to increase. This has implications for the childbearing goals of men and women as disagreement between spouses is likely to decrease marital/partnership stability and increase the likelihood of marital dissolution – a core deciding factor in their decisions to start a family. Furthermore, disagreement between spouses in terms of childbearing preferences has been shown to decrease the likelihood of entering into parenthood (Miller & Pasta, 1996). Therefore public health campaigns need to raise awareness that childbearing is not only an issue that affects women. Raising awareness could encourage men to take on more of an integrated role within the family. Notwithstanding this, the only way such public health campaigns can be successful is to carry out research with men. From the current thesis, this is evident to be the big practical obstacle because men choose not to participate in childbearing research. With previous research showing men to have lower levels of fertility knowledge, the lack of male participation in the research on childbearing may however be a result of men not implementing fully informed decisions. Therefore, although men cannot be forced to participate in the research on childbearing, educating them about fertility in addition to highlighting the benefits of participating in reproductive health services and research on childbearing would ensure their future decisions regarding these matters are fully informed. This in turn would add to our understanding of why men have low participation rates in this specific area of health research.

The present research has highlighted the decisions of whether and when to begin parenthood to be complex processes dependent on the perceived costs of childbearing. The decision to enter parenthood is suggested to depend on whether other life goals have been met (e.g., education, career) and whether the individual perceives themselves to have the optimal conditions (e.g., stable relationship, marriage, economic stability) in which to have and rear a child (Chapter 3). The desire to achieve alternative lifestyle goals prior to childbearing poses problems because striving towards the achievements of these goals or perceiving them to be important, may make people delay childbearing until such a time when their fertility may be compromised. These findings suggest that more education and awareness is needed so that people can be encouraged in a non coercive way to meet their childbearing goals in addition to other life plans. Education would allow individuals to consider their life goals and how they may impact on their childbearing preferences and behaviour. This would ensure that individuals have the necessary information and knowledge to make informed decisions about their childbearing careers. Raising awareness could additionally contribute to helping couples to be more realistic about the time and effort needed to prepare the nest for the arrival of a child. When raising awareness and educating individuals about how factors and life goals may impact the decision to start a family, health professionals need to include men as well as women in addition to acknowledging individual differences (e.g., current life stage, reproductive readiness). Further, individuals could be encouraged to consider their childbearing preferences and behaviours in relation to their partners. This could encourage effective couple communication and ensure that the decisions of one member of the couple does not impact negatively on the childbearing preferences and behaviours of the other. For example, if a man chooses to delay childbearing he may do so up until a point when his partner's age acts as a constraint on her ability to conceive naturally.

Public health campaigns need to begin concentrating on what would be effective techniques to disseminate education and awareness about fertility to men (and women). Professionals need to understand the complexity of issues and factors surrounding the decisions of whether and when to begin parenthood and know how these impact on individuals choices when it comes to their decisions. The majority of work regarding public health campaigns and education about fertility issues focus on areas such as preventing teenage pregnancy or sexually transmitted diseases. This is the case particularly for men. There is a pressing need for a balance to be achieved so that issues regarding the lifestyle choices of men and women, how they may impact childbearing behaviour and possibly cause people to jeopardise parenthood goals, can be incorporated. However, presenting men with information or trying to increase their incorporation in health services may not be a simple process. For example, Chapter 5 shows that the presentation of information that was thought to resonate with men had little effect on the attitudes, intentions and behaviour of men. This may have been the result of the information being perceived to be irrelevant to men due to their current life stage and childbearing readiness. Information may not be personally used until men are personally ready to have children or until childbearing becomes more salient (Agadjanian, 2002). Health professionals and policy makers trying to educate, increase awareness and incorporate men into reproductive health services and research therefore need to consider whether there is a critical period or age at which the presentation of information may be the most effective.

The available research on childbearing is likely to be more reflective of the attitudes and opinions of women rather than men due to the female orientated approach to research and the lack of male participation. This has implications for the development of childbearing policies. The conclusions drawn from research on childbearing have the

ability to inform the development of corresponding policies. Consequently, policies are likely to be developed primarily for and reflect the needs of women. The results from the current thesis demonstrate that it is important that childbearing policies reflect the needs, attitudes, opinions and behaviours of men as well as women. For example, findings highlight that men continue to see themselves primarily as the breadwinner of the family. This could in part be due to childbearing policies excluding men from the childbearing process and thus reasserting traditional gender roles (Miller, 2011). For example, paternity leave is limited to two weeks which restricts the amount of time men can spend at home after the birth of their child. Therefore, the male family role is less integrated which has been found to effect their involvement and bond with their child (Tanaka & Waldfogel, 2007). Furthermore, having only two weeks leave from employment after the birth of a child may place more stress on the woman. After paternity leave has ceased, the responsibilities of looking after the child are left primarily to women. Consequently, although increased gender equity in the labour force has encouraged more egalitarian gender roles, women continue to bear most of the childcare responsibilities as childbearing policies continue to reflect traditionalism (Marsiglio, 1991; Miller, 2011). The reformulation of childbearing policies is thus a possible necessity in order for them to reflect the needs and interests of men and women and the changes in society. This could also encourage the dissolution of the male role as the breadwinner by encouraging the attitudes and behaviours of men to progress. In turn, changes in childbearing policies could decrease the likelihood of couple disagreement in terms of their roles in the family and thus have positive effects on contemporary childbearing behaviour.

The asymmetry in the participation rates of men and women are not restricted to the research on childbearing. Other areas of research including research on depression (Siegel, Alvaro, Crano, Lienenmann, Hohman & O'Brien, 2012) and stress and eating

habits (Louis, Chan & Greenbaum, 2009) also show men to participate less than women. Consequently, the findings from this thesis have potential implications for research across a variety of different subjects. If other areas of research are consistently found to show similar participation rates, it is likely that they too do not have a good research base when it comes to understanding male attitudes, opinions and behaviour. Thus, conclusion drawn from such research may also apply more to the attitudes and behaviours of women, or particular groups of men. Consequently, establishing effective ways to increase male participation in research would be of benefit to all research not only research on childbearing.

Conclusion

The present research comes at a time when the importance of including men in reproductive and childbearing issues is becoming increasingly evident. With the childbearing preferences and behaviours of men remaining largely traditional, this research demonstrates the increasing need to raise awareness that childbearing is an issue that affects men as well as women. Re-educating men to have more of an integrated role in family life is likely to positively impact childbearing trends in addition to increasing male participation in reproductive health services and childbearing research. Therefore, the research presented in this thesis could provide fundamental groundwork for the development of public health campaigns to disseminate the importance of the male role in childbearing and maintain the development of effective ways to increase male participation in childbearing research as an important issue that warrants continued investigation. The establishment of methods to recruit men into the research on childbearing would help generate a contemporary picture of the childbearing preferences and behaviours of men in addition to identifying unmet needs in research and policy.

Ultimately, the research presented in this thesis proposes that the future of childbearing research should be centred on providing men with the information they need to make informed choices about participation in childbearing research and all aspects of their own childbearing careers.

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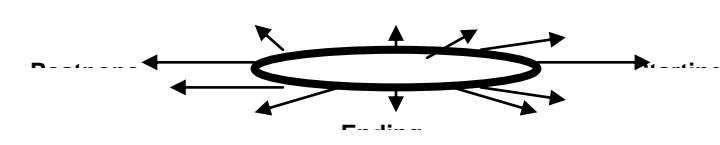
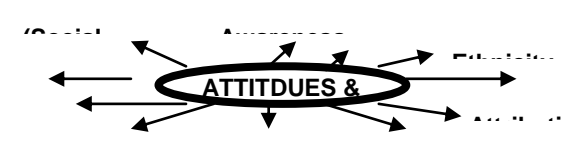
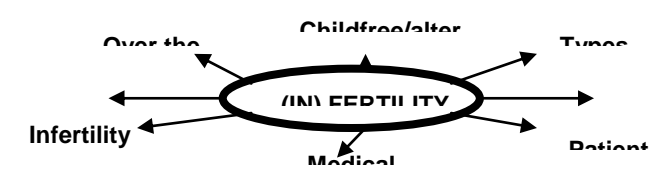
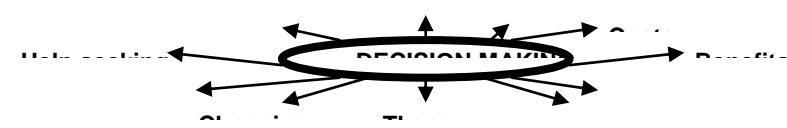
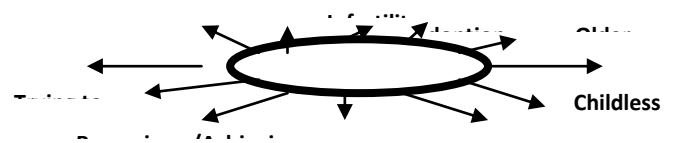
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Appendices

Appendix A: Inclusion exclusion criteria

Inclusion Criteria Paper included if it meets all of the following:	Exclusion Criteria Paper excluded if it meets any of the following:
<ol style="list-style-type: none"> 1. Examines a relationship between drivers and childbearing outcomes such as likelihood of first birth. 2. Prospective or cross-sectional study 3. Quantitative data 4. Where mixed samples (i.e., different parity groups) analysis for parity 0 is separate 4: Includes a sample of men and carries out gender analysis 	<ol style="list-style-type: none"> 1. Concerns teenage pregnancy 2. Concerns abortion 3. Concerns reproductive decision-making after illness or use of specialist fertility treatments 4. Concerns family size or completed family size 5. Concerns birth spacing 6. Concerns the desire for more children (i.e. not first birth) 7. Theory paper, summary, chapter that does not include primary data 8. Focuses solely on qualitative data (e.g. interviews and focus groups with no quantitative analysis) i.e. narrative analysis 9. Does not examine the relationship between drivers and outcomes. 10. Retrospective studies (e.g. after birth has occurred and parents are reflecting back on their drivers or intentions), unless they are also cross-sectional and use comparison groups. 11. Studies including only women

Appendix B: Search terms



Appendix C: Search strategy

Medline	Results
# ▲ Searches	
11 ((parenthood or fatherhood or motherhood) adj2 (intent\$ or start\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or costs or benefits or barrier\$ or choos\$ or choice\$ or beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$ or optimal condition\$1)).tw.	279
12 (Childbearing adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$)).ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	276
13 (childbearing adj2 (beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1)).ti,ab.	74
14 (Childless\$ adj2 (intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or preference\$ or costs or benefit\$ or barrier\$ or choose or choice)).ti,ab.	35
15 (childless\$ adj2 (beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1 or costs or benefit\$ or barrier\$ or choose or choice\$)).ti,ab.	12
16 (becom\$ pregnant adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$)).ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	134
17 (Reproductive behavior/ or pregnancy/px) and (marriage/ or time factors/ or maternal age/ or paternal age/ or religion/ or career choice/ or "Costs and Cost Analysis"/)	218
18 (Reproductive behavio?r and (marriage or time factors or maternal age or paternal age or religion or career choice or Costs)).ti,ab.	144
19 reproductive behavior/ and (intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or preference\$).tw.	137
20 reproductive decision\$.ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	177
21 (voluntary childlessness or emerging adulthood).ti,ab.	107
22 intended childlessness.ti,ab.	0
23 conceiving time.ti,ab.	1
24 Intention to conceive.ti,ab.	6
25 Childbearing decision\$.ti,ab.	31
26 Fertility timing.ti,ab.	20
27 ((future or pursu\$) adj parenthood).ti,ab.	14
28 ((future or pursu\$) adj motherhood).ti,ab.	4
29 ((future or pursu\$) adj fatherhood).ti,ab.	4
30 reproductive intention\$.ti,ab.	50
31 Start\$ a family.ti,ab.	52

32	((child\$ or motherhood or fatherhood or parenthood) adj1 timing).ti,ab.	19
33	attaining motherhood.ti,ab.	2
34	attaining fatherhood.ti,ab.	0
35	attaining parenthood.ti,ab.	0
36	want\$ children.ti,ab.	90
37	*reproductive behavior/	208
38	planning a family.ti,ab.	14
39	child planning.ti,ab.	5
40	Fertility decision making.ti,ab.	22
41	Try\$ to get pregnant.ti,ab.	20
42	(try\$ adj2 conceiv\$).tw.	115
43	or/11-42	1943
44	(infertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	2309
45	(fertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	1224
46	(fecundity adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	43
47	(fertil\$ adj1 (problem\$ or difficult\$)).tw.	530
48	(infertil\$ adj1 (problem\$ or difficult\$)).tw.	300
49	(ability to conceive or fail\$3 to conceive).ti,ab.	471
50	able to conceive.tw.	50
51	conceiving time.ti,ab.	1
52	time to conception.tw.	97
53	time to pregnancy.tw.	291
54	childbearing ability.tw.	15
55	(try\$ adj2 conceiv\$).tw.	115
56	Try\$ to get pregnant.tw.	20
57	or/44-56	5201
58	((consult\$ adj2 doctor\$1) or (consult\$ adj2 GP\$1)).tw.	1573
59	(helpseek\$ or help seek\$ or health seek\$ or advice seek\$ or decision\$ or seek\$ medic\$ or consult\$ doctor\$1 or consult\$ GP\$1 or treatment\$ seek\$).tw.	130289
60	((detect\$ or diagnose or diagnosis) adj2 (self or able or ability)).tw.	13353
61	(Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$).ti,ab.	1079985
62	Complementary Therapies/	10271
63	((complementary or alternative) adj therap\$).tw.	6286
64	(fertilit\$ adj2 kit\$1).ti,ab.	4
65	58 or 59 or 60 or 61 or 62 or 63 or 64	1203219
66	57 and 65	696
67	Fertility Decision-Making.ti,ab.	22
68	inFertility Decision-Making.ti,ab.	1
69	(fertility/ or infertility/) and (attitudes/ or awareness/) and (pregnancy/ or reproduction/ or parents/)	163
70	(fertility/ or infertility/ or reproductive medicine/) and patient acceptance of healthcare/	286
71	66 or 67 or 68 or 69 or 70	1140
72	(fertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormon\$ remed\$ or hormon\$ therap\$)).ti,ab.	1798

73	(infertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormonal remedies)).ti,ab.	3087
74	alternative parenting.ti,ab.	1
75	IVF.ti,ab.	10911
76	ICSI.ti,ab.	3431
77	IUI.ti,ab.	794
78	assisted reprod\$ technolog\$.ti,ab.	2295
79	(assist\$ adj2 (conceive or conception)).ti,ab.	688
80	in vitro fertilisation.ti,ab.	920
81	in vitro fertilization.ti,ab.	11666
82	infertility investigat\$.ti,ab.	198
83	((fertil\$ or infertil\$) adj3 kit\$1).ti,ab.	12
84	Infertility/th, rh, su [Therapy, Rehabilitation, Surgery]	2151
85	or/72-84	25629
86	Attitudes/ or attitude\$.ti,ab.	87793
87	beliefs.ti,ab.	19408
88	Aware\$.ti,ab.	76087
89	knowledg\$.ti,ab.	225100
90	attitude\$.ti,ab.	64492
91	perception\$.ti,ab.	86598
92	religio\$.ti,ab.	14711
93	ethnic\$.ti,ab.	47941
94	attribution.ti,ab.	2767
95	stigma\$.ti,ab.	9643
96	faith.ti,ab.	2564
97	norms.ti,ab.	10445
98	social represent\$.ti,ab.	255
99	social influenc\$.ti,ab.	1240
100	Decision making/	47524
101	deliberat\$.ti,ab.	7977
102	cues to action.ti,ab.	71
103	optimal condition\$.ti,ab.	7373
104	(advice adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	1259
105	(information adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	36156
106	Consumer Health Information/	244
107	or/86-106	597548
108	107 and 85	1387
109	43 or 71 or 108	4242
110	limit 109 to (humans and yr="1990 - 2009")	2828
111	((retrospective\$ adj2 review\$) or (case\$ adj2 review\$) or (patient\$ adj2 review\$) or (patient\$ adj2 chart\$) or (peer adj2 review\$) or (chart adj2 review\$) or (case\$ adj2 report\$) or (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep)).ti,ab,sh. or editorial.pt. or letter.pt.	5714606
112	110 not 111	2499
113	from 112 keep 1-2499	2499

Medline in Process

1	((parenthood or fatherhood or motherhood) adj2 (intent\$ or start\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or costs or benefits or barrier\$ or choos\$ or choice\$ or beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$ or optimal condition\$1)).tw.	13
2	(Childbearing adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$)).ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	9
3	(childbearing adj2 (beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1)).ti,ab.	5
4	(Childless\$ adj2 (intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or preference\$ or costs or benefit\$ or barrier\$ or choose or choice\$)).ti,ab.	1
5	(childless\$ adj2 (beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1 or costs or benefit\$ or barrier\$ or choose or choice\$)).ti,ab.	1
6	((becom\$ pregnant adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$)) and (reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$)).ti,ab.	2
7	(Reproductive behavio?r and (marriage or time factors or maternal age or paternal age or religion or career choice or Costs)).ti,ab.	0
8	(reproductive decision\$ and (reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$)).ti,ab.	6
9	(voluntary childlessness or emerging adulthood).ti,ab.	9
10	intended childlessness.ti,ab.	0
11	conceiving time.ti,ab.	0
12	Intention to conceive.ti,ab.	0
13	Childbearing decision\$.ti,ab.	1
14	Fertility timing.ti,ab.	0
15	((future or pursu\$) adj parenthood).ti,ab.	0
16	((future or pursu\$) adj motherhood).ti,ab.	0
17	((future or pursu\$) adj fatherhood).ti,ab.	0
18	reproductive intention\$.ti,ab.	5
19	Start\$ a family.ti,ab.	3
20	((child\$ or motherhood or fatherhood or parenthood) adj1 timing).ti,ab.	1
21	attaining motherhood.ti,ab.	0
22	attaining fatherhood.ti,ab.	0
23	attaining parenthood.ti,ab.	0
24	want\$ children.ti,ab.	1
25	planning a family.ti,ab.	1
26	child planning.ti,ab.	0
27	Fertility decision making.ti,ab.	1
28	Try\$ to get pregnant.ti,ab.	0

29	(try\$ adj2 conceiv\$).tw.	3
30	or/1-29	58
31	(infertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	59
32	(fertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	35
33	(fecundity adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	3
34	(fertil\$ adj1 (problem\$ or difficult\$)).tw.	17
35	(infertil\$ adj1 (problem\$ or difficult\$)).tw.	6
36	(ability to conceive or fail\$3 to conceive).ti,ab.	14
37	able to conceive.tw.	2
38	conceiving time.ti,ab.	0
39	time to conception.tw.	2
40	time to pregnancy.tw.	8
41	childbearing ability.tw.	0
42	(try\$ adj2 conceiv\$).tw.	3
43	Try\$ to get pregnant.tw.	0
44	or/31-43	145
45	((consult\$ adj2 doctor\$1) or (consult\$ adj2 GP\$1)).tw.	43
46	(helpseek\$ or help seek\$ or health seek\$ or advice seek\$ or decision\$ or seek\$ medic\$ or consult\$ doctor\$1 or consult\$ GP\$1 or treatment\$ seek\$).tw.	6390
47	((detect\$ or diagnose or diagnosis) adj2 (self or able or ability)).tw.	705
48	(Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$).ti,ab.	58392
49	((complementary or alternative) adj therap\$).tw.	277
50	(fertilit\$ adj2 kit\$1).ti,ab.	0
51	or/45-50	63975
52	44 and 51	23
53	Fertility Decision-Making.ti,ab.	1
54	inFertility Decision-Making.ti,ab.	0
55	52 or 53 or 54	24
56	(fertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormon\$ remed\$ or hormon\$ therap\$)).ti,ab.	102
57	(infertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormonal remedies)).ti,ab.	82
58	alternative parenting.ti,ab.	0
59	IVF.ti,ab.	405
60	ICSI.ti,ab.	136
61	IUI.ti,ab.	29
62	assisted reprod\$ technolog\$.ti,ab.	116
63	(assist\$ adj2 (conceive or conception)).ti,ab.	33
64	in vitro fertilisation.ti,ab.	24
65	in vitro fertilization.ti,ab.	369
66	infertility investigat\$.ti,ab.	1
67	((fertil\$ or infertil\$) adj3 kit\$1).ti,ab.	0
68	or/56-67	900
69	attitude\$.ti,ab.	2401
70	beliefs.ti,ab.	945

71	Aware\$.ti,ab.	3820
72	knowledg\$.ti,ab.	13584
73	attitude\$.ti,ab.	2401
74	perception\$.ti,ab.	4061
75	religio\$.ti,ab.	561
76	ethnic\$.ti,ab.	2286
77	attribution.ti,ab.	188
78	stigma\$.ti,ab.	588
79	faith.ti,ab.	126
80	norms.ti,ab.	499
81	social represent\$.ti,ab.	28
82	social influenc\$.ti,ab.	54
83	deliberat\$.ti,ab.	444
84	cues to action.ti,ab.	3
85	optimal condition\$.ti,ab.	630
86	(advice adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	49
87	(information adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	1887
88	or/69-87	28125
89	68 and 88	58
90	((retrospective\$ adj2 review\$) or (case\$ adj2 review\$) or (patient\$ adj2 review\$) or (patient\$ adj2 chart\$) or (peer adj2 review\$) or (chart adj2 review\$) or (case\$ adj2 report\$) or (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep)).ti,ab,sh. or editorial.pt. or letter.pt.	87172
91	30 or 55 or 89	129
92	91 not 90	115
93	from 92 keep 1-115	115

Psycinfo

1	((parenthood or fatherhood or motherhood) adj2 (intent\$ or start\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or costs or benefits or barrier\$ or choos\$ or choice\$ or beliefs or Aware\$ or knowledge\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$ or optimal condition\$1)).tw.	556
2	(Childbearing adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$)).ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	105
3	(childbearing adj2 (beliefs or Aware\$ or knowledge\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1)).ti,ab.	62
4	(Childless\$ adj2 (intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or preference\$ or costs or benefit\$ or barrier\$ or choose or choice\$)).ti,ab.	59
5	(childless\$ adj2 (beliefs or Aware\$ or knowledge\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1 or costs or benefit\$ or barrier\$ or choose or choice\$)).ti,ab.	42
6	(becom\$ pregnant adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$)).ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	18
7	(family planning/ or pregnancy/) and (marriage/ or time/ or religion/ or occupations/ or "costs and cost analysis"/)	160
8	(Reproductive behavior and (marriage or time factors or maternal age or paternal age or religion or career choice or Costs)).ti,ab.	48
9	family planning/ and (intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or preference\$).tw.	825
10	reproductive decision\$.ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	97
11	(voluntary childlessness or emerging adulthood).ti,ab.	278
12	intended childlessness.ti,ab.	1
13	conceiving time.ti,ab.	1
14	Intention to conceive.ti,ab.	2
15	Childbearing decision\$.ti,ab.	31
16	Fertility timing.ti,ab.	5
17	((future or pursu\$) adj parenthood).ti,ab.	6
18	((future or pursu\$) adj motherhood).ti,ab.	4
19	((future or pursu\$) adj fatherhood).ti,ab.	1
20	reproductive intention\$.ti,ab.	13
21	Start\$ a family.ti,ab.	36
22	((child\$ or motherhood or fatherhood or parenthood) adj1 timing).ti,ab.	13
23	attaining motherhood.ti,ab.	2
24	attaining fatherhood.ti,ab.	0
25	attaining parenthood.ti,ab.	1
26	want\$ children.ti,ab.	58
27	family planning/	914

28	planning a family.ti,ab.	6
29	child planning.ti,ab.	6
30	Fertility decision making.ti,ab.	17
31	Try\$ to get pregnant.ti,ab.	6
32	(try\$ adj2 conceiv\$).tw.	31
33	or/1-32	2335
34	(infertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	101
35	(fertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	118
36	(fecundity adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	10
37	(fertil\$ adj1 (problem\$ or difficult\$)).tw.	98
38	(infertil\$ adj1 (problem\$ or difficult\$)).tw.	36
39	(ability to conceive or fail\$3 to conceive).ti,ab.	46
40	able to conceive.tw.	21
41	conceiving time.ti,ab.	1
42	time to conception.tw.	5
43	time to pregnancy.tw.	7
44	childbearing ability.tw.	1
45	(try\$ adj2 conceiv\$).tw.	31
46	Try\$ to get pregnant.tw.	6
47	or/34-46	456
48	((consult\$ adj2 doctor\$1) or (consult\$ adj2 GP\$1)).tw.	427
49	(helpseek\$ or help seek\$ or health seek\$ or advice seek\$ or decision\$ or seek\$ medic\$ or consult\$ doctor\$1 or consult\$ GP\$1 or treatment\$ seek\$).tw.	93980
50	((detect\$ or diagnose or diagnosis) adj2 (self or able or ability)).tw.	2351
51	(Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$).ti,ab.	570951
52	alternative medicine/	1925
53	((complementary or alternative) adj therap\$).tw.	741
54	(fertilit\$ adj2 kit\$1).ti,ab.	0
55	48 or 49 or 50 or 51 or 52 or 53 or 54	638455
56	47 and 55	159
57	Fertility Decision-Making.ti,ab.	17
58	inFertility Decision-Making.ti,ab.	0
59	(fertility/ or infertility/) and (attitudes/ or awareness/) and (pregnancy/ or family planning/ or parents/)	2
60	(fertility/ or infertility/ or reproductive technology/) and (Help Seeking Behavior/ or Health Care Seeking Behavior/)	8
61	56 or 57 or 58 or 59 or 60	182
62	(fertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormon\$ remed\$ or hormon\$ therap\$)).ti,ab.	91
63	(infertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormonal remedies)).ti,ab.	253
64	alternative parenting.ti,ab.	7
65	IVF.ti,ab.	222
66	ICSI.ti,ab.	22
67	IUI.ti,ab.	9

68	assisted reprod\$ technolog\$.ti,ab.	123
69	(assist\$ adj2 (conceive or conception)).ti,ab.	36
70	in vitro fertilisation.ti,ab.	36
71	in vitro fertilization.ti,ab.	274
72	infertility investigat\$.ti,ab.	16
73	((fertil\$ or infertil\$) adj3 kit\$1).ti,ab.	0
74	Infertility/	1166
75	or/62-74	1560
76	Attitudes/ or attitude\$.ti,ab.	126077
77	beliefs.ti,ab.	40738
78	Aware\$.ti,ab.	52043
79	knowledg\$.ti,ab.	122147
80	attitude\$.ti,ab.	118379
81	perception\$.ti,ab.	139336
82	religio\$.ti,ab.	36546
83	ethnic\$.ti,ab.	36836
84	attribution.ti,ab.	9137
85	stigma\$.ti,ab.	8379
86	faith.ti,ab.	5705
87	norms.ti,ab.	20003
88	social represent\$.ti,ab.	1162
89	social influenc\$.ti,ab.	3835
90	Decision making/	26743
91	deliberat\$.ti,ab.	6919
92	cues to action.ti,ab.	60
93	optimal condition\$.ti,ab.	362
94	(advice adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	427
95	(information adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	15921
96	or/76-95	531496
97	96 and 75	410
98	33 or 61 or 97	2795
99	limit 98 to (humans and yr="1990 - 2009") [Limit not valid in PsycINFO; records were retained]	1887
100	((retrospective\$ adj2 review\$) or (case\$ adj2 review\$) or (patient\$ adj2 review\$) or (patient\$ adj2 chart\$) or (peer adj2 review\$) or (chart adj2 review\$) or (case\$ adj2 report\$) or (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep)).ti,ab,sh. or editorial.pt. or letter.pt.	201891
101	99 not 100	1869

All EBM Cochrane Database of Systematic Reviews, CENTRAL, DARE , ACP)

- 1 ((parenthood or fatherhood or motherhood) adj2 (intent\$ or start\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing\$ or decision\$ or reason\$ or costs or benefits or barrier\$ or choos\$ or choice\$ or beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$ or optimal condition\$1)).tw. 9
- 2 (Childbearing adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing\$ or decision\$)).ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or 5

	expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	
3	(childbearing adj2 (beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1)).ti,ab.	5
4	(Childless\$ adj2 (intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or preference\$ or costs or benefit\$ or barrier\$ or choose or choice)).ti,ab.	1
5	(childless\$ adj2 (beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1 or costs or benefit\$ or barrier\$ or choose or choice\$)).ti,ab.	0
6	(becom\$ pregnant adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$)).ti,ab. and ((reason\$ or Attitude\$ or believ\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	2
7	(Reproductive behavior/ or pregnancy/px) and (marriage/ or time factors/ or maternal age/ or paternal age/ or religion/ or career choice/ or "Costs and Cost Analysis"/)	0
8	(Reproductive behavio?r and (marriage or time factors or maternal age or paternal age or religion or career choice or Costs)).ti,ab.	0
9	reproductive behavior/ and (intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or preference\$).tw.	3
10	reproductive decision\$.ti,ab. and ((reason\$ or Attitude\$ or believ\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	1
11	(voluntary childlessness or emerging adulthood).ti,ab.	4
12	intended childlessness.ti,ab.	0
13	conceiving time.ti,ab.	0
14	Intention to conceive.ti,ab.	0
15	Childbearing decision\$.ti,ab.	0
16	Fertility timing.ti,ab.	0
17	((future or pursu\$) adj parenthood).ti,ab.	0
18	((future or pursu\$) adj motherhood).ti,ab.	0
19	((future or pursu\$) adj fatherhood).ti,ab.	0
20	reproductive intention\$.ti,ab.	0
21	Start\$ a family.ti,ab.	2
22	((child\$ or motherhood or fatherhood or parenthood) adj1 timing).ti,ab.	2
23	attaining motherhood.ti,ab.	0
24	attaining fatherhood.ti,ab.	0
25	attaining parenthood.ti,ab.	0
26	want\$ children.ti,ab.	3
27	*reproductive behavior/	1
28	planning a family.ti,ab.	1
29	child planning.ti,ab.	0
30	Fertility decision making.ti,ab.	0
31	Try\$ to get pregnant.ti,ab.	1
32	(try\$ adj2 conceiv\$).tw.	25
33	or/1-32	61
34	(infertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	105

35	(fertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	36
36	(fecundity adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	1
37	(fertil\$ adj1 (problem\$ or difficult\$)).tw.	35
38	(infertil\$ adj1 (problem\$ or difficult\$)).tw.	18
39	(ability to conceive or fail\$3 to conceive).ti,ab.	40
40	able to conceive.tw.	1
41	conceiving time.ti,ab.	0
42	time to conception.tw.	23
43	time to pregnancy.tw.	37
44	childbearing ability.tw.	0
45	(try\$ adj2 conceiv\$).tw.	25
46	Try\$ to get pregnant.tw.	2
47	or/34-46	300
48	((consult\$ adj2 doctor\$1) or (consult\$ adj2 GP\$1)).tw.	293
49	(helpseek\$ or help seek\$ or health seek\$ or advice seek\$ or decision\$ or seek\$ medic\$ or consult\$ doctor\$1 or consult\$ GP\$1 or treatment\$ seek\$).tw.	12941
50	((detect\$ or diagnose or diagnosis) adj2 (self or able or ability)).tw.	724
51	(Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$).ti,ab.	52521
52	Complementary Therapies/	202
53	((complementary or alternative) adj therap\$).tw.	1008
54	(fertilit\$ adj2 kit\$1).ti,ab.	0
55	48 or 49 or 50 or 51 or 52 or 53 or 54	65406
56	47 and 55	50
57	Fertility Decision-Making.ti,ab.	0
58	inFertility Decision-Making.ti,ab.	0
59	(fertility/ or infertility/) and (attitudes/ or awareness/) and (pregnancy/ or reproduction/ or parents/)	1
60	(fertility/ or infertility/ or reproductive medicine/) and patient acceptance of healthcare/	0
61	56 or 57 or 58 or 59 or 60	51
62	(fertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormon\$ remed\$ or hormon\$ therap\$)).ti,ab.	164
63	(infertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormonal remedies)).ti,ab.	321
64	alternative parenting.ti,ab.	0
65	IVF.ti,ab.	1648
66	ICSI.ti,ab.	557
67	IUI.ti,ab.	239
68	assisted reprod\$ technolog\$.ti,ab.	117
69	(assist\$ adj2 (conceive or conception)).ti,ab.	59
70	in vitro fertilisation.ti,ab.	135
71	in vitro fertilization.ti,ab.	1123
72	infertility investigat\$.ti,ab.	14
73	((fertil\$ or infertil\$) adj3 kit\$1).ti,ab.	1
74	Infertility/th, rh, su [Therapy, Rehabilitation, Surgery]	156
75	or/62-74	3044
76	Attitudes/ or attitude\$.ti,ab.	3477
77	beliefs.ti,ab.	995

78	Aware\$.ti,ab.	2347
79	knowledg\$.ti,ab.	6167
80	attitude\$.ti,ab.	3088
81	perception\$.ti,ab.	5298
82	religio\$.ti,ab.	152
83	ethnic\$.ti,ab.	1442
84	attribution.ti,ab.	167
85	stigma\$.ti,ab.	239
86	faith.ti,ab.	38
87	norms.ti,ab.	391
88	social represent\$.ti,ab.	3
89	social influenc\$.ti,ab.	117
90	Decision making/	1207
91	deliberat\$.ti,ab.	350
92	cues to action.ti,ab.	8
93	optimal condition\$.ti,ab.	60
94	(advice adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	56
95	(information adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	1432
96	Consumer Health Information/	2
97	or/76-96	20366
98	97 and 75	31
99	33 or 61 or 98	135
100	limit 99 to (humans and yr="1990 - 2009") [Limit not valid in CDSR,ACP Journal Club,DARE,CCTR,CLCMR; records were retained]	127
101	((retrospective\$ adj2 review\$) or (case\$ adj2 review\$) or (patient\$ adj2 review\$) or (patient\$ adj2 chart\$) or (peer adj2 review\$) or (chart adj2 review\$) or (case\$ adj2 report\$) or (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep)).ti,ab,sh. or editorial.pt. or letter.pt.	20382
102	100 not 101	122
103	from 102 keep 1-122	122

HMIC

1	((parenthood or fatherhood or motherhood) adj2 (intent\$ or start\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or costs or benefits or barrier\$ or choos\$ or choice\$ or beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$ or optimal condition\$1)).tw.	22
2	(Childbearing adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$)).ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	4
3	(childbearing adj2 (beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1)).ti,ab.	3
4	(Childless\$ adj2 (intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$	2

	or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or preference\$ or costs or benefit\$ or barrier\$ or choose or choice)).ti,ab.	
5	(childless\$ adj2 (beliefs or Aware\$ or knowledg\$ or values or perception\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms or social represent\$ or social influenc\$ or attitude\$1 or costs or benefit\$ or barrier\$ or choose or choice\$)).ti,ab.	2
6	(becom\$ pregnant adj2 (optimal condition\$1 or costs or benefit\$ or barrier\$ or choose or choice\$ or intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$)).ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	0
7	(family planning/ or pregnancy/) and (marriage/ or maternal age/ or religion/ or occupations/ or costs/)	17
8	(Reproductive behavio?r and (marriage or time factors or maternal age or paternal age or religion or career choice or Costs)).ti,ab.	0
9	family planning/ and (intent\$ or start\$ or plan\$ or intend\$ or achiev\$ or attempt\$ or pursu\$ or desir\$3 or need\$3 or wish\$3 or motivation\$1 or postpon\$ or delay\$ or defer\$ or timing or decision\$ or reason\$ or preference\$).tw.	212
10	reproductive decision\$.ti,ab. and ((reason\$ or Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$ or religio\$ or ethnic\$ or attribution or stigma\$ or faith or norms\$ or preference\$ or influenc\$ or constraint\$).ti,ab. or attitudes/)	8
11	(voluntary childlessness or emerging adulthood).ti,ab.	4
12	intended childlessness.ti,ab.	0
13	conceiving time.ti,ab.	1
14	Intention to conceive.ti,ab.	0
15	Childbearing decision\$.ti,ab.	0
16	Fertility timing.ti,ab.	0
17	((future or pursu\$) adj parenthood).ti,ab.	0
18	((future or pursu\$) adj motherhood).ti,ab.	1
19	((future or pursu\$) adj fatherhood).ti,ab.	0
20	reproductive intention\$.ti,ab.	0
21	Start\$ a family.ti,ab.	8
22	((child\$ or motherhood or fatherhood or parenthood) adj1 timing).ti,ab.	3
23	attaining motherhood.ti,ab.	0
24	attaining fatherhood.ti,ab.	0
25	attaining parenthood.ti,ab.	0
26	want\$ children.ti,ab.	9
27	family planning/	346
28	planning a family.ti,ab.	5
29	child planning.ti,ab.	1
30	Fertility decision making.ti,ab.	0
31	Try\$ to get pregnant.ti,ab.	1
32	(try\$ adj2 conceiv\$).tw.	2
33	or/1-32	434
34	(infertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	14

35	(fertil\$ adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	10
36	(fecundity adj2 (myths or risk factor\$ or cause\$ or prevalence\$ or incidence\$ or status\$ or concern\$ or common or frequen\$)).ti,ab.	0
37	(fertil\$ adj1 (problem\$ or difficult\$)).tw.	8
38	(infertil\$ adj1 (problem\$ or difficult\$)).tw.	11
39	(ability to conceive or fail\$3 to conceive).ti,ab.	4
40	able to conceive.tw.	1
41	conceiving time.ti,ab.	1
42	time to conception.tw.	17
43	time to pregnancy.tw.	8
44	childbearing ability.tw.	1
45	(try\$ adj2 conceiv\$).tw.	2
46	Try\$ to get pregnant.tw.	1
47	or/34-46	72
48	((consult\$ adj2 doctor\$1) or (consult\$ adj2 GP\$1)).tw.	841
49	(helpseek\$ or help seek\$ or health seek\$ or advice seek\$ or decision\$ or seek\$ medic\$ or consult\$ doctor\$1 or consult\$ GP\$1 or treatment\$ seek\$).tw.	10590
50	((detect\$ or diagnose or diagnosis) adj2 (self or able or ability)).tw.	84
51	(Attitude\$ or belief\$ or Aware\$ or knowledge or values or perception\$ or perceive\$ or expectation\$ or believ\$).ti,ab.	28740
52	alternative medicine/	397
53	((complementary or alternative) adj therap\$).tw.	300
54	(fertilit\$ adj2 kit\$1).ti,ab.	0
55	48 or 49 or 50 or 51 or 52 or 53 or 54	37500
56	47 and 55	18
57	Fertility Decision-Making.ti,ab.	0
58	inFertility Decision-Making.ti,ab.	0
59	(human fertility/ or infertility/) and (attitudes/ or awareness/) and (pregnancy/ or family planning/ or parents/)	0
60	(human fertility/ or infertility/ or reproductive technology/) and Health Care Seeking Behavior/	0
61	56 or 57 or 58 or 59 or 60	18
62	(fertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormon\$ remed\$ or hormon\$ therap\$)).ti,ab.	45
63	(infertil\$ adj2 (treat\$ or therapies or therapy or medical monitoring or hormonal remedies)).ti,ab.	47
64	alternative parenting.ti,ab.	0
65	IVF.ti,ab.	70
66	ICSI.ti,ab.	8
67	IUI.ti,ab.	0
68	assisted reprod\$ technolog\$.ti,ab.	13
69	(assist\$ adj2 (conceive or conception)).ti,ab.	37
70	in vitro fertilisation.ti,ab.	76
71	in vitro fertilization.ti,ab.	14
72	infertility investigat\$.ti,ab.	0
73	((fertil\$ or infertil\$) adj3 kit\$1).ti,ab.	0
74	Infertility/	185

75	or/62-74	346
76	Attitudes/ or attitude\$.ti,ab.	7235
77	beliefs.ti,ab.	1205
78	Aware\$.ti,ab.	4539
79	knowledg\$.ti,ab.	7181
80	attitude\$.ti,ab.	6215
81	perception\$.ti,ab.	4282
82	religio\$.ti,ab.	697
83	ethnic\$.ti,ab.	4546
84	attribution.ti,ab.	79
85	stigma\$.ti,ab.	555
86	faith.ti,ab.	251
87	norms.ti,ab.	393
88	social represent\$.ti,ab.	7
89	social influenc\$.ti,ab.	60
90	Decision making/	3490
91	deliberat\$.ti,ab.	574
92	cues to action.ti,ab.	1
93	optimal condition\$.ti,ab.	4
94	(advice adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	473
95	(information adj2 (avail\$ or access\$3 or seek\$ or find\$3 or locat\$ or identif\$ or helpseek\$ or communic\$ or source\$)).ti,ab.	3700
96	consumer health information/	1444
97	or/76-96	32654
98	97 and 75	39
99	33 or 61 or 98	480
100	limit 99 to (humans and yr="1990 - 2009") [Limit not valid; records were retained]	344
101	((retrospective\$ adj2 review\$) or (case\$ adj2 review\$) or (patient\$ adj2 review\$) or (patient\$ adj2 chart\$) or (peer adj2 review\$) or (chart adj2 review\$) or (case\$ adj2 report\$) or (rat or rats or mouse or mice or hamster or hamsters or animal or animals or dog or dogs or cat or cats or bovine or sheep)).ti,ab,sh. or editorial.pt. or letter.pt.	4808
102	100 not 101	343

IBSS

infertil* or fertile* or fecundity

myths or risk factor* or cause* or prevalence* or incidence* or status* or concern* or common or frequen*

s1 and s2

fertil* N1 problem*

fertil* N1 difficult*

infertil* N1 problem*

infertil* N1 difficult*

“ability to conceive”

“fail* to conceive”

“able to conceive”

“conceiving time”

“time to conception”

“time to pregnancy”

“childbearing ability”

try* N2 conceiv*

“Try* to get pregnant”

s3 or s4 or s5 or s6 or s7 or s8 or s9 or s10 or s11 or s12 or s13 or s14 or s15 or s16

consult* N2 doctor*
 consult* N2 GP*
 helpseek* or help seek* or health seek* or advice seek* or decision* or seek* medic* or consult* doctor* or consult* GP* or treatment* seek*
 detect* or diagnose or diagnosis
 Attitude* or belief* or Aware* or knowledge or values or perception* or perceive* or expectation* or believ*
 Complementary therap*
 Alternative therap*
 fertilit* N2 kit*
s18 or s19 or s20 or s21 or s22 or s23 or s24 or s25
 s17 and s26
 Fertility Decision-Making
 inFertility Decision-Making
 (ZU "FERTILITY AND FAMILY") or (ZU "FERTILITY AND MARRIAGE") or (ZU "FERTILITY AND RELIGION") or (ZU "FERTILITY ATTITUDES")

For All other search engines the following was used:

(((("fatherhood" or "motherhood" or "parenthood"))) and(("attitudes" or "attributions" or "awareness" or "barriers" or "beliefs" or "choice" or "costs benefits" or "decision making" or "delay" or "desire" or "ethnicity" or "faith" or "intention" or "knowledge" or "motivation" or "norms" or "perception" or "postponement" or "reasons" or "religions" or "social influence" or "social representation" or "timing" or "values"))) or(("childbearing") and(("barriers" or "choice" or "costs benefits" or "decision making" or "delay" or "desire" or "motivation" or "planned pregnancy" or "postponement" or "timing"))) and(("attitudes" or "attributions" or "awareness" or "beliefs" or "ethnicity" or "expectations" or "faith" or "knowledge" or "norms" or "perception" or "preferences" or "reasons" or "religions" or "social influence" or "values"))) or(("childlessness") and(("choice" or "barriers" or "costs benefits" or "decision making" or "delay" or "desire" or "intention" or "motivation" or "planned pregnancy" or "planning" or "postponement" or "preferences" or "reasons" or "timing"))) or(("attitudes" or "attributions" or "awareness" or "beliefs" or "ethnicity" or "expectations" or "faith" or "knowledge" or "norms" or "perception" or "preferences" or "reasons" or "religions" or "social influence" or "values"))) and(("childlessness") and(("pregnancy" and "becoming"))) or(("attitudes" or "attributions" or "awareness" or "barriers" or "beliefs" or "choice" or "costs benefits" or "decision making" or "delay" or "desire" or "ethnicity" or "faith" or "intention" or "knowledge" or "motivation" or "norms" or "perception" or "postponement" or "reasons" or "religions" or "social influence" or "social representation" or "timing" or "values"))) and(("attitudes" or "attributions" or "awareness" or "beliefs" or "ethnicity" or "expectations" or "faith" or "knowledge" or "norms" or "perception" or "preferences" or "reasons" or "religions" or "social influence" or "values"))) and(("pregnancy")) or(("pregnancy" or "reproductive behaviour")) and(("costs benefits" or "age" or "career choice" or "cost analysis" or "fatherhood" or "marriage" or "motherhood" or "parenthood" or "religions" or "time"))) or(("attitudes" or "awareness" or "barriers" or "beliefs" or "choice" or "costs benefits" or "decision making" or "delay" or "desire" or "ethnicity" or "faith" or "intention" or "knowledge" or "motivation" or "norms" or "perception" or "postponement" or "reasons" or "religions" or "social influence" or "social representation" or "timing" or "values"))) and(("pregnancy" or "reproductive behaviour"))) or(("attitudes" or "attributions" or "awareness" or "beliefs" or "ethnicity" or "expectations" or "faith" or "knowledge" or "norms" or "perception" or "preferences" or "reasons" or "religions" or "social influence" or "values"))) and(("decision making" and "reproduction")) or(("childlessness" and "voluntary")) or(("timing" and "fertility")) or(("parenthood" and "future")) or(("parenthood" and "pursuit")) or(("motherhood" and ("pursuit" or "future"))) or(("pursuit" or "future") and ("fatherhood")) or(("parenthood" or "children" or "fatherhood" or "motherhood")) and(("timing")) or(("parenthood" or "children" or "fatherhood" or "motherhood")) and(("achievement")) or(("decision making" and "fertility")) or(("decision making" and "fertility")) or(("infertility" and ("causes" or "concerns" or "incidence" or "myths" or "prevalence" or "risk factors" or "status"))) or(("causes" or "concerns" or "incidence" or "myths" or "prevalence" or "risk factors" or "status")) and ("fertility")) or(("fertility" and ("difficult" or "difficulty" or "problems"))) or(("infertility" and ("difficult" or "difficulty" or "problems"))) or(("timing") and ("conception")) or(("timing") and ("pregnancy")) or(("childbearing") and ("ability"))) and(("treatment" or "advice" or "decision making" or "health" or "helpseeking")) or(("diagnosis" or "detection")) and(("ability" or "self")) or(("beliefs" or "attitudes" or "awareness" or "expectations" or "knowledge" or "perception" or "perceptions" or "values")) or ("alternative medicine") or ("alternative medicine") and ("therapy")) or(("infertility" and "decision making")) or(("fertility" or "infertility")) and(("awareness" or "attitudes")) and(("parents" or "pregnancy" or "reproduction")) or(("health" and ("fertility" or "infertility")) or(("reproduction" and "medicine")))) or(("fertility" and ("hormones" or "monitoring" or "therapy" or "treatment"))) or(("hormones" or "monitoring" or "therapy" or "treatment")) and ("infertility")) or(("parenting" and "alternative")) or(("reproductive technologies") or ("in vitro fertilization")) or(("investigations" and "infertility")) or(("surgery" and "infertility" and "rehabilitation" and "therapy")) and(("attitudes" or "beliefs") or ("awareness")) or ("knowledge") or ("perceptions") or ("religions") or ("ethnicity")) or(("attributes" or "attributions")) or ("faith") or ("norms") or ("social representation") or ("social influence") or ("decision making") or ("action" and "cues")) or ("advice") and(("sources" or "access" or "availability" or "communication" or "helpseeking" or "identification" or "identity" or "location")) or(("sources" or "access" or "availability" or "communication" or "helpseeking" or "identification" or "identity" or "location")) and ("information"))

Appendix D: Critical appraisal and data extraction form

Section 1. Data Extraction

Study ref: First author/date/study number	Heaten Jacobson & Holland 1999	
Review phase (e.g. phase one, two or three)	Phase 1	
Data extracted by [and checked by]:	CH	
Aim/hypothesis	Examine factors related to persistence and change in decisions to remain voluntary childless.	
Fertility Outcome (i.e. type of fertility decision/intention being investigated)	Fertility outcome	Measure / definition
	Trends in intentions to remain Childless	<p>Longitudinal self reports (women and men and their intentions to remain childless, differences after 7 years)</p> <p>Using waves 1 and 2 of the NSFH examines 4 possible birth outcomes. 1st postpones: they want children at wave 1 but had not had children at wave 2. 2nd group: switches from initially wanting children at wave 1 to no longer wanting children at wave 2. 3rd group: consistently childless they have no children and do not intend to have children 4th group: respondents who did not want children but had children or decided they wanted to have a child.</p>
Predictor (e.g. age, marital status)	Predictor	Measure / definition
	Age	In years
	Gender	Male/Female
	Race	White/Black
	Perceived stability of relationship	
	Marital status	Never married, cohabiting, Married
	Familial motivation	Importance of grandchildren, providing a child with a sibling, having a least one boy
	Education	

	Income	
	Desired hours of work	
Study design (e.g. prospective longitudinal, cohort study. Cross-sectional study)	Longitudinal. Wave I and Wave II of the NSFH (National surveys of families and households)	
Length of follow-up (if applicable)	N/a	
Sample Size (if the study reports it, note whether the study is adequately powered)	1,172 Women and men (women aged 19-39 and men with partners/spouses aged 19-39). No power detail	
Sampling procedure	National probability sample based on Wave I and Wave II of the NSFH (National surveys of families and households)	
Country	United States of America	
Eligibility criteria	women aged 19-39 and men with partners/spouses aged 19-39, Blacks and Non-Hispanic Whites, Only non-sterilized respondents who had never had a child at wave I and who were either married or never married.	
Population studied (demographics)	Location (Urban/ Rural/ Mixed Unknown)	No detail provided
	Gender (Male/ Female /Both)	Both
	Age	women aged 19-39 and men with partners/spouses aged 19-39
	Socio-economic	No specific information provided
	Ethnicity	Non-Hispanic Whites and Blacks
	Other details	
Data analysis	Multinomial regression p values	
Factors/confounders adjusted for	Model 1: socio-demographic variables Model 2: socio-demographic variables plus partner status Model 3: socio-demographic variables plus partner status and career and lifestyle variables Model 4: personal and familial variables	
Study response and attrition rate (if applicable)		
Results (Report direction of association with risk of childlessness, plus data reporting where possible odds ratio and CI, and whether results are statistically significant – $p < 0.05$)	<p>Table 2.</p> <p>Age. Older individuals are more likely to decide they do not want to have children (.139, $p < .05$) Older people more likely to be consistently childless (.299 $p < .05$) and to switch to decide that they want children (.143, $p < .05$)</p> <ul style="list-style-type: none"> - As people get older their decisions about having children change, either they decide it is too late to begin a family or they decide that it may be good to have children before time runs out. <p>Black (compared to white)</p>	

	<p>Are more likely to have children (overall), the negative coefficients for all outcomes correspond with a greater likelihood of becoming intentional parents.</p> <p>Black respondents are less likely to decide they do not want children (-.761 $p < .5$) and are less likely to be consistently childless ($p = 1.141$, $p < .05$)</p> <p>Higher education Higher levels of education reduce the chances of switching from childlessness to wanting children (-.168, $p < .05$) and increase the chances that people will postpone having a child (.079, $p < .05$) - Costs associated with having children are raised by more investment in human capital, education may also children the motives and intentions for having children.</p> <p>High income Higher income is associated with a greater chance of having an intended birth (indicated by the negative coefficients for postponement, switch to childless and consistently childless) High income, decreases the likelihood of postponement (-.209, $p < .05$), switch to childless (-.120, $p < .05$) and consistently childless (-.254, $p < .05$). Respondents with high income are less likely to decide to switch to parenting or wanting a child (-.265, $p < .05$) - People with more resources have a greater sense of security about providing for children and therefore are less reluctant to have children.</p> <p>Gender Part-time Work Full -time Work Employment and gender has no significant effect on intentions to remain childless</p> <p>*** Note*** Employment taken out of subsequent models, gender kept to compare males and females</p> <p>Model 2. Introduction of variables that reflect commitment to a partner Table 2.</p> <p>Married and cohabitation All coefficients for cohabiting and being married are negative except for one. This illustrates that those who are cohabiting or married are unlikely to be in any of the four groups. They intended to have a child at wave 1 and did so by wave 2. Having strong ties to a partner increases the likelihood of having a birth.</p> <p>Cohabiting at Wave 1. Overall Increases the likelihood of having an intended birth</p> <p>Cohabiting at wave 1, significantly decreases (-2.026) the likelihood of being consistently childless (no other significant results for cohabiting at wave one</p>
--	--

found, however all coefficients are negative.

Began Cohabiting. Initiating cohabitation between the waves of the survey increases the likelihood of having a child

Beginning cohabitation decreases the likelihood of postponement (-.938, $p < .05$)

(no other significant results were found for beginning cohabitation. Note** positive coefficient, although not significant for consistently childless and beginning cohabitation between waves)

Married at wave 1. Increases the likelihood of having a child

Being married at wave 1 significantly decreases postponement (-2.398, $p < .05$), being consistently childless (-3.343, $p < .05$) and switching to wanting children (-2.545, $p < .05$)

- those who are married at wave 1 intended to have a child at wave 1 and did so at wave 2.

(no other significant results were found, all large negative coefficients)

Got married

Those who got married during the waves of the survey were less likely to postpone childbearing (-1.472, $p < .05$) and were less likely to switch to wanting a child (-1.113, $p < .05$)

Socio-demographic variables reveal similar results to those found in model 1.

Age.

Older individuals are more likely to decide they do not want to have children (.204, $p < .05$)

Older people more likely to be consistently childless (.351 $p < .05$) and to switch to decide that they want children (.209, $p < .05$)

- With the introduction of the commitment variables the coefficients for age become higher, increases the likelihood of the 3 significant outcomes.

Black (compared to white)

Are more likely to have children (overall), the negative coefficients for all outcomes correspond with a greater likelihood of becoming intentional parents.

Black respondents are less likely to postpone childbearing (-1.536, $p < .05$)

They are less likely to decide they do not want children (-2.028 $p < .5$) and are less likely to be consistently childless ($p = 2.424$, $p < .05$)

And are less likely to switch to wanting a child (-1.252, $p < .05$)

- All the negative coefficients are larger with the introduction of the commitment variables.
- Black respondents who are in a committed relationship are more

likely to have intended to have a birth at wave one and had an intentional birth at wave 2.

High education

Higher levels of education reduce the chances of switching from childlessness to wanting children (-.165, $p < .05$)

No other significant associations found, all negative coefficients bar postponement indicating that higher education with committed relationship results in greater chance of having an intended birth.

High income

Again Higher income is associated with a greater chance of having an intended birth (indicated by the negative coefficients for all four possible outcomes)

High income, decreases the likelihood of postponement (-.178, $p < .05$),

Respondents with high income are less likely to decide to switch to parenting or wanting a child (-.265, $p < .05$)

- People with more resources have a greater sense of security about providing for children and therefore are less reluctant to have children.
- The negative coefficient for postponement is not as strong when the new variables for commitment are included in the analysis.

Table 3.

Model 3, the introduction of lifestyle and career variables

Time for Leisure and social activities

People who express concern that having children will impact on their leisure and social activities are more likely to be consistently childless (.235, $p < .05$) and are more likely to switch to wanting a child (.241, $p < .05$)

- Some individuals decide to have children, may be due to people socialising early and later deciding to settle down and have a family.

Believes mothers work is harmful

Individuals who express concern that mothers working is harmful for the child, are either more likely to have an intended child, or to postpone having an intended child.

Believing mothers work is harmful increases the likelihood of postponement (.044, $p < .05$) and decreases the likelihood of switching to childless (-.062, $p < .05$)

- individuals more likely to postpone childbearing, may be working individuals who want to postpone for the well being of their child

Desired hours of work,

Time and energy for career

Neither of the above two variables elicited significant results suggesting the career goals may not have a strong influence on decisions about having children.

Commitment variables and demographic

These elicit similar results to the previous models after the introduction of career and leisure variables

Model 4.

Table 4. The introduction of variables for personal and familial reasons for having a birth

Personal motivation

Only one significant result, however negative coefficients for all four possible outcomes illustrates that those with personal motivations are likely to fall under the intentional parenthood.

Those with personal motivations for a child are least likely to be postponers (-.198, $p < .05$)

Family motivation

Those with family motivation are least likely to be consistently childless (-.781, $p < .05$) and are also less likely to switch to wanting a child (-.564)

- Individuals with personal or family motivation for a child are more likely to be intentional parents.

Marital stability

Individuals who express concern over the stability of their marriage are more likely to be consistently childless (.291, $p < .05$)

- The status of the relationship with the partner is important in the decision of having children or not.

Results for the other variables included in previous models are similar to those already found

Comparing males and females.

Table 5.

The variables with the largest effects were selected to compare the results for males and females, based on magnitude of coefficients and significance. Sample is relatively small when divided by gender.

The coefficients for males and females are relatively similar for most variables.

Age

Only one gender difference emerged for age and that was for postponement. All the other coefficients are similar for males and females, they are all positive and statistically significant reflecting the results found for preceding analysis.

For women, age has no significant effect on postponement (.009, $p > .05$).

For men, postponement is increased (.119, $p < .05$) and the coefficient is larger for men than for women.

- men are more likely to postpone childbearing than women

Black (compared to white)

All the coefficients are negative. All results are statistically significant for men and women bar one result.

For women no significant effect is found for being black and switching to wanting a child, whereas for men this is significantly decreased (-1.534, $p < .05$)

- black men are more likely to intentionally enter into parenthood

Income

All coefficients are negative, two significant results and two gender differences are found.

Men with high income are less likely to postpone childbearing (-.212, $p < .05$) whereas for women income has no effect on postponement.

For women, income is associated with a decreased likelihood of switching to wanting a child (-.456, $p < .05$) no significant effect for men's income and switching to parenthood is found.

- Women's income is associated with intentional parenthood

Cohabiting at wave 1.

Although not all results are significantly different, they are different in the coefficients.

Whereas for women the coefficient for cohabiting at wave 1 and its association with postponement is positive for men it is negative (not significant), this is also illustrated in the results found for switching to childless.

For consistently childless, male cohabiters are significantly less likely to be consistently childless (-2.514, $p < .05$) whereas for women, although the coefficient is negative no significant result is found.

Male and female cohabiters, no significant association with Switching to parenthood, both coefficients are negative.

Began cohabiting

Beginning cohabiting between surveys yielded different results than those who were cohabiting at wave one.

All coefficients are negative apart from two and only one result was found to be significant.

For both men and women who began cohabiting between surveys the likelihood of postponement is decreased.

The strongest of this effect is observed For women who began cohabiting (-1.080, $p < .05$) compared to men (-.929, $p < .05$)

Although not significant, men who began cohabiting are more likely to be consistently childless (.431) compared to women (-.210) and women are more likely to switch to wanting a child (.192) compared to men (-1.117)

Married at wave 1.

All the results for male and females who were married at wave one are significant and the coefficients are negative, reflecting previous results found for marriage.

- Men and women who are married at wave one intended to have a child at wave one and did so by wave 2.

- The pronatalst effect for marriage is however stronger for men than women.

Got married

For both men (-1.515, $p < .05$) and women (-1.454, $p < .05$) who got married during the interval, the likelihood of postponement is significantly decreased.

Men who got married are less likely to be consistently childless (-1.553, $p < .05$) compared to women (.347, $p > .05$) and are significantly less likely to switch to wanting a child (-1.778, $p < .05$) compared to women (-.583, $p > .05$).

The results for men and women who got married and switch to childless are not significant but are both negative coefficients.

Time for leisure.

All coefficients are positive.

Men (.280, $p < .05$) and women (.375, $p < .05$) who express concern about time for leisure are more likely to be consistently childless.

Women are more likely to switch to wanting a child (.259, $p < .05$) compared to men (.269, $p > .5$).

- Childbearing will have a larger impact on women's leisure time than men's reflecting traditional gender role.

Familial motivation

All coefficients are negative.

No significant results are found for either men or women with family motivation and postponement

Men who have family motivation are less likely to switch to childlessness (-.228, $p < .05$) compared to women with family motivation where no significant result was found (-.264, $p > .05$)

Men and women who have family motivation are significantly less likely to be consistently childless. The effect is stronger for women (-.817, $p < .05$)

	<p>than for men (-.782, $p < .05$) They are also less likely to switch to wanting a child. Again this effect is stronger for women (-.986, $p < .05$) than it is for men (-.397, $p < .05$)</p> <ul style="list-style-type: none"> - Men and women who have family motivation are more likely to enter into intended parenthood. <p>Largest group are postponers, Second largest group are those who carry out their intention to have a child Third largest group are those who switch from wanting a child to not wanting a child Fourth group are those who did not intend to have a child but did so in subsequent wave</p>
Authors conclusions	A surprising amount of shifts in childbearing decisions were observed. The decision about childbearing appears to be less firm than previous generations.
Data extractor comments <i>(statement on quality which will be informed by data extraction and critical appraisal)</i>	<ul style="list-style-type: none"> • Large Sample of respondents • Limited to blacks and non-Hispanics, • Good range of results however the differences between the childbearing intentions of males and females are somewhat neglected with the results illustrated in the table not being adequately reported. Furthermore the non-significant results are not discussed.

Section 2. Critical appraisal

For each question answer: Yes [Y] / Can't tell [?] / No [N]; and add explanatory notes where necessary

A/ What is this paper about?

1. Does the paper address a clearly focused issue?	
in terms of ...	Y- Childless couples, large sample
<ul style="list-style-type: none"> • The population studied? • (case-control study only) Is the case definition explicit and confirmed? 	
<ul style="list-style-type: none"> • The outcomes considered? 	Y – Trends in the intention to remain childless
<ul style="list-style-type: none"> • Are the aims of the investigation clearly stated? 	N – Unclear about predictors, which were used and which ones were employed as control variables

A/ Do you trust it?

2. Is the choice of study method appropriate?	Y
3. Is the population studied appropriate?	
<ul style="list-style-type: none"> • (<i>x-sec study</i>) Was the sample representative 	Y – Large sample, however limited to non-Hispanic

of its target population?	whites and Blacks. Does not reflect the ethnicity and race of American inhabitants
<ul style="list-style-type: none"> • <i>(cohort study)</i> Was an appropriate control group used – ie were groups comparable on important confounding factors? 	
<ul style="list-style-type: none"> • <i>(case-control study)</i> Were the controls randomly selected from the same population as the cases? 	
4. Is confounding and bias considered?	
<ul style="list-style-type: none"> • Have all possible explanations of the effects been considered? 	Y and N. Gender differences are not given adequate attention, non-significant results are not discussed
<ul style="list-style-type: none"> • Did the study achieve a good response rate? 	
<ul style="list-style-type: none"> • <i>(cohort study)</i> Were the assessors blind to the different groups? 	n/a
<ul style="list-style-type: none"> • <i>(cohort study)</i> Could selective drop out explain the effect? 	n/a
<ul style="list-style-type: none"> • <i>(x-sec study)</i> Were rigorous processes used to develop the survey questions/measures? (E.g. were the questions piloted/validated?) 	No detail about how the survey was developed
<ul style="list-style-type: none"> • <i>(case-control study)</i> How comparable are the cases and controls with respect to potential confounding factors? 	n/a
<ul style="list-style-type: none"> • <i>(case-control study)</i> Were interventions and other exposures assessed in the same way for cases and controls? 	n/a
5. (Cohort study) Was follow up for long enough?	n/a
<ul style="list-style-type: none"> • Could all likely effects have appeared in the time scale? 	
<ul style="list-style-type: none"> • Could the effect be transitory? 	
<ul style="list-style-type: none"> • Was follow up sufficiently complete? 	
<ul style="list-style-type: none"> • Was dose response demonstrated? 	

C/ What did they find?

6. Are tables/graphs adequately labelled and understandable?	Y Gender differences not adequately explained or reported in the results. Non-significant results are not reported
7. Are you confident with the authors' choice and use of statistical methods, if employed?	Y

D/ Are the results relevant locally?

8. Can the results be applied to the local situation? Consider differences between the local and study populations (eg cultural, geographical, ethical) which could affect the relevance of the study.	Y Although restricted to non-Hispanic whites and Blacks. Cultural differences may also be evident
9. Were all important outcomes/results considered?	Y
10. Is any cost-information provided?	N

Appendix E: Evidence table

Table E1

Studies examining the association between being in a relationship/married and childbearing

Paper (topics)	Fertility outcome and how measured	Driver & how measured	Sample (data source, ages, gender etc, date)	Data: Length of study; response rate; type of analysis & adjustments	Results	Conclusions
Heaton et al., 1999 (Factors related to persistence and change in the decision to remain childless)	1 st postpones: they want children at wave 1 but had not had children at wave 2. 2 nd group: switches from initially wanting children at wave 1 to no longer wanting children at wave 2. 3 rd group: consistently childless they have no children and do not intend to have children 4 th group: respondents who did not	Married at wave 1 = Whether the respondent was married at the beginning of the study Got married = whether the respondent got married during the interval period. Other variables = age gender, race, perceived stability of relationship, marital status, family motivation, income, desired age at first birth, personal motivation, gender, time for leisure, believes mothers work is harmful,	National probability sample based on Wave I and Wave II of the NSFH (National surveys of families and households) Sample of 1,172 women aged 19- 39 and men with partners/spouses aged 19-39, Blacks and Non- Hispanic Whites, Only non-sterilized respondents who had never had a child at wave I and who were either married or never married.	Six years follow- up (1988-1994) Multinomial regression analysis Adjusted for: age, education, earnings and attitudes towards gender role	<i>Married</i> Table 2: Model 2: the introduction of partner status variables Married at wave 1. Increases the likelihood of having a child Being married at wave 1 significantly decreases postponement (-2.398, $p < .05$), being consistently childless (-3.343, $p < .05$) and switching to wanting children (-2.545, $p < .05$) - those who are married at wave 1 intended to have a child at wave 1 and did so at wave 2. (no other significant results were found, all large negative coefficients) <i>Got married</i> Those who got married during the waves of the survey were less likely to postpone childbearing (-1.472, $p < .05$) and were less likely to switch to wanting a child (-1.113, $p < .05$) Table 3: the introduction of career and leisure variables Being married at wave 1 significantly decreases postponement (-2.405, $p < .05$), switching to childless (-1.783, $p < .05$), being consistently childless (-3.345 $p < .05$) and switching to	<ul style="list-style-type: none"> The negative coefficients observed for being married at wave one or getting married during the interval (regardless of whether they were statistically significant) illustrate illustrates that those who are cohabiting or married are unlikely to be in any of the four groups. They intended to have a child at wave 1 and did so by wave 2. Having strong ties to a partner increases the likelihood of having a birth Two of the strongest factors that predict changes in childbearing are being married or marrying between the two surveys. The decision to have a child is still clearly and strongly related to the decision to marry

Table E1

Studies examining the association between being in a relationship/married and childbearing (continued)

Paper (topics)	Fertility outcome and how measured	Driver & how measured	Sample (data source, ages, gender etc, date)	Data: Length of study; response rate; type of analysis & adjustments	Results	Conclusions
	want children but had children or decided they wanted to have a child.				<p>wanting children (-2.522, $p < .05$)</p> <ul style="list-style-type: none"> - Those who are married at wave 1 intended to have a child at wave 1 and did so at wave 2. (All large negative coefficients, slightly more negative than results in table 2) <p>Introducing career and leisure variables significantly decreases the likelihood of switching to childlessness compared to the previous table (table 2) where demographic and partner status variables are considered Those who got married during the waves of the survey were less likely to postpone childbearing (-1.440 $p < .05$) and were less likely to switch to wanting a child (-1.096, $p < .05$)</p> <p>Results are similar to previous model, however the negative coefficients are slightly smaller, the introduction of career and lifestyle factors decreases the effect.</p> <p>Table 4: Introduction of personal and family value variables</p> <p>Being married at wave 1 significantly decreases postponement (-2.421, $p < .05$), switching to childless (-2.186, $p < .05$), being consistently childless (-3.452 $p < .05$) and switching to wanting children (-2.657, $p < .05$) Those who are married at wave 1 intended to have a child at wave 1 and did so at wave 2. (All large negative coefficients, all coefficients are larger than those found in previous models).</p>	

Table E1

Studies examining the association between being in a relationship/married and childbearing (continued)

Paper (topics)	Fertility outcome and how measured	Driver & how measured	Sample (data source, ages, gender etc, date)	Data: Length of study; response rate; type of analysis & adjustments	Results	Conclusions
					<p>Those who got married during the waves of the survey were less likely to postpone childbearing (-1.483 $p < .05$) and were less likely to switch to wanting a child (-1.022, $p < .05$)</p> <p>Results are similar to previous model, however the negative coefficient for postponement is slightly larger and the coefficient for switching to parenthood or wanting a child is slightly smaller,</p> <p>Table 5: The variables with the largest effects were selected to compare the results for males and females, based on magnitude of coefficients and significance.</p> <p>Sample is relatively small when divided by gender.</p> <p>Married at wave 1.</p> <p>All the results for male and females who were married at wave one are significant and the coefficients are negative, reflecting previous results found for marriage.</p> <p>- Men and women who are married at wave one intended to have a child at wave one and did so by wave 2.</p> <p>The pronatalist effect for marriage is however stronger for men than women.</p>	

Table E1

Studies examining the association between being in a relationship/married and childbearing (continued)

Paper (topics)	Fertility outcome and how measured	Driver & how measured	Sample (data source, ages, gender etc, date)	Data: Length of study; response rate; type of analysis & adjustments	Results	Conclusions
					<p><i>Got married</i></p> <p>For both men (-1.515, $p < .05$) and women (-1.454, $p < .05$) who got married during the interval, the likelihood of postponement is significantly decreased.</p> <p>Men who got married are less likely to be consistently childless (-1.553, $p < .05$) compared to women (.347, $p > .05$) and are significantly less likely to switch to wanting a child (-1.778, $p < .05$) compared to women (-.583, $p > .05$).</p> <p>The results for men and women who got married and switch to childless are not significant but are both negative coefficients</p>	
Testa and Toulemon 2006 (Fertility preferences and subsequent reproductive behaviour)	All births that occurred between 1998 and 2003. Women who were pregnant or had a birth by 2003 were considered achievers	Marital and de facto conjugal status Marital status is coded as: single cohabiting and married. The category single covers unmarried, separated divorced and widowed respondents. The group is further divided between respondents who remain single for the whole follow up period and those who were single in 1998 but with a partner in 2003. Other variables: age, marital status, employment, education, religion, cohabitation length	Men and women aged 20-45. Although 363 included the subsample – logistic regression based on 91 respondents who were fertile and childless at baseline, and had a child by 2003.	65% response rate for whole sample 5 years follow-up (1998-2003) Multivariate logistic regression Control Variables: Gender, Age, Marital status, Education, employment, religion	<p>Table 5. Full model (not just intentions) The coefficients of fertility desires or intentions are much lower than in the intentions only model.</p> <p>Marital status (Married=reference category). Being single in 1998 decreased the likelihood of having a birth within the five years (in model 1: OR 0.1, $p < .05$, In rest of models OR 0.2, $p < .01$) compared to being married.</p> <p>Being single in the whole period significantly decreased the likelihood of having a first birth in all the models (OR, 0.1, $p < .05$) compared to being married.</p> <p>Table 7: persistent postponement of a child (voluntary) Being single in 1998 is significantly related to voluntary postponement (18.0, $p < .01$) and being single in 1998 and 2003 is also significantly related to voluntary postponement (24.6, $p < .05$) compared to those who are married.</p>	<ul style="list-style-type: none"> • Being married is a strong predictor of having a first birth • Being single in 1998 and in the whole survey period decreases the likelihood of having a first birth and being single increases postponement of first birth

Table E1

Studies examining the association between being in a relationship/married and childbearing (continued)

Paper (topics)	Fertility outcome and how measured	Driver & how measured	Sample (data source, ages, gender etc, date)	Data: Length of study; response rate; type of analysis & adjustments	Results	Conclusions
Liefbroer 2005 (The impact of the costs and rewards on timing of first birth)	Timing of 1st birth: full birth histories containing both year and month of birth during first wave and updated at all subsequent waves. The age at which the pregnancy leading up to first childbirth occurred was used as the indicator of the timing of the decision to have a first child.	Relationship status at the time of the first wave: measured by a set of dummy variables indicating whether the respondent had no partner, a steady partner, lived in a consensual union, or was married. Other variables: parent's education, parent's religiosity, gender, birth cohort, education attainment, relationship status, employment status.	840 men and women between the ages of 18 and 26 at wave 1 and 30-38 at wave 5 Data came from the Panel Study on Social Integration in the Netherlands (PSIN).	47% of original sample 13 year study (5 waves of data from 1987-2000) Relative risk estimates of having a first birth (Hazard rate models, odd ratios)	Table 3 & 4 Model 1: the main effect for the perceived costs and rewards. Steady dating increased the relative risk of having a first birth for women (1.852, $p<.01$) and men (2.903, $p<.01$) Being In a consensual union dating increased the relative risk of having a first birth for women (3.036, $P<0.01$) and men (3.506, $p<0.01$) Being married increased the relative risk of having a first birth for women (3.713, $p<0.01$) and men (9.550, $p<0.01$) Model 2: all statistically significant interactions Steady dating increased the relative risk of having a first birth for women (1.864, $p<.01$) and men (2.903, $p<.01$) Being In a consensual union increased the relative risk of having a first birth for women (3.268, $p<0.01$) and men (3.878, $p<0.01$) Being Married increased the relative risk of having a first birth for women (3.696, $p<0.01$) And men (10.510, $p<0.01$)	<ul style="list-style-type: none"> • Being in a relationship increases the likelihood of having a first birth. The stronger the level of commitment the greater the likelihood of experiencing a first birth, illustrated by the higher relative risk estimates for the differing relational categories. • Being married is the strongest predictor of having a first birth for both women and men • Relationship status has a stronger effect on the relative risk of having a first birth for men than for women particularly for being married. • In model two all the relative risk estimates slightly increase for men and women bar one: for women a slight decrease in the relative risk of having a first birth is observed in model two for being married. Further, the biggest difference between men and women can be observed here.

Table E1

Studies examining the association between being in a relationship/married and childbearing (continued)

Paper (topics)	Fertility outcome and how measured	Driver & how measured	Sample (data source, ages, gender etc, date)	Data: Length of study; response rate; type of analysis & adjustments	Results	Conclusions
Miller & Pasta 1995 (childbearing intentions effect on trying to get pregnant)	Proception = tried to get pregnant during last 12 months at baseline = 1, at first , second or third follow-up were coded 2,3,4 respectively. All other respondents were coded 5,6 or 7 depending on how soon they intended to have a child.	Whether the couple had been Separated/divorced during the 3.5 year follow-up	201 childless married couples. Based in urban and sub-urban areas of California, during 1988-1989	One, two and 3.5 years following initial interview Response rate = no information Conducted multivariate Logistical regression analysis	Separated divorced decreased proception ($r=.104$, $t=4.42$, $p<.05$)	<ul style="list-style-type: none"> Being separated or divorced acted as a delay in the initiation of proception

Note: B = standardised beta weight, OR = odd ratio, se = standard error, t= t-test statistic, r=regression coefficient.

Appendix F: Synthesis table

Driver	Outcome	Direction of evidence, number of studies country
	1st live birth	
Age		
Younger age		↑*** B, ↑*** M (US.)
Older Age		↔ B (US.) ↑* B (Netherlands) ↓*** B (France) ↑** F & M (Netherlands) ↑* B ↑* M ↑* F (U.S)
Wife is Younger		↑** B (U.S)
Wife is Older		↓** B (U.S)
Education		
Low education		↑* M ↔ B (U.S) ↑* B (U.S) ↔ B (Netherlands) ↔ B (France)
Medium education		↓* F & M ↔ B (U.S) ↓*** F & M ↔ B (US.) ↔ B (France) ↔ B (Netherlands)
High education		↔ B (France) ↓** F ↓** B(Netherlands) ↓* B (U.S)
Enrolled in education/full time student		↔ B (US)
Situational Factors		
Social mobility		↑*** B (U.S)
Geographical mobility		↔ (U.S)
Longer observational period		↑*** B (U.S) ↓** (U.S)
Parity 0		↑*** B, M& F (US)
Race		
Non-White		↑* B (U.S)
Black		↓* B ↓* M (U.S)
Relationship		
Married		↑*** F & M (US.) ↑** F & M (Netherlands)

Driver	Outcome 1 st live birth	Direction of evidence, number of studies country
		↑* B (U.S) ↓* B ↓* M ↓* F (U.S)
Single Cohabitation		↓** B (France) ↔ B (France) ↓*** B (US) ↔ B (U.S)
In relationship (not cohabiting)		↑** M & F (Netherlands)
Relationship duration (longer)		↓** (U.S) ↑* B (Netherlands) ↔ B (France)
High relationship stability		↔ B (U.S) ↔ B (U.S)
Low relationship stability		↓** B (U.S) ↔ B (U.S)
Effect on relationship (negative)		↑** B ↔F & M (Netherlands)
Occupational conditions Unemployed		↓** B (France) ↔ B (Netherlands)
Perceived costs to career		↔M, ↔F ↓* B, (Netherlands)
Employed		↔ B (US.) ↔ B (Netherlands)
Husband employed Wife employed		↑** B (U.S) ↔B (U.S)
Financial status Low income		↓* B, M (US.) ↑* B (U.S) ↔ B (France)
High income		↔ B (US.) ↔ B (France)
Family Of Origin Number of siblings (higher)		↓* B ↓* F (U.S) ↑** M ↑* B (Netherlands)

Driver	Outcome 1st live birth	Direction of evidence, number of studies country
		↑*** B (U.S)
		↑*** B (U.S)
Mother higher religious affiliation		↓** B (U.S)
Parents higher religious affiliation		↔ B (Netherlands)
Respondents family income		↔ B (U.S)
family financial assets (higher)		↓** B (U.S)
Mothers marital history		↓* B (U.S)
Parents divorced		↔ B (U.S)
Educational attainment of mother and father (higher)		↓** F, ↓** B (Netherlands)
		↔ B (Netherlands)
		↓** B (U.S)
Mothers age at first birth (higher)		↔ B (U.S)
		↔ B (U.S)
Support		
Religious		
Higher religious affiliation		↔ B (U.S)
		↑** B (U.S)
		↔ B (France)
Parenting motivations and Family Values		
Traditional gender role attitudes		↑* B (U.S)
Egalitarian gender role attitudes		↔ B (U.S)
Wife has egalitarian gender role attitudes		↑** B (U.S)
Husband has traditional gender role attitudes		↔ B (U.S)
Husband has egalitarian gender role attitudes		↔ B (U.S)
Expected rewards		↑* B (Netherlands)
Perceived chances of having a baby/fedunctity		↑* B (Netherlands)
		↔ B (France)
Evaluation of current state of being childless		↔ B (Netherlands)
Positive attitudes towards luxury goods		↓** B (U.S)
Attitudes towards childbearing		↓* B (U.S)
		↔ B (U.S)
Attitudes towards activities		↑** B (U.S)

Driver	Outcome 1st live birth	Direction of evidence, number of studies country
with children		
Children cause worry		↓** B (U.S)
Family size preferences		↑*** B (U.S)
Positive attitudes towards career		↓** B (U.S) ↓* B (U.S)am
Personal motivation		↔ B (U.S)
Higher sense of security about childbirth		↑* B, ↑* F ↔ M (Netherlands)
Family motivation		↓*B ↓*M ↓* F (U.S)
Perceived costs to individual autonomy		↓** F (Netherlands)
Perceived costs to spending power		↓* M, ↔B, F (Netherlands)
Gender		
Men		↓* M (France)
Gender differences		↔ B (U.S) ↔ B (US.) ↔ B (U.S) ↔ B (Netherlands)
Intentions		
Yes very sure		↑*** B, ↑** F & M (US.)
Yes moderately sure		↑*** B, M & F (US.)
Yes not sure		↑** B ↑** F (US.)
No not sure/ No moderately sure		↑* B ↑* M (US.)
Spouse has perceived higher fertility intentions		↑*** B (US.)
Spouse has perceived lower intentions		↓** B (US.)
Expected birth within next 5 years		↑*** B ↑*** F (US.) ↑*** B (France)
Expected bith within 5 years – no probably not		↔ B (France)
Intention to have a child		↑* B (Netherlands)
Both desire children		↑*** B (U.S)
Only husband desires a child		↑** M ↓** F (U.S)
Only wife desires a child		↓** M ↑** F (U.S)

Driver	Outcome 1st live birth	Direction of evidence, number of studies country
Both Want a child		↑** M & F (U.S)
Wife only childbearing desires		↔ B (U.S)
Husband only childbearing desires		↔ B (U.S)
Neither desire children		↔ B (U.S)
Wants a child immediately		↑*** B (France)
Interactions		
Higher costs to relationship * Duration		↓* B(Netherlands)
Higher Sense of security about childbirth *Duration		↓** B (Netherlands)
Percieved fewer costs ot career * Duration		↓* B (Netherlands)
Individual autonomy * Duration		↓** B (Netherlands)

Note: ↓= hinders childbearing, ↑= facilitates childbearing, ↔ no significance, B = for both men and women, F = for females only, M= for males only.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Appendix G: Evidence tables for significant results

Table G.1

Evidence map for the results for demographic drivers according to outcome for the longitudinal studies^{1, 2}

DEMOGRAPHIC DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Age	<p>Age significantly increased the likelihood of switching (.139*) to wanting to be childless B [Heaton et al., 1999; model 1 – socio-demographic variables]. This was also found for model 3 (.212*) B, where career and lifestyle variables were added and model 4 with personal and familial variables (.199*) B]</p> <p>Older respondents were more likely to intend to have a child within the next 4 years at time 1 (.19**) B [Taris, 1998]</p>	<p>Age significantly increased the likelihood of postponement for men (.119*) but not for women .009] [Heaton, 1999; comparison between gender]</p> <p>Age 30 squared significantly decreased the likelihood of involuntary postponement in the five years (.4*) B. But increased the likelihood of voluntary postponement (2.0*) B. [Testa & Toulemon, 2006; Model 5]</p>	<p>Age significantly increased the likelihood of switching to parenthood (.142*) B [Heaton et al., 1999; model 1 – socio-demographic variables, in model 3 – the introduction of career and lifestyle variables (.236*) B and model 4- personal and familial variables (.334*) B]</p> <p>Older age decreases the likelihood of first birth (.017**) F, (.003**) M. [Liefbroer, 2005; model 2]</p> <p>Age 30 squared significantly decreased the likelihood of having a birth within the five years (.04***) B. [Testa & Toulemon, 2006; Model 5]</p> <p>Wife is older decreased the likeliness to have a child (.939 **)B. [Myers, 1997]</p> <p>Older respondents were more likely to have had a first birth (.17**)B [Taris, 1998]</p> <p>Older age increased the odds of having a first birth (1.14, p<.001), age * time shows that individuals belonging to different birth cohorts had different probabilities of having a child (0.99, p<.05) M, F [Jokela et al 2009]</p> <p>Being aged 18-24 increased the likelihood of having a first child (.66***)M, (.52***)F, [Philipov, 2009] as did being aged 25-29 (.66***)M [Philipov, 2009]</p>	<p>Age significantly increased the likelihood of being consistently childless (.299*) to wanting to be childless B [Heaton et al., 1999; model 1 – socio-demographic variables and model 3 – introduction of career and lifestyle variables (.368*) B and model 4- personal and familial variables (.193*) B]</p>

Table G.1

Evidence map for the results for demographic drivers according to outcome for the longitudinal studies (continued)^{1, 2}

DEMOGRAPHIC DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Race	Being Black significantly decreased the likelihood of switching to wanting to be childless (-.761) B [Heaton et al., 1999; model 1 – socio-demographic variables] This was also found for model 3 (-2.168*) B, where career and lifestyle variables were added and model 4 with personal and familial variables (-1.979*)B]	Being Black significantly decreased the likelihood of postponement (-1.536) B [Heaton et al., 1999; model 2 – socio-demographic variables plus partner status, and in model 4 with personal and familial variables (-1.465*)B]	Being Black significantly decreased the likelihood of parenthood (-1.471*) B [Heaton et al., 1999; model 3 – introduction of career and lifestyle variables and model 4 with personal and familial variables (-1.056*)B] For women no significant effect is found for being black and switching to wanting a child, whereas for men this is significantly decreased (-1.534*) Being non white increased likeliness to have a child (.670*) B. [Myers, 1997]	Being Black significantly decreased the likelihood of being consistently childless (-1.141*) B [Heaton et al., 1999; model 1 – socio-demographic variables, model 3 – the introduction of career and lifestyle variables (-2.611*)B, and model 4 with personal and familial variables (-2.139*)B]
Gender			Being female significantly increases the likelihood of having a marital first birth (.39***). [Barber, 2001, Table 3; attitudes towards competing alternatives, model 4 for premarital first birth and model 8 for marital] Men are less likely to have children compared to women in the five years (0.5*). [Testa. 2006; Model 5] Being male decreased the odds of having a first birth (0.76, p<.01) [Jokela et al 2009] Being female increased the hazard rate of first birth (1.84, p<.01) [Reis et al 2011]	

Note: ¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only.
*p<.05, **p<.01, ***p<.001.

Table G.2

Evidence map for the results for socio-economic drivers according to outcome for the longitudinal studies^{1, 2}

SOCIO- ECONOMIC DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLISSNESS
Education		Education significantly increased the likelihood of postponement (.079*) B [Heaton et al., 1999; model 1 – socio-demographic variables and model 3 – introduction of career and lifestyle variables (.090*)B	Education significantly decreased the likelihood of switching to parenthood (-.168*) B [Heaton et al., 1999; model 1 – socio-demographic variables and model 3 the introduction of career and lifestyle variables (-.175*)B, and model 4 with personal and familial variables (-.214*) B]	Education significantly decreased the likelihood being consistently childless [Heaton et al., 1999; model 4 personal and familial variables(-.142*) B]
Being in education			Higher education lead to decreased odds of having a first child (0.91, p<.05) M, F [Jokela et al., 2009]	
			Having a low education (less than secondary) increased the likelihood of having a first birth (.44**)M, [Philipov, 2009]	
			Being in education decreased the likelihood of having a first child (-.51**) M, (-.46**)F [Philipov, 2009]	
			Being in education decreased the likelihood of first birth (-.47**)M, F, [Barber, 2000, Table 4, Model 3]	
Intentions to start study			Intending to start studying decreased the likelihood of having a first child (-.31*)F, [Philipov, 2009]	
Proportion of grades that were A and B in final semester of high school			Decreased the likelihood of having a premarital first birth (-.60*) B [Barber, 2001, Table 2; attitudes towards childbearing]	

Table G.2

Evidence map for the results for socio-economic drivers according to outcome for the longitudinal studies (continued)^{1, 2}

SOCIO- ECONOMIC DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Social mobility			Social mobility increased the likelihood of having a first birth (2.431***) B. [Myers, 1997]	
Income		Higher income significantly decreased the likelihood of postponement (-.209*) B [Heaton et al., 1999; model 1 – socio-demographic variables, model 2- socio-demographic variables plus partner status (-.178) B and model 3 –of career and lifestyle variables (-.175*) B] Men with high income are less likely to postpone childbearing (-.212*) whereas for women income has no effect on postponement. [Heaton et al., 1999; gender comparisons] Wife’s income contribution decreases the likelihood of having a first birth (.981**)B. [Myers, 1997]	Higher income significantly decreased the likelihood of parenthood (-.265*) B [Heaton et al., 1999; model 1 – socio-demographic variables, model 3 career and lifestyle variables (-.281*) B and model 4, personal and familial variables (-.265*)B] Income is associated with a decreased likelihood of switching to wanting a child (-.456, p<.05)F. [Heaton et al., 1999; gender comparisons] Family income (higher) decreased the likelihood of first birth (.988*)B. [Myers, 1997] Low income increased the likelihood of having a first birth (.988*) B. Myers, 1997]	
Employment			Being male and working full time increased the likelihood of having a marital first birth (.87*) [Barber, 2001, Table 6; Early adulthood experiences, model 4 for premarital first birth, model 8 for marital] Being unemployed decreases the likelihood of having a first birth (.01**) [Testa & Toulemon, 2006; Model 5] Being employed increased the likelihood of having a first child (.67***)M, [Philipov, 2009]	

Note: ¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only. *p<.05, **p<.01, ***p<.001.

Table G.3

Evidence map for the results for relational drivers according to outcome for the longitudinal studies^{1, 2}

RELATIONAL DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Marriage	Being married at the beginning of the survey decreased the likelihood of switching to childlessness (-3.343*) B, [Heaton et al., 1999; model 2 – socio-demographic variables plus partner status, in model 3 – introduction of career and lifestyle variables (-2.783*) B, and model 4 personal and familial variables (-2.816*) B]	Being married at the beginning of the survey decreased the likelihood of postponement (-2.398*) B, as did getting married between the phases (-.1472*) B [Heaton et al., 1999; model 2 – socio-demographic variables plus partner status]. This was also found for model 3 with the introduction of career and lifestyle variables (-2.405*, -1.440*) B, and in model 4 personal and familial variables (-.2421*, -1.483*)B]	<p>Being married at the beginning of the survey decreased the likelihood of switching to parenthood (-2.545*) B, [Heaton et al., 1999; model 2 – socio-demographic variables plus partner status, in model 3 career and lifestyle variables (-2.522*) B, and in model 4 personal and familial variables -2.657*) B]</p> <p>Getting married at between the phases of the survey decreased the likelihood of switching to parenthood (-1.096*) B, [Heaton et al., 1999 in model 3, and in model 4 personal and familial variables (-1.022*)B]</p> <p>Men are significantly less likely to switch to wanting a child (-1.778*) compared to women (-.583). [Heaton et al., 1999; gender comparisons]</p> <p>married increases the likelihood of first birth (3.696**) F, (10.51**)M. [Liefbroer, 2005; Model 2]</p> <p>Being married increased the odds of having a first birth (7.06p<.05) M, F [Jokela, et al., 2009]</p> <p>Being married increased the hazard rate of first birth for men and women (2.34**) M, (1.42**)F [Reis et al., 2011]</p> <p>Being married increased the likelihood of first birth (2.46***)M,F [Barber, 2000, Table 4 Model 3]</p>	<p>Being married at the beginning of the survey decreased the likelihood of remaining consistently childless [Heaton et al., 1999 model 3 – introduction of career and lifestyle variables (-3.345*) B and model 4, personal and familial variables (-3.452 B)]</p> <p>Men who got married are less likely to be consistently childless (-1.553*) compared to women (.347) [Heaton et al., 1999; gender comparisons]</p>

Table G.3

Evidence map for the results for relational drivers according to outcome for the longitudinal studies (continued)^{1, 2}

RELATIONAL DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Cohabiting		Beginning cohabitation between the phases decreased the likelihood of postponement (-.938*) B [Heaton et al., 1999; model 2 – socio-demographic variables plus partner status]. This was also found for model 3 with the introduction of career and lifestyle variables (-.848*) B. and for model 4 personal and familial variables (-.996*)B]	<p>Cohabitation increased the likelihood of premarital first birth (1.47***) B. [Barber, 2001, Table 6; Early adulthood experiences, model 4 for premarital first birth, model 8 for marital]</p> <p>Being in a consensual union increases the likelihood of first birth (3.268**) F, (3.878**)M. [Liefbroer, 2005; Model 2]</p> <p>Cohabiting increased the likelihood of first birth (1.43***)M,F [Barber, 2000; Table 4 Model 3]</p>	<p>Cohabitation decreased the likelihood of consistently childlessness (-.2048*) B [Heaton, 1999, model 3 – career and lifestyle variables, and model 4 personal and familial variables (-2.293*)]</p> <p>For consistently childless, male cohabiters are significantly less likely to be consistently childless (-2.514*) whereas for women, although the coefficient is negative no significant result is found.[Heaton et al., 1999; gender comparisons]</p>
Steady dating			Steady dating increases the likelihood of first birth (1.864**) F, (3.053**)M. [Liefbroer, 2005; Model 2]	
Went steady before age 18			<p>Going steady before the age of 18 increased the likelihood of a premarital (.96***) and marital first birth (.82***) B [Barber, 2001, Table 2; Attitudes towards childbearing model 4 for premarital and model 8 for marital]</p> <p>Going steady before the age of 18 increased the likelihood of having a first birth (.61***)M, F [Barber, 2001, Table 3, model 3].</p>	

Table G.3

Evidence map for the results for relational drivers according to outcome for the longitudinal studies (continued)^{1, 2}

RELATIONAL DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLISSNESS
Single		<p>Being single at the beginning of the survey (18.0**) B, and through the whole follow up period (24.6**) B, increased the likelihood of voluntary postponement compared to married individuals [Testa & Toulemon, 2006; Model 5]</p> <p>Being single at the beginning of the survey (18.0**) B, and through the whole follow up period (24.6**) B, increased the likelihood of voluntary postponement [Testa & Toulemon, 2006; Model 5]</p>	<p>Being single at the beginning of the survey (.2**) B, and through the whole follow up period (0.1**) B, decreases the likelihood of first birth [Testa & Toulemon, 2006; Model 5]</p> <p>Being single was found to decrease the likelihood of having a first child for men and women compared to those who were married (-1.50***) M, (-0.92)F, [Philipov, 2009]</p>	
Divorced			Separated divorced decreased proception (.104*)B. [Miller & Pasta, 1995]	
Remarried			Remarriage decreased the likelihood of first birth (.902*)B. [Myers, 1997]	
Union duration		<p>Being in a union for 3-6 years decreased the likelihood of involuntary postponement (0.1*) B.</p> <p>Being in a union for 3-7 grouped with 7+ years increased the likelihood of voluntary postponement (5.3*)B. [Testa & Toulemon, 2006; Model 5]</p>	Longer duration of marriage decreased the likelihood of first birth (.815***) B. [Myers, 1997]	

Table G.3

Evidence map for the results for relational drivers according to outcome for the longitudinal studies (continued)^{1, 2}

RELATIONAL DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLISSNESS
Marital happiness/stability/ relationship with partner			Negative evaluations of the impact childbearing has on relationship with partner decreases the likelihood of first birth (.0954**)M, [Liefbroer, 2005]	Marital stability increased the likelihood of being consistently childless (-.291*) B Heaton et al., 1999; model 4 – personal and familial variables]
Divorce proneness			Divorce proneness decreased the likelihood of first birth (.759**)B. [Myers, 1997]	
Marriage age preference			Preferring marriage at an older age hinders childbearing (-.09***)M, F, [Barber, 2000, Table 3, Model3]	

*Note:*¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only.
*p<.05, **p<.01, ***p<.001.

Table G.4

Evidence map for the results for life cycle according to outcome for the longitudinal studies^{1, 2}

LIFE CYCLE DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Perceived fecundity			Perceived fecundity increases proception (.053*) M, (.258*) F. [Miller & Pasta, 1995]	
Perceived success	Higher perceived success was positively associated with the intention to have a child (.31***) B [Taris, 1998]			
Current state of childlessness	Was negatively related to intentions to have a child (-.32***) B [Taris, 1998]			

Note: ¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only.
*p<.05, **p<.01, ***p<.001.

Table G.5

Evidence map for the results for family of origin drivers according to outcome for the longitudinal studies ^{1, 2}

FAMILY OF ORIGIN DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLISSNESS
Parental divorce/single parent-m			Having parents who are divorced decreases the likelihood of having a first birth (.561**) F. [Liefbroer, 2005; Model 2]	
Sibling size/ mothers completed family size			Mothers total number of children increased the likelihood of having a premarital (.28***) and marital first birth (.09***) B. [Barber, 2001, Table 2; Attitudes towards childbearing model 4 for premarital and model 8 for marital]	
			Mothers total amount of children (higher number), facilitates the likelihood of first birth (.11**) M, F [Barber, 2000, Table 3, Model 3]	
			Higher number of siblings increases the likelihood of first birth (1.094*)M, [Liefbroer, 2005; Model 2]	
Parents favour having children			Having one (.55**) M, or two siblings (.48*) M, increased the likelihood of having a first birth [Philipov, 2009] Parents favour having children increased proception (.173*) F. [Miller and pasta 1995]	

Table G.5

Evidence map for the results for family of origin drivers according to outcome for the longitudinal studies (continued)^{1, 2}

FAMILY OF ORIGIN DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Mothers marriage age preference			The mother wanting her child to marry at an older age hinders childbearing (-.08**)M, F [Barber, 2000; Table 3, Model 3]. (-.05*) M, F [Barber, 200; Table, 4, model 3]	
Mothers minimum education preference for child			The mother wanting her child to have a higher education hinders childbearing (-.08*)M, F, [Barber, 2000; Table 3, Model3], (-.07**) M, F, [Barber, 2000, Table 4, Model 3]	
Parents education			The average of parents education decreased the likelihood of premarital first birth (-.11*) [Barber, 2001, Table 2; Attitudes towards childbearing model 4 for premarital and model 8 for marital]	
Parents career preference for child			The mother wanting her child to have a good career decreases the likelihood of the respondent having a first birth (-.18*)M, F [Barber, 2000, Table 3, Model 3]	
Mother worked outside of the home at child age 15			Having a mother who worked outside the home at the child's age of 15 decreased the likelihood of having a first birth (-.40**)M, F [Babrber, 2000, Table 3, Model3]	
Mother worked outside of the home*daughter			Having a mother who worked outside the home at the child's (Daughters) age of 15 increased the likelihood of having a first birth (.46**)M, F [Babrber, 2000, Table 3, Model3]	

Table G.5

Evidence map for the results for family of origin drivers according to outcome for the longitudinal studies (continued)^{1, 2}

FAMILY OF ORIGIN DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLISSNESS
Parents religion			Having a catholic mother decreased the likelihood of having a premarital first birth (-.55**) B. [Barber, 2001, Table 2; Attitudes towards childbearing model 4 for premarital and model 8 for marital]	
Family financial assets			Higher family financial assets decreased the likelihood of premarital first birth (-.59**) B and decreased the likelihood of marital first birth (-.18*) B. [Barber, 2001, Table 2; Attitudes towards childbearing model 4 for premarital and model 8 for marital]	

*Note:*¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only.
*p<.05, **p<.01, ***p<.001.

Table G.6

Evidence map for the results for contextual drivers according to outcome for the longitudinal studies^{1, 2}

SITUATIONAL DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLISSNESS
Rural area of living			Living in a rural area decreased the odds of having a first birth (0.88, p<.**) M, F [Jokela, et al., 2009]	

Note: ¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only.
*p<.05, **p<.01, ***p<.001.

Table G.7

Evidence map for the results for socio-cultural factors according to outcome for the longitudinal studies^{1, 2}

SOCIO-CULTURAL DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLISSNESS
Social support			Social support from friends was found to increase the hazard rate of first birth (1.63*)F [Reis et al., 2011].	

Note: ¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only.
*p<.05, **p<.01, ***p<.001.

Table G.8

Evidence map for the results for intention and desire drivers according to outcome for the longitudinal studies (continued)^{1, 2}

INTENTION AND DESIRE DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Perceived likelihood of having a child within the next five years			Being certain (yes certain) about the perceived likelihood of having a child within the next five years increased the likelihood of having a first birth (15/8*) B, [Testa & Toulemon, 2006; Model 5]. Being somewhat certain (yes probably) about the perceived likelihood of having a first birth in the next five years compared to no certainly not increased the likelihood of having a first birth (16.4*)B. [Testa & Toulemon, 2006; Model 5]	
Child timing intentions			Child timing intentions were positively related to proception (.689*) M, (.724*)F. [Miller & Pasta, 1995]	

Note: ¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only.
*p<.05, **p<.01, ***p<.001.

Table G.9

Evidence map for the results for personal value drivers according to outcome for the longitudinal studies^{1, 2}

PERSONAL VALUE DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLINESS
Time for leisure			Investing in time for leisure increased the likelihood of switching to wanting to be a parent (.241*) B [Heaton et al., 1999; model 3 – introduction of career and lifestyle variables	Investing in time for leisure increased the likelihood of being consistently childlessness (.235*) B [Heaton et al., 1999; model 3 – introduction of career and lifestyle variables
Attitudes towards luxury goods			Women are more likely to switch to wanting a child (.259*) compared to men (.269). [Heaton et al., 1999; gender comparisons] Positive attitudes towards luxury goods decreases the likelihood of premarital (-.33*)B, and marital first births (.19*)B. [Barber, 2001, Table 3; attitudes towards competing alternatives, model 4 for premarital first birth and model 8 for marital]	
Attitudes towards spending power			Attitudes towards luxury goods decrease the likelihood of premarital first birth (-.33**) B. [Barber, 2001, Table 4; attitudes towards childbearing <i>and</i> competing alternatives,] positive evaluations of the effect of having children on spending power increased the likelihood of first birth (1.081*) M [Liefbroer, 2005]	

Table G.9

Evidence map for the results for personal value drivers according to outcome for the longitudinal studies (continued)^{1, 2}

PERSONAL VALUE DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Attitudes towards activities with children			Women with positive attitudes towards activities with children increases the likelihood of having a marital first birth (.15**) [Barber, 2001, Table 4; attitudes towards childbearing <i>and</i> competing alternatives,]	
Belief that children cause worry and strain			Believing that children cause worry and strain decreases the likelihood of marital first birth (-.14*) B. [Barber, 2001, Table 4; attitudes towards childbearing <i>and</i> competing alternatives,]	
Sense of security			More positive evaluations of the sense of security that can accompany childbearing increases the likelihood of first birth (1.099*)F, (1.095**)M [Liefbroer, 2005]	
Tradition gender role			Traditional gender role increased the likelihood of having a first birth (1.146*) B.[Myers, 1997]	
Husband as decision maker			Husband as decision maker increased the likelihood of having a first birth (1.225*) B.[Myers, 1997]	
Believing mothers work is harmful	Believing mothers work is harmful decreased the likelihood of switching to childlessness (-.062*) B, [Heaton et al., 1999; model 3 – introduction of career and lifestyle variables]	Believing mothers work is harmful increased the likelihood of postponement (.044*) B, [Heaton et al., 1999; model 3 – introduction of career and lifestyle variables]		

Table G.9

Evidence map for the results for personal value drivers according to outcome for the longitudinal studies (continued)^{1, 2}

PERSONAL VALUE DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Attitudes towards career			Positive attitudes towards career significantly decreased the likelihood of having a premarital first birth (-.36**) B.[Barber, 2001, Table 3; attitudes towards competing alternatives, model 4 for premarital first birth and model 8 for marital] Attitudes towards career decrease the likelihood of premarital first birth (-.34**) B. [Barber, 2001, Table 4; attitudes towards childbearing <i>and</i> competing alternatives,] Perceiving fewer costs to career significantly increased the likelihood of first birth (1.106*)F, (1.1118*)M, [Liefbroer, 2005]	
Personal motivation		Personal motivation decreased the likelihood of postponement (-.198*)B, [Heaton et al., 1999; model 4 – personal and familial variables]		
Familial motivation	Men who have family motivation are less likely to switch to childlessness (-.228*) compared to women with family motivation where no significant result was found (-.264) [Heaton et al., 1999; gender comparisons]		Familial motivation decreased the likelihood of switching to parenthood (-.564*) B Heaton et al., 1999; model 4 – personal and familial variables]	Familial motivation decreased the likelihood of remaining consistently childless (-.781*) B Heaton et al., 1999; model 4 – personal and familial variables]
Individual autonomy			Less impact childbearing has on an individual's autonomy is positively related to having a first birth (1.195**) F[Liefbroer, 2005]	

*Note:*¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only.
*p<.05, **p<.01, ***p<.001.

Table G.10

Evidence map for the results for personality factors according to outcome for the longitudinal studies^{1,2}

PERSONALITY DRIVER	INTENTIONS	POSTPONEMENT of FIRST BIRTH	TRYING/HAD FIRST BIRTH	VOLUNTARILY CHILDLESSNESS
Sociability			High sociability is positively related to the likelihood of having a first birth (1.15, p<.05) M, F [Jokela et al., 2009; model 1], introduction of marital status increased the odds of having a first birth (1.13, p<.01) [Jokela et al., 2009; model 2]	
Neuroticism			Activity (high stability in individuals personality) is positively related to the likelihood of having a first birth (1.19, p<.05) M, [Jokela et al., 2009, model 1] More neuroticism during adolescence decreased the hazard rate of fist birth for men (0.57p<.01)M, and women (0.64, p<.01) [Reis et al., 2011]	

Note: ¹Only significant results taken. ²Only results from parity 0 taken, B = for both men and women, F = for females only, M= for males only.
*p<.05, **p<.01, ***p<.001.

Appendix H: Recruitment outcome according to website by country and gender

Table F.1

Recruitment outcome according to website placement and country for women (n=8355) and men (n=1690).

Country	Total	Website																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Australia	195	20		5	40				1	1		1			33			1	57		2	65	
Brazil	399	32		127	70					13		1				1						155	
Canada	274	39		16	2	14			10	7		89	1		6			5	1			84	
China	399						200	199														0	
Denmark	405	136		40	2	4			4	3		122							5			89	
France	485	61	7	46	3	54				11	1							1	27			274	
Germany	397	131		40	8	30				11	2	1										174	
India	341	33	193	1	8					5				92								9	
Italy	205	33		21	1	18				7												125	
Japan	481	1	480																			0	
Mexico	711	348		100	27	1				33					1			1		1	22	177	
N.Zealand	107	3				1						1							2			51	
Portugal	230	57		10	2	1				10							85					65	
Russia	408		408																			0	
Spain	606	180		53	24	52				21					5			71	1		28	171	
Turkey	640	333	3	3	1					1	130			96								73	
UK	524	39	3	11	169	49			137	7	1		1	2					4	1		100	
USA	289	28	1	20	9				3	8	2	1	20	1		76			7		1	112	
Other**	170	16	7	13	23	11			1	16	1		4	1	1	2			12	1	2	59	
Total*	7266	1490	1102	506	389	235	200	199	156	154	137	124	117	97	97	92	86	73	64	61	53	51	1783
Female	5856	1102	593	478	374	232	100	99	155	132	88	122	114	51	76	90	80	70	62	59	52	51	1676
Male	1410	388	509	28	15	3	100	100	1	22	49	2	3	46	21	2	6	3	2	2	1	-	107

Note. 1= Facebook; 2 = IPSOS; 3 = Google; 4 = Babycentre; 5 = Clearblue; 6 = China Online; 7 = China clinic; 8 = Infertility Network UK [INUK]; 9 = Cardiff Fertility Studies websites; 10 = Cocukistiyorum; 11 = Landsforeningen for Ufrivilligt Barnlose [LFUB]; 12 = IVF.ca; 13 = India Clinic; 14 = Cider, I want children; 15 = Conceive.com; 16 = Association Portuguese Fertility; 17 = Asociacion Nacional para los prolemas de infertilidad [ASPROIN]; 18 = Fertility.com; 19 = Access; 20 = Embarazada.com; 21 = Ohbaby.com; 22 = Other (refers to websites with less than 50 referrals ~ 130 websites). *Totals do not include 106 participants for which referral source could not be identified (due to incomplete website names, forums etc.) and 2673 participants missing on either referral source information (n=2637) or country data (n=36). **Other refers to countries with less than 100 participants.

Appendix I: Full regression tables for Chapter 3

Table I.1

Summary of regression coefficients for the association between the correlates of economic preconditions with gender interactions

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Control variables									
Gender	.59	.25	.06*	.62	.26	.07*	-1.02	1.28	-.11
Age	.56	.12	.12***	.08	.13	.02	.12	.13	.03
Years trying to conceive	-1.00	.17	-.16***	-1.04	.19	-.16***	-.99	.19	-.15***
Background Variables									
Area of residence				-.09	.26	-.01	.33	.54	.03
Years together				.87	.18	.15***	.51	.31	.09
Perceived fertility				-.17	.12	-.04	-.19	.24	-.04
Economic variables									
University level education				1.08	.11	.25***	.99	.22	.23***
Work salience				.66	.11	.15***	.49	.22	.12*
Economic hardship				-.02	.12	-.00	.05	.25	.01
Have paid work				1.01	.28	.09***	.93	.65	.09
Partner has paid work				-.42	.32	-.04	-.03	.47	-.00
Social variables									
Friends/family have had children				-.03	.11	-.01	-.43	.24	-.09
Know anyone decided not to have children				-.04	.21	-.01	-.21	.43	-.03
Partner subjective norms				-.09	.12	-.02	.02	.27	.01
Comply partner norms				-.29	.14	-.07*	-.64	.32	-.15*
In-law/family subjective norms				.11	.14	.03	-.15	.32	-.04

Table I.1

Summary of regression coefficients for the association between the correlates of economic preconditions with gender interactions

(continued)

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Comply family/in-law subjective norms				-.05	.19	-.01	-.17	.39	-.04
Community subjective norms				.06	.14	.01	-.11	.30	-.03
Comply with community norms				-.25	.18	-.06	-.21	.35	-.05
Relational variables									
Life satisfaction				.04	.11	.01	-.01	.23	-.00
Relationship happiness				.29	.11	.07*	.03	.23	.01
Health variables									
Personal illness				-.06	.53	-.00	2.26	1.11	.11*
Family illness				1.19	.40	.08**	-.25	.94	-.02
Work stress				.42	.33	.04	-.33	.70	-.04
Personal stress				.57	.32	.06	.77	.67	.08
Other life events cannot cope with other physical, personal stress				-.48	.33	-.04	-.20	.71	-.02
Needing medical care in last 12 months				-.35	.39	-.04	-.22	.85	-.03
				-.06	.53	-.00	2.26	1.11	.11
Gender interactions									
Area of residence*gender							-.47	.62	-.04
Years together*gender							.11	.08	.07
Perceived fertility*gender							.03	.28	.01
University level education*gender							.23	.51	.03

Table I.1

Summary of regression coefficients for the association between the correlates of economic preconditions with gender interactions

(continued)

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Work salience*gender							.26	.27	.10
Economic hardship*gender							-.11	.28	-.02
Have paid work*gender							-.07	.72	-.01
Partner has paid work*gender							-.70	.65	-.08
Friends have child*gender							.58	.27	.11*
Know anyone decided not to have children*gender							.25	.49	.03
Partner subjective norms*gender							-.13	.30	-.03
Comply partner norms*gender							.39	.35	.08
In-law/family subjective norms*gender							.31	.35	.07
Comply family/in-law subjective norms*gender							.18	.45	.04
Community subjective norms*gender							.22	.34	.05
Comply with community norms*gender							-.04	.41	-.01
Life satisfaction*gender							.07	.27	.01
Relationship happiness*gender							.33	.27	.07
Personal illness*gender							-3.0	1.3	-.13*
Family illness*gender							1.69	1.04	.10
Work stress*gender							.98	.79	.09
Personal stress*gender							-.42	.76	-.04
Other life events cannot cope with*gender							-.02	.96	-.00
other physical, personal stress *gender							-.35	.80	-.03
Needing medical care in last 12 months*gender									
ΔR^2		.03***			.15***			.02	
<i>F</i>		16.41			11.15			6.64	

Note: Gender (1 = female), *B* = unstandardised beta. *SE B* = standardised error, β = standardised beta. ΔR^2 = difference in variance accounted for in the dependent variable. **p*<.05, ***p*<.01, ****p*<.001.

Table I.2

Summary of regression coefficients for the association between the correlates of personal and relational readiness with gender interactions

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Control variables									
Gender	1.49	.24	.16***	1.21	.25	.13***	2.17	1.26	.23
Age	-.26	.11	-.06*	-.34	.13	-.08**	-.29	.13	-.07*
Years trying to conceive	-1.11	.17	-.18***	-.98	.19	-.16***	-.97	.19	-.15***
Background variables									
Area of residence				.26	.26	.03	-.40	.53	-.04
Years together				.22	.17	.04	.02	.30	.00
Perceived fertility				-.19	.12	-.04	.31	.24	.07
Economic variables									
University level education				.27	.11	.07*	.17	.22	.04
Work salience				-.08	.11	-.02	.00	.22	.00
Economic hardship				.14	.12	.03	.02	.25	.01
Have paid work				.64	.27	.06*	.96	.64	.10
Partner has paid work				.50	.31	.04	1.35	.46	.11**
Social variables									
Friends/family have had children				.35	.11	.08**	.47	.23	.11*
Know anyone decided not to have children				.29	.21	.04	-.10	.42	-.012
Partner subjective norms				.47	.12	.11***	.72	.27	.17**
Comply partner norms				-.00	.14	-.00	-.20	.32	-.05
In-law/family subjective norms				-.11	.14	-.02	-.19	.31	-.05

Table I.2

Summary of regression coefficients for the association between the correlates of personal and relational readiness with gender interactions
(continued)

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Comply family/in-law subjective norms				-.33	.19	-.08	-.33	.39	-.08
Community subjective norms				.29	.14	.07*	.63	.30	.15
Comply with community norms				-.32	.18	-.08	-.42	.35	-.10*
Relational variables									
Life satisfaction				.24	.11	.06*	.18	.23	.04
Relationship happiness				.50	.11	.12***	.67	.23	.16**
Health variables									
Personal illness				.45	.52	.02	.14	1.09	.01
Family illness				-.02	.39	-.00	.64	.92	.04
Work stress				.00	.32	.00	-.18	.69	-.02
Personal stress				.15	.32	.02	-.41	.66	-.05
Other life events cannot cope with other physical, personal stress				-.63	.32	-.06*	.02	.70	.00
Needing medical care in last 12 months				-.06	.39	-.01	.61	.83	.07
				.14	.24	.01	-.30	.46	-.03
Gender interactions									
Area of residence*gender							.84	.61	.07
Years together*gender							.07	.08	.05
Perceived fertility*gender							-.66	.27	-.12*
University level education*gender							.35	.50	.04
Work salience*gender							-.18	.26	-.07

Table I.2

Summary of regression coefficients for the association between the correlates of economic preconditions with gender interactions

(continued)

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Economic hardship*gender							.09	.28	.02
Have paid work*gender							-.32	.71	-.04
Partner has paid work*gender							-1.61	.64	-.18*
Friends have child*gender							-.14	.27	-.03
Know anyone decided not to have children*gender							.54	.49	.06
Partner subjective norms*gender							-.32	.29	-.07
Comply partner norms*gender							.28	.35	.06
In-law/family subjective norms*gender							.09	.35	.02
Comply family/in-law subjective norms*gender							-.01	.44	-.00
Community subjective norms*gender							-.43	.34	-.09
Comply with community norms*gender							.14	.41	.03
Life satisfaction*gender							.08	.26	.02
Relationship happiness*gender							-.24	.26	-.05
Personal illness*gender							.54	1.24	.02
Family illness*gender							-.84	1.02	-.05
Work stress*gender							.27	.78	.03
Personal stress*gender							.82	.75	.08
Other life events cannot cope with*gender							-.87	.94	-.10
other physical, personal stress *gender							-.87	.79	-.08
Needing medical care in last 12 months*gender							.66	.54	.08
ΔR^2		.07***			.09***			.02	
<i>F</i>		38.19			9.71			5.76	

Note: Gender (1 = female), *B* = unstandardised beta. *SE B* = standardised error, β = standardised beta. ΔR^2 = difference invariance accounted for in the dependent variable.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table I.3

Summary of regression coefficients for the association between the correlates of health and child costs precondition readiness with gender interactions

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE B</i>	β
Control variable									
Gender	-.02	.25	-.00	.36	.28	.04	1.75	1.38	.18
Age	-.19	.13	-.04	-.30	.14	-.07*	-.31	.14	-.07*
Years trying to conceive	-.02	.18	-.00	-.11	.21	-.02	-.13	.21	-.02
Background characteristics									
Years together				.18	.19	.03	.38	.33	.06
Area of residence				-.68	.28	-.06*	-.31	.58	-.03
Perceived fertility				.09	.13	.02	-.19	.26	-.04
Economic variables									
University level education				.225	.121	.052	.58	.24	.13*
Work salience				.53	.12	.12***	.64	.24	.15**
Economic hardship				.18	.13	.04	.45	.27	.10
Have paid work				.37	.30	.04	1.13	.70	.11
Partner has paid work				-.43	.34	-.04	-.55	.50	-.04
Social variables									
Friends/family have had children				-.05	.12	-.01	-.05	.26	-.01
Know anyone decided not to have children				.11	.23	.01	.89	.46	.10*
Partner subjective norms				-.03	.13	-.01	.17	.29	.04
Comply partner norms				.16	.15	.04	-.00	.34	-.00

Table I.3

Summary of regression coefficients for the association between the correlates of health and child costs precondition readiness with gender interactions (continued)

Variable	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE B</i>	β
In-law/family subjective norms				-.18	.15	-.00	-.50	.34	-.12
Comply family/in-law subjective norms				.33	.20	.08	.67	.42	.16
Community subjective norms				.35	.15	.08*	.70	.33	.16*
Comply with community norms				-.03	.20	-.01	-.72	.38	-.16
Relational variables									
Life satisfaction				-.00	.12	-.00	-.11	.25	-.03
Relationship happiness				.19	.12	.04	.05	.25	.01
Health variables									
Personal illness				1.48	.57	.07**	1.47	1.19	.07
Family illness				.28	.43	.02	.92	1.01	.06
Work stress				.47	.35	.05	-.24	.76	-.02
Personal stress				.95	.35	.10**	1.00	.72	.11
Other life events cannot cope with other physical, personal stress				-.29	.35	-.03	-1.60	.77	-.14*
Needing medical care in last 12 months				-.34	.42	-.04	.24	.91	.03
				.81	.26	.08**	.21	.50	.02
Gender interactions									
Area of residence*gender							-.43	.66	-.04
Years together*gender							-.06	.09	-.04
Perceived fertility*gender							.34	.30	.06
University level education*gender							-.91	.55	-.10

Table I.3

Summary of regression coefficients for the association between the correlates of economic preconditions with gender interactions

(continued)

Variables	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Work salience*gender						-.09	.29		-.04
Economic hardship*gender						-.32	.31		-.06
Have paid work*gender						-.88	.77		-.10
Partner has paid work*gender						.08	.69		.01
Friends have child*gender						.01	.29		.00
Know anyone decided not to have children*gender						-1.00	.53		-.11
Partner subjective norms*gender						-.23	.33		-.05
Comply partner norms*gender						.14	.38		.03
In-law/family subjective norms*gender						.42	.38		.09
Comply family/in-law subjective norms*gender						-.48	.48		-.09
Community subjective norms*gender						-.45	.37		-.09
Comply with community norms*gender						.94	.44		.18*
Life satisfaction*gender						.16	.29		.03
Relationship happiness*gender						.20	.29		.04
Personal illness*gender						.01	1.36		.00
Family illness*gender						-.82	1.12		-.05
Work stress*gender						.94	.86		.09
Personal stress*gender						-.10	.82		-.01
Other life events cannot cope with*gender						1.66	.87		.14
other physical, personal stress *gender						-.77	1.03		-.09
Needing medical care in last 12 months*gender						.791	.591		.092
ΔR^2		.03***				.15***			.02
<i>F</i>		.87				4.01			2.24

Note: Gender (1 = female), *B* = unstandardised beta. *SE B* = standardised error, β = standardised beta. ΔR^2 = difference in variance accounted for in the dependent variable. **p*<.05, ***p*<.01, ****p*<.001.

Appendix J: Importance of preconditions according to country

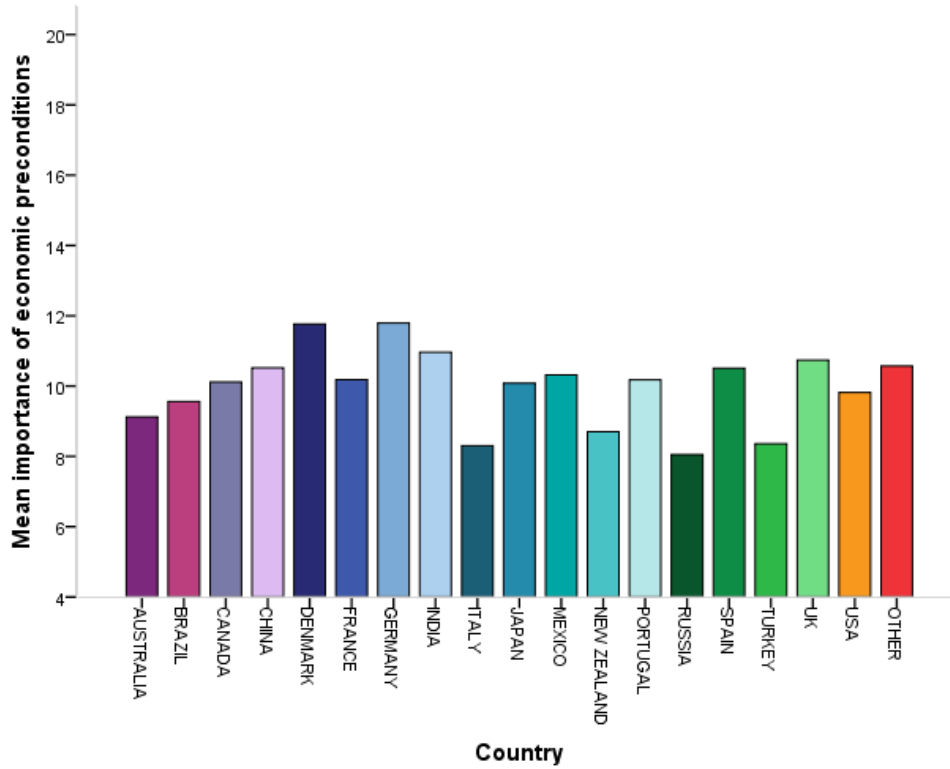


Figure J.1: Mean importance of economic preconditions according to country

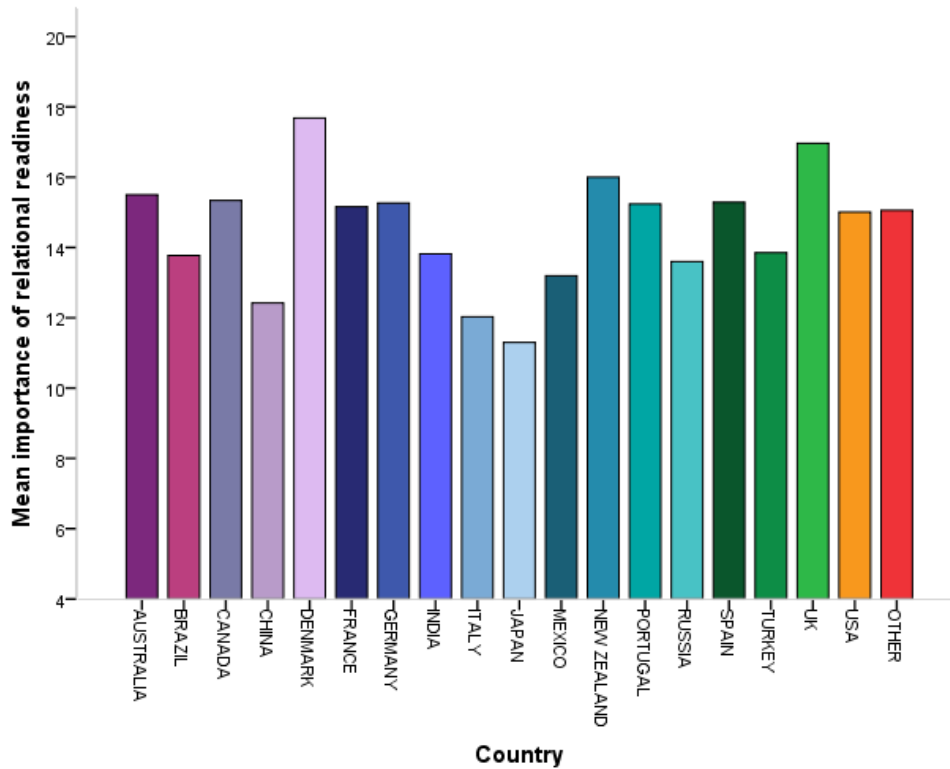


Figure J.2: Mean importance of personal and relational preconditions according to country

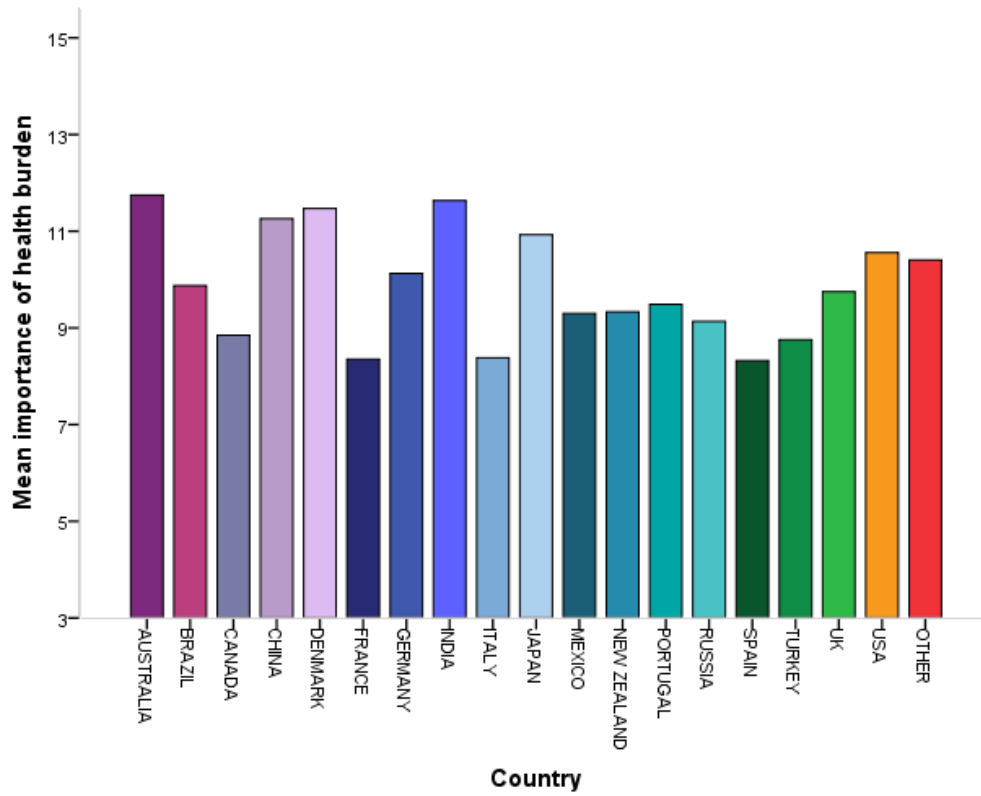


Figure J.3: Mean importance of health and child costs according to country

Appendix K: Copy of the first Participation in Research Survey (PRS1)

Thank you for considering to take part in the 'Participation in Research' survey.

Starting a family is a goal for many men and women. There are many studies about the childbearing process but most of these studies focus on women and how they feel about the project to have a child. Why so few men are represented in research about childbearing is poorly understood. The goal of the present study is to better understand men and women's participation in research generally and in fertility and childbearing specifically. By childbearing, we mean trying to conceive, achieve a pregnancy or father a child.

The survey is divided into four sections. The first section concerns your background (e.g., gender, age and education), the second your participation in research, third your attitudes towards participating in childbearing research and fourthly your willingness to participate in upcoming childbearing research.

The questionnaire will take 15 minutes to complete.

We are currently recruiting men and women aged 18 years and over.

All your responses will be completely anonymous unless you choose to provide your name for future research. Identifiable information if provided will be held confidentially and retained for up to three months from the date this survey is completed. After three months all identifiable information will be deleted and the data will be completely anonymised. All data will be stored on computers that are password protected.

Participation in this study is entirely voluntary. If you choose to participate you are free to omit any questions you do not wish to answer or withdraw from the study at any time. You can additionally contact professor Jacky Boivin (cardiffertilitystudies@cardiff.ac.uk) and ask for the information you provided to be deleted/destroyed at any time until the data has been completely anonymised.

Thank you very much for helping us with this important project on 'participation in research'.

Next

0% complete

School of Psychology, Cardiff University
Consent Form

I understand that my participation in this project will involve completing a questionnaire about my general background, my participation in research, my attitudes towards participating in childbearing research and my intentions to participate in upcoming research on childbearing. I understand that completing this questionnaire will take approximately 15 minutes of my time.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason and without loss of payment (or course credit).

I understand that I am free to ask any questions at any time. I am free to withdraw or discuss my concerns with Professor Jacky Boivin

I understand that the information provided by me will be held confidentially, such that only the experimenter and Professor Jacky Boivin can trace this information back to me individually.

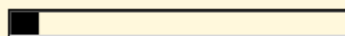
I understand that my data will be anonymised three months after completing the current survey and after this point no-one will be able to trace my information back to me. The information will be retained for up to seven years when it will be deleted/destroyed. I understand that I can ask for the information I provide to be deleted/destroyed at any time up until the data has been anonymised and I can have access to the information up until the data has been anonymised.

I also understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study.

If you are 18 years of age or over, understand the statement above and freely consent to participate in this study please tick 'YES'.

Yes

Next

 8% complete

PART 1: About your background

1. Are you
 - Female
 - Male
2. How old are you?

3. What is your nationality?

4. What is your country of residence?

5. What is your marital status?
 - Married/cohabiting
 - Single
 - Widowed
6. If applicable how long have you and your partner been together?
(Please state in years and/or months)
Years _____ Months _____
7. What is your sexual orientation?
 - Bi Sexual
 - Gay/Lesbian
 - Heterosexual
 - Homosexual
 - Prefer not to say
8. Have you ever given birth/fathered a child?
 - Yes
 - No
9. What is the highest level of education you have achieved?
(Please tick the highest level that applies)
 - No education
 - Primary school/Elementary school
 - Secondary school/High school
 - Post secondary school/No degree (e.g., BTEC, NVQ, HND)
 - Undergraduate college or university (e.g., BA, BSc)
 - Graduate and post graduate school (e.g., MA PhD)
10. What is your employment status?
 - Full time employment
 - Part time employment
 - Unemployed
 - Student
 - Retired

Part 2: About your participation in childbearing research

1. Previously, have you had the opportunity to participate in research on childbearing?

- Yes
- No

2. How frequently do you have the opportunity to participate in research on childbearing?

	Never/ almost never	Seldom	Sometimes	Often	Always/ almost always
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. How possible is it for you to participate in research on childbearing?
Please indicate on the response scale where [0] means highly impossible and [5] means highly possible

	0	1	2	3	4	5
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Suppose that a research project on childbearing was announced. Please indicate to what extent you agree or disagree with the following statements regarding participation in this project using the response scale: strongly disagree to strongly agree with statement.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I would want to participate in the research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would intend to participate in the research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would expect to participate in the research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Individuals often participate in research that matches their personal interests. Please indicate how interested you are in the following research topics using the response scale not at all interested to extremely interested

	Not at all interested	Somewhat interested	Moderately interested	Very interested	Extremely interested
Childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sexuality	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marriage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Health	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Gadgets and new technologies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Body image	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sport	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Friendships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fitness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part 3: About your attitudes

There are many factors that may influence your decision to participate in research on childbearing. In this section we ask you about:-

- a) Men and women's roles
- b) What you think about starting a family/having another child
- c) Your attitudes towards research on childbearing

a) About men and women's roles

1. Please indicate to what extent you agree or disagree with the following statements using the response scale: strongly disagree to strongly agree with statement.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
A working mother can establish just as warm and secure a relationship with her children as a mother who does not work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A preschool child is likely to suffer if his or her mother works	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
All in all, family life suffers when the woman has a full time job	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is ok for mothers of babies/young children to have a full time career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A job is alright but what most women really want is a home and children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being a housewife is just as fulfilling as working for pay	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a job is the best way for a woman to be an independent person	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Both men and women should contribute to the household income	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A man's job is to earn money; a woman's job is to look after the home and the family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Men ought to do a larger share of the housework than they do now	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Men ought to do a larger share of the childcare than they do now	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is not good if the man stays at home and cares for the children and the mother goes out to work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Family life often suffers because men concentrate too much on their work	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Please rate how much you do of each of the following household tasks. You can put a number between 0 and 100 for each of the household tasks.

If you have a partner, or you have other help to complete the tasks (e.g., family member, paid cleaner) please rate how much you and they do of each household task. If you do fill out the additional columns, make sure the total adds up to 100 for each household task.

For example:

Washing

- a. You: 40 + Partner: 60 = 100
OR
- b. You: 50 + Other: 50 = 100
OR
- c. You: 10 + Partner: 10 + Other: 80 = 100

	You	Your partner	Other (e.g., family member)	Not applicable
Cooking, baking, washing up	_____	_____	_____	_____
Gardening, pet care	_____	_____	_____	_____
Clothes washing, ironing, sewing	_____	_____	_____	_____
Cleaning the house, tidying	_____	_____	_____	_____
Care of adults in own home	_____	_____	_____	_____
Maintenance, odd jobs, repairs around the home	_____	_____	_____	_____
Care of own children	_____	_____	_____	_____

3. Please indicate to what extent you agree or disagree with the following statements using the response scale: strongly disagree to strongly agree with statement.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Women should take care of contraception	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Men should take care of contraception	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Both men and women should take of contraception	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. when you're in a relationship, who do you think should make the decision about?
 (Please tick one box on each line only)

	Always me	Usually me	Both myself and my partner	Usually my partner	Always my partner
Whether to have a medical termination of pregnancy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whether to use contraception	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whether to have children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
What method of contraception to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When to have children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. When you're in a relationship if there was any disagreement with your partner on contraception who would have the final say? (Please tick only one box)

- Myself
- My partner
- We would decide together
- Someone else

b) What you think about starting a family/having another child

Below are a number of factors that may influence an individual's decision to begin childbearing.

1. Please indicate to what extent you agree or disagree with the following statements using the response scale: strongly disagree to strongly agree with statement.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Having a child is an obstacle for my professional career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a child causes worry and strain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a child results in a loss of leisure time	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a child costs too much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a child is the most important thing in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a child is more meaningful to women than it is to men	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. How strong is your desire to have a child? Please indicate on the response scale where [1] means no desire at all and [10] means a very strong desire.

1	2	3	4	5	6	7	8	9	10
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

c) About your attitudes towards research on childbearing

- | | | | | | | |
|---|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
| 1. How important to you is participating in research on childbearing? Please indicate on the response scale where [0] means highly unimportant and [5] means highly important. | 0
<input type="radio"/> | 1
<input type="radio"/> | 2
<input type="radio"/> | 3
<input type="radio"/> | 4
<input type="radio"/> | 5
<input type="radio"/> |
| 2. How valuable to you is participating in research on childbearing? Please indicate on the response scale where [0] means highly worthless and [5] means highly valuable | 0
<input type="radio"/> | 1
<input type="radio"/> | 2
<input type="radio"/> | 3
<input type="radio"/> | 4
<input type="radio"/> | 5
<input type="radio"/> |
| 3. How beneficial to you is participating in research on childbearing? Please indicate on the response scale where [0] means highly harmful and [5] means highly beneficial | 0
<input type="radio"/> | 1
<input type="radio"/> | 2
<input type="radio"/> | 3
<input type="radio"/> | 4
<input type="radio"/> | 5
<input type="radio"/> |
| 4. How enjoyable to you is participating in research on childbearing? Please indicate on the response scale where [0] means highly unenjoyable and [5] means highly enjoyable. | 0
<input type="radio"/> | 1
<input type="radio"/> | 2
<input type="radio"/> | 3
<input type="radio"/> | 4
<input type="radio"/> | 5
<input type="radio"/> |
| 5. How favourable to you is participating in research on childbearing? Please indicate on the response scale where [0] means highly unfavourable and [5] means highly favourable. | 0
<input type="radio"/> | 1
<input type="radio"/> | 2
<input type="radio"/> | 3
<input type="radio"/> | 4
<input type="radio"/> | 5
<input type="radio"/> |
| 6. How interested are you in participating in research on childbearing? Please indicate on the response scale where [0] means uninterested and [5] means very interested. | 0
<input type="radio"/> | 1
<input type="radio"/> | 2
<input type="radio"/> | 3
<input type="radio"/> | 4
<input type="radio"/> | 5
<input type="radio"/> |

Appendix K: Copy of the Participation in Research Survey (PRS1)

Please rate the following statement using the scale where [0] means bad and [5] means good.

7. For me participating in research on childbearing is...	0	1	2	3	4	5
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Please rate the following statement using the scale where [0] means unpleasant and [5] means pleasant.

8. For me participating in research on childbearing is...	0	1	2	3	4	5
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. Please indicate to what extent you agree or disagree with the following statements using the response scale: strongly disagree to strongly agree with statement.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Most people who are important to me would want me to participate in research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generally speaking I want to do what most people who are close to me think I should do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my partner would want me to participate in research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generally speaking I want to do what my partner thinks is best	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my in-laws and/or family would want me to participate in research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generally speaking I want to do what my in-laws and/or family think is best	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my friends would want me to participate in childbearing research	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Generally speaking I want to do what my friends think is best	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. Please indicate to what extent you agree or disagree with the following statements:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
It is easy for me to participate in research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The decision to participate in research on childbearing is beyond my control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If I wanted I could participate in research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whether I engage in research on childbearing is entirely up to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Whether I engage in research on childbearing is not entirely up to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part 4: About intentions

- Out of 10 men, how many would you expect to participate in research on childbearing?

- Out of 10 women, how many would you expect to participate in research on childbearing?

- Would you participate in research on childbearing?
 Yes
 No
- Please would you explain your response to question three

Future research

From time to time we have research on childbearing issues. Please leave your email address if you are interested in receiving information about upcoming research on childbearing. Email addresses will be deleted after three months from the date this survey is completed.

Thank you for participating in this survey

Thank you for taking the time to complete this survey

In the last decade considerable changes in childbearing decision making have been observed which in turn has impacted fertility trends in many countries. While numerous studies have examined the potential factors that may influence or underlie the decision of whether and when to have children, previous research has been carried out predominantly on women, little is known about the childbearing preferences and behaviours of men.

We are interested in people's perceptions of and participation in research on childbearing. Specifically we are interested in identifying the possible reasons for why men's childbearing preferences and behaviours are not represented within this specific field of health research.

Thank you again for your time. It is important to ask you a range of questions about your attitudes, intentions and behaviour.

Based on previous research we asked you questions about your attitudes towards men and women's roles, starting a family and research on childbearing. We also asked about your intentions to participate in research in general and research on childbearing specifically. Theoretically, an individual's intentions to perform a certain act are determined by their attitudes towards the behaviour, their perception of social pressure to perform the behaviour and their perceived ability to perform the behaviour. In order to analyse whether attitudes and intentions predict actual behaviour we asked you to provide an email address so we could contact you in the future and ask for your voluntary participation in research on childbearing.

The data you have provided will be held anonymously unless you provided your email address. Email addresses and corresponding data will be held confidentially according to the data protection act. After three months your email addresses will be deleted and your data anonymised. You have the right to withdraw your data at any time up until the data has been completely anonymised. Those who provided an email address may be contacted in the future regarding available research opportunities and possible participation.

If you have any further questions about this research then please contact China Harrison or Professor Jacky Boivin:

China Harrison
Postgraduate student
School of psychology
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CF10, 3AT

Professor Jacky Boivin
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Cardiff university
Tower Building, Park Place
Cardiff, Wales

Psychology Ethics committee details:
Email: psychethics@cardiff.ac.uk
Phone: +44 (0) 0292070360

Appendix L: Copy of the second Participation in Research Survey (PRS2)

Thank you for considering participation in this study.

We are interested in understanding your attitudes towards research and childbearing. By childbearing, we mean trying to conceive, achieve a pregnancy or father a child

The survey is divided into four parts that ask about your background (e.g., occupation), your attitudes towards research in general, your beliefs about parenthood (e.g., the factors that influence your decision making) and your attitudes towards research on childbearing.

For all questions select the answer that best describes your own situation, thoughts or feelings. There are no right or wrong answers.

The questionnaire will take approximately 5 minutes to complete.

Approximately three months ago you completed the participation in research survey and left your email indicating that you would be interested in hearing about upcoming research.

We are currently recruiting men and women 18 aged years or older. Participation in this study is entirely voluntary, so you are free to decide whether to participate or not. If you do decide to participate, you are free to omit any questions you do not wish to answer or withdraw from the study at any time.

All your responses will be completely confidential. Identifiable (your email address) if provided will be held for up to one month, after which it will be deleted and the data will be completely anonymised. All the data collected will be stored on computers that are password protected.

This study has received ethical approval from School of Psychology Ethics Committee, Cardiff University. If you have any questions about this project then please contact the principal investigator Professor Jacky Boivin (cardifffertilitystudies@cardiff.ac.uk).

Next

0% complete

School of psychology, Cardiff University consent form

I understand that my participation in this project will involve completing a questionnaire about my general background and my beliefs about parenthood. I understand that completing this questionnaire will take approximately 5 minutes of my time, that participation in this study is entirely voluntary, that I can withdraw from the study at any time without giving a reason and I am free to ask any questions at any time. I am free to withdraw or discuss my concerns with Professor Jacky Boivin


I understand that the information provided by me will be held confidentially such that only China Harrison and Professor Jacky Boivin can trace the information back to me individually. I understand that my data will be anonymised one month after completing the current study. The information will be retained for up to seven years after which it will be deleted/destroyed. I also understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study.

If you are 18 years of age or older, understand the statement above and freely consent to participate in this study please tick 'YES'.

YES

Next

 14% complete

PART 1: About your background		
1. How old are you?	<input type="text"/>	
2. What is your occupation?	<input type="text"/>	
	Yes	No
3. Do you work in research or have a research background?	<input type="radio"/>	<input type="radio"/>
4. Do you plan to have a/another child in the future?	<input type="radio"/>	<input type="radio"/>
PART 2: About your attitudes towards research		
1. How important to you is participating in research? Please indicate on the response scale where [0] means highly unimportant and [5] means highly important.		
0	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. How valuable to you is participating in research? Please indicate on the response scale where [0] means highly worthless and [5] means highly valuable.		
0	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. How beneficial to you is participating in research? Please indicate on the response scale where [0] means highly harmful and [5] means highly beneficial .		
0	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. How enjoyable to you is participating in research? Please indicate on the response scale where [0] means highly unenjoyable and [5] means highly enjoyable .		
0	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. How favourable to you is participating in research? Please indicate on the response scale where [0] means highly unfavourable and [5] means highly favourable .		
0	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. How interested are you in participating in research? Please indicate on the response scale where [0] means highly uninterested and [5] means highly interested.		
0	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Please rate the following statement using the scale where [0] means bad and [5] means good.		
For me participation in research is...		
0	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="button" value="Next"/>		
 28% complete		

8. Please rate the following statement using the scale where [0] means unpleasant and [5] means pleasant

For my participation in research is...

	3	4	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. In the last year how many times have you had the opportunity to participate in research?

10. How many times in the last year have you participated in research?

PART 3: About your attitudes towards childbearing

Please indicate to what extent you agree or disagree with the following statements using the response scale: strongly disagree to strongly agree with the statement

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Having a child is the most important thing in life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is hard to imagine a life without children	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a child is not necessary for my happiness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Couples without a child are just as happy as those with a child	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Being a parent is one of the most important things a person can do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There is a certain freedom without children that appeals to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Without a child I would be excluded from my community and social groups (by community we mean your friends, colleagues and neighbors)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART 4: About your attitudes towards research on childbearing

1. What factors would enable you to participate in childbearing research?

[Next](#)

42% complete

2. What reasons, if any, would prevent you from participating in childbearing research?

3. Are there any other issues that come to mind when you think about participating in childbearing research?

4. In the last year how many times have you had the opportunity to participate in childbearing research?

5. In the last year how many times have you participated in childbearing research?


6. Are you more likely to participate in a study on childbearing if you.....

- Receive an email asking for your participation
- See a poster asking for your participation
- Are given a flyer asking for your participation
- Are paid for your participation
- Are entered into a draw to win a prize
- Other

If other please state

7. What would motivate you to participate in childbearing research?

Next

 57% complete

8. Approximately three months ago you took part in the 'participation in research' survey and left your email address so we could contact you in the future regarding your possible participation in childbearing research. There were two parts to the participation in research survey with your participation in this study making up the second part.

Please enter the email address you provided us with last time. Your email address will be used to match your responses. We will not be contacting you again in the future.

9. Please confirm your email address

Next

 71% complete

Thank you for taking the time to complete this survey

We are interested in people's perceptions of and participation in childbearing research. Specifically we are interested in identifying possible reasons for why men's childbearing preferences and behaviours are not represented within this specific field of health research.

The participation in research survey you completed three months ago was designed to examine your attitudes and intentions towards participating in research on childbearing. The current study measured your actual behavioural participation in childbearing research.

Having two parts to the current study allowed us to assess whether your attitudes and intentions predicted your behaviour. You were not told at the beginning of the survey that there would be a second part to the study as providing you with this information may have affected your responses to the questions and your actual behaviour/future participation.

The email address you have provided in both surveys will be used to match your responses. The email address you provided us will be deleted within the next month after which your data will become completely anonymous.

Thank you very much for taking the time to complete this survey

If you have any further questions about this research then please contact China Harrison or Professor Jacky Boivin:

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Cardiff, Wales
Cardiffertilitystudies@cardiff.ac.uk

Psychology Ethics committee details:
Email: psychethics@cardiff.ac.uk
Phone: +44 (0) 0292070360

Submit

 85% complete

Appendix M: Normality testing for structural equation modelling

Table M.1

Measurement descriptive statistics, normality for TPB model applied to the behavioural intention of the total (N=799)^a and the research behaviour of the subsample (n=288)^a

	<i>M</i>	<i>SD</i>	Skewness	<i>SE</i>	Kurtosis	<i>SE</i>
Total sample (N=799)						
Attitudes	2.87	.88	.09	.09	.00	.18
Subjective norms	2.66	.69	-.66	.09	.18	.17
Behavioural control	3.96	.72	-.78	.09	.84	.17
Intentions	3.08	.95	-.25	.09	.15	.17
Men (n=176)						
Attitudes	2.65	.85	.38	.186	.57	.37
Subjective norms	2.69	.68	-.57	.184	.04	.37
Behavioural control	3.89	.76	-.51	.186	-.41	.37
Intentions	2.91	.93	-.27	.184	.19	.37
Women (n=623)						
Attitudes	2.93	.87	.01	.10	-.03	.20
Subjective norms	2.65	.71	-.68	.10	.21	.20
Behavioural control	3.99	.70	-.87	.10	1.32	.20
Intentions	3.13	.95	-.25	.10	.15	.20
Subsample (N=288)						
Attitudes	3.45	.79	.07	.15	.39	.29
Subjective norms	2.76	.68	-.44	.14	.44	.29
Behavioural control	4.12	.67	-.76	.14	-.07	.29
Intentions	3.54	.85	-.39	.14	.70	.29
Men (n=49)						
Attitudes	3.22	.82	.58	.34	2.15	.67
Subjective norms	2.79	.66	-.56	.34	.11	.67
Behavioural control	3.98	.72	-.60	.34	-.19	.67
Intentions	3.44	.74	-.55	.34	1.72	.67
Women (n=239)						
Attitudes	3.46	.78	-.02	.16	.18	.32
Subjective norms	2.75	.68	-.41	.16	.52	.31
Behavioural control	4.15	.66	-.79	.16	-.02	.32
Intentions	3.56	.87	-.39	.16	.59	.31

Note: ^asample varies due to missing cases. *M*= mean, *SD*= standard deviation, *SE*= standard error,

Appendix N: Full regression table for Chapter 4, Part II

Table N.1

Multiple regression analysis with intention to participate in childbearing research as the dependent variable and distal factors (model 1) and TPB constructs (model 2) as the predictors with gender interaction (Model 3).

Distal factors	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
<i>Life course</i>									
Age	.00	.06	.00	.01	.05	.01	-.01	.10	-.01
Married/cohabiting ^a	.16	.08	.08	.01	.07	.01	.01	.15	.00
Years together	-.02	.05	-.02	.01	.04	.01	.04	.09	.04
<i>Childbearing attribute</i>									
Gender	.23	.08	.10**	.12	.07	.05	.06	.22	.03
Given birth/fathered a child	.51	.11	.23***	.34	.09	.15***	.20	.20	.09
Sexuality ^c	-.06	.08	-.03	-.08	.06	-.03	-.24	.18	-.11
Desire for a child	.17	.04	.18***	.05	.03	.05	.07	.07	.08
Costs of childbearing	-.02	.04	-.02	.00	.04	.00	.09	.08	.07
Women take care of contraception	-.05	.03	-.05	-.05	.03	-.05	-.15	.06	-.16*
Who decides about contraception	-.05	.05	-.04	-.04	.04	-.03	-.35	.10	-.26**
Traditional gender role	.05	.05	.03	.04	.04	.03	.23	.09	.15*
<i>Research attributes</i>									
At least university education	.11	.06	.06	.05	.05	.03	.03	.14	.02
Employment status ^b	.02	.03	.02	-.00	.03	-.00	.02	.05	.02
Interest in research	.47	.05	.30***	.19	.05	.12***	.19	.10	.12*
<i>TPB constructs</i>									
Attitudes				.60	.04	.52***	.60	.04	.52***
Subjective norms				.05	.04	.04	.06	.04	.04
Perceived behavioural control				.13	.04	.10***	.14	.04	.10***
<i>Interactions</i>									

Table N.1

Multiple regression analysis with intention to participate in childbearing research as the dependent variable and distal factors (model 1) and TPB constructs (model 2) as the predictors with gender interaction (Model 3) (continued)

Distal factors	Model 1			Model 2			Model 3		
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β
Age*gender							.02	.11	.02
Married/cohabiting*gender							.01	.17	.01
Years together*gender							-.03	.11	-.03
Given birth/fathered a child*gender							.19	.22	.08
Sexuality*gender							.18	.19	.10
Desire for a child*gender							-.02	.07	-.02
Costs of childbearing*gender							-.10	.09	-.07
Women take care of contraception *gender							.11	.07	.11
Who decides about contraception*gender							.36	.11	.24**
Traditional gender role*gender							-.24	.11	-.14*
At least university education							.02	.15	.01
Employment status ^b							-.03	.06	-.02
Interest in research							.01	.11	.01
ΔR^2		.22***			.25***			.02	
<i>F</i>		15.08			38.75			22.8	
								9	

Note. Gender (1=women), *B*=unstandardised beta, *SE B*=standard error, β = standardised beta, ^amarried/cohabiting compared against being single, ^b employed (0) student (1), ^cHeterosexual (1) compared to GLBT (0).

* $p < .05$, *** $p < .001$, ** $p < .01$

Appendix O: Attitude change questionnaire

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Survey

Thank you for considering participation in this study.

Please click the link below to be taken to the first page of the study.

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Thank you for considering participation in this survey.

The goal of the present study is to better understand the participation of men and women in research generally and in fertility and childbearing research specifically. By childbearing, we mean trying to conceive, achieve a pregnancy or father a child. The survey is divided into three parts that ask about your background (e.g., occupation) as well as your attitudes and intentions towards participation in research. For all questions select the answer that best describes your own situation, thoughts or feelings. There are no right or wrong answers.

The questionnaire will take approximately ten minutes to complete.

We are currently recruiting men and women aged 18 years and over. All responses and any identifiable information provided will be held confidentially and retained for up to three months from the date this survey is completed. After three months all identifiable information will be deleted and the data will be completely anonymised. All data will be stored on computers that are password protected.

Participation in this study is entirely voluntary. If you choose to participate you are free to withdraw from the study at any time. The project has received ethical approval from the School of Psychology Ethics committee, Cardiff University.

Psychology Ethics committee details:
Email: psychethics@cardiff.ac.uk
Phone: +44 (0)292070360

If you have any questions about this project then please contact the principle investigators China Harrison or Professor Jacky Boivin (cardiffertilitystudies@cardiff.ac.uk).

Thank you very much for helping us with this project on participation in research

Next

0% complete

**School of Psychology, Cardiff University
Consent Form**

I understand that my participation in this project will involve completing a questionnaire about my general background and my attitudes and intentions towards participating in research which will take approximately ten minutes of my time.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason or discuss my concerns with Professor Jacky Boivin.

I understand that any identifying information provided by me will be held confidentially, such that only the experimenter and Professor Jacky Boivin can trace this information back to me individually.

I understand that my data will be anonymised three months after completing the current survey and after this point no one will be able to trace my information back to me. The anonymous information will be retained for up to seven years when it will be deleted/destroyed.

I understand that I can ask for the information I provide to be deleted/destroyed at any time up until the data has been anonymised

I also understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study.

If you are 18 years of age or over, understand the statement above and freely consent to participate in this study please tick 'YES' and leave your email address.

If you are 18 years of age or over, understand the statement above and freely consent to participate in this study please tick 'Yes' and leave your email address

Yes

Email address:

Next

12% complete

PART 1: About your background

1. Are you

Male	Female
<input type="radio"/>	<input type="radio"/>

2. How old are you?

3. What is your nationality?

4. What is your country of residence?

5. What is your marital status?

Married/cohabiting	Single	Widowed
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. If applicable how long have you and your partner been together?
(Please state in years and/or months)

Years	Months
<input style="width: 100px; height: 20px;" type="text"/>	<input style="width: 100px; height: 20px;" type="text"/>

7. What is your sexual orientation?

Bisexual	Gay/Lesbian	Heterosexual	Prefer not to say
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. Have you ever given birth/fathered a child?
 - Yes
 - No
 - I am/My partner is currently pregnant


9. What is the highest level of education you have achieved?
(Please tick the highest level that applies)
 - No education
 - Primary school/Elementary school
 - Secondary school/High school
 - Post secondary school/No degree (e.g., BTEC, NVQ, HND)
 - Undergraduate college or university (e.g., BA, BSc)
 - Graduate and post graduate school (e.g., MA PhD)

25% complete

10. What is your employment status?

- Full time employment
- Part time employment
- Unemployed
- Student
- Retired

Next


 37% complete

PART 2: About your intentions

Suppose that a research project on childbearing was announced. Please indicate to what extent you agree or disagree with the following statements regarding participation in this project using the response scale: Strongly disagree to strongly agree.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I would want to participate in the research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would intend to participate in the research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would expect to participate in the research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Next

 50% complete

PART 3: About your attitudes towards research on childbearing

1. How important to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly unimportant and [5] means highly important.

1 2 3 4 5

2. How valuable to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly worthless and [5] means highly valuable.

1 2 3 4 5

3. How beneficial to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly harmful and [5] means highly beneficial.

1 2 3 4 5

4. How enjoyable to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly unenjoyable and [5] means highly enjoyable.

1 2 3 4 5

5. How favourable to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly unfavourable and [5] means highly favourable.

1 2 3 4 5

6. How interested are you in participating in research on childbearing? Please indicate on the response scale where [1] means uninterested and [5] means highly interested.

1 2 3 4 5

7. Please rate the following statement using the scale where [1] means bad and [5] means good.

For me participating in research on childbearing is...

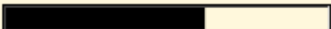
1 2 3 4 5

8. Please rate the following statement using the scale where [1] means unpleasant and [5] means pleasant.

For me participating in research on childbearing is...

1 2 3 4 5


Next

 62% complete

Respondents in the general and personal persuasive groups received the following additional information in section three of the questionnaire.

Thank you for answering the previous questions. We would now like to ask you to read an article that appeared in a well known newspaper. Please read the article carefully. There is no time limit.

Next

 50% complete

General persuasive message

 Sunday, November 6, 2011

People no longer want to have children

More and more people are choosing not to have children, according to recent research. But fertility experts say more work is needed to get a clear picture

Fewer people want to have children, if a recent study is to be believed. Researchers at the University of Cardiff found evidence that increasing numbers of people are putting lifestyle choices before their biological instincts to have children. The study also found that people are waiting longer before having children and that family size is getting smaller. Such major changes in attitudes to parenthood and childbearing behaviour have profound implications for our society.

But not everyone is convinced by the study. Dr Rawles, a health psychologist at the University Hospital of Wales, says that research looking at people's attitudes towards childbearing is often based on the opinions of a small group of middle class, well educated, white people. "Can we really say that the conclusions drawn from such research are a true portrayal of the childbearing attitudes opinions and behaviours of all people?" he says.



Previous research has shown that attitudes towards childbearing vary significantly depending on factors including class, race and level of education. But participants in family and childbearing studies have tended to be drawn from a relatively small section of society. The few studies to concentrate on under-represented groups have yielded interesting results. People in low socioeconomic positions are found to be more likely to have children earlier, while black people are more likely to have children than white people. In addition, Rawles points out that some recent statistics appear to contradict the Cardiff University study findings. "People want to have children and the rate that they are having children is the highest it has been in over 50 years," Rawles says.

With such differing claims emerging, Rawles says that finding volunteers to establish a true representation of people's attitudes to parenthood is of utmost importance. Without these volunteers, important questions about our attitudes towards childbearing will remain unanswered.

Crucially, inaccurate research could mean that services in areas such as childbearing and family that take into account the needs of all people are inadequate or non-existent. As Rawles says: "Participation in research on childbearing is beneficial and worthwhile for all."

Personalised persuasive message

 Sunday, November 6, 2011

Men no longer want to have children

More and more men are choosing not to have children, according to recent research. But fertility experts say more work is needed to get a clear picture

Fewer men want to have children, if a recent study is to be believed. Researchers at the University of Cardiff found evidence that increasing numbers of men are putting lifestyle choices before their biological instincts to have children. The study also found that men are waiting longer before having children and that family size is getting smaller. Such major changes in attitudes to parenthood and childbearing behaviour have profound implications for our society.

But not everyone is convinced by the study. Dr Rawles, a health psychologist at the University Hospital of Wales, says that research looking at men's attitudes towards childbearing is often based on the opinions of a small group of middle class, well educated, white men. "Can we really say that the conclusions drawn from such research are a true portrayal of the childbearing attitudes opinions and behaviours of all men?" he says.



Previous research has shown that attitudes towards childbearing vary significantly depending on factors including class, race and level of education. But participants in family and childbearing studies have tended to be drawn from a relatively small section of society. The few studies to concentrate on under-represented groups have yielded interesting results. Men in low socioeconomic positions are found to be more likely to have children earlier, while black men are more likely to have children than white men. In addition, Rawles points out that some recent statistics appear to contradict the Cardiff University study findings. "Men want to have children and the rate that they are having children is the highest it has been in over 50 years," Rawles says.

With such differing claims emerging, Rawles says that finding male volunteers to establish a true representation of men's attitudes to parenthood is of utmost importance. Without male volunteers, important questions about our attitudes towards childbearing will remain unanswered.

Crucially, inaccurate research could mean that services in areas such as childbearing and family that take into account the needs of all men are inadequate or non-existent. As Rawles says: "Participation in research on childbearing is beneficial and worthwhile for all."

The respondents in the general and persuasive group were asked to write down their cognitive responses to the persuasive

We are interested in what you were thinking about while you were reading the article. Below contains a form we have prepared for you to record your thoughts and ideas. Simply write down the first idea in the first box, the second idea in the second box, etc. Please put only one idea or thought in a box. You should try and record only those ideas that you were thinking while you were reading the article. Please state your thoughts and ideas as concisely as possible. We have deliberately provided more space than we think most people will need to insure that everyone would have plenty of room to write the ideas they had. Don't worry if you are unable to fill every space.

1

2

3

4

5

6

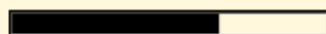
7

8

9

10

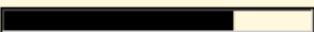
Next

 66% complete

The respondents in the general and persuasive group were then asked to rate the persuasive message using the following items:

Part4: About the newspaper article

1. **Did the newspaper article attract your attention?**
 Not at all Very much
2. **How attractive was the newspaper article?**
 Not at all attractive Very attractive
3. **How informative was the newspaper article?**
 Not at all informative Very informative
4. **How easy was it for you to understand the newspaper article?**
 Not at all easy Very easy
5. **How useful was the newspaper article?**
 Not at all useful Very useful
6. **How much did the information in the newspaper article apply to your life?**
 Very little Very much
7. **How much did you agree with the argument 'people no longer want to have children?'**
 Strongly disagree Strongly agree
8. **How much did you agree with the argument that more people need to participate in childbearing research to get a clearer picture of childbearing behaviour?**
 Strongly disagree Strongly agree
9. **In your opinion, how trustworthy was the information in the newspaper article?**
 Not at all trustworthy Very trustworthy
10. **Were you already familiar with the information in the newspaper article?**
 Not at all familiar Very familiar
11. **If you had come across this newspaper article at home, how much of it would you have read?**
 None of it All of it

 75% complete

12. **How likely is it that you would show this article to people you know?**

Not at all likely Very likely


13. **How likely is it that you will make changes to your behaviour based on what you read?**

Not at all likely Very likely

All the respondents regardless of condition were asked to complete the following section of the questionnaire. This was the last section of the questionnaire.

Please indicate how relevant you think participation in childbearing research is for men and women on the response scale where [1] means highly irrelevant and [7] means highly relevant

Men	1	2	3	4	5	6	7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Women	1	2	3	4	5	6	7
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 75% complete

Thank you for taking the time to complete this study

In the last decade considerable changes in childbearing decision making have been observed which in turn has impacted fertility trends in many countries. Numerous studies have examined the potential factors that may influence the decision of whether and when to have children. However this research has predominantly been carried out with female respondents. Where there is research on men their participation rates are low compared to women. Theoretically, intentions to perform a certain act are determined by attitudes towards the behaviour. Accordingly, based on previous research we asked you questions about your attitudes and intentions towards participation in childbearing research.

Thank you again for your time.

The data you have provided will be held confidentially according to the data protection act. After three months your email address will be deleted and your data anonymised. You have the right to withdraw your data at any time up until the data has been completely anonymised.

If you have any further questions about this research then please contact China Harrison or Professor Jacky Boivin:

China Harrison
Postgraduate student
School of psychology
Cardiff university
Tower Building, Park Place
Cardiff, Wales
CF10, 3AT

Professor Jacky Boivin
School of psychology
Cardiff university
Tower Building, Park Place
Cardiff, Wales

Psychology Ethics committee details:
Email: psychethics@cardiff.ac.uk
Phone: +44 (0)292070360

Submit

 91% complete

Appendix P: Second attitude change questionnaire

Thank you for considering participation in this survey.

Starting a family is a goal for many men and women. There are many studies about the childbearing process but most of these studies focus on women and how they feel about the project to have a/another child. Why so few men are represented in research about childbearing is poorly understood. The goal of the present study is to better understand the childbearing preferences and behaviours of men in addition to their participation in childbearing research. By childbearing, we mean trying to conceive, achieve a pregnancy or father a child. The survey is divided into five parts that ask about your background (e.g., age) and your desires and intentions to have a/another child, your attitudes and intentions towards participation in childbearing research and factors that may influence your decision to have a/another child (e.g., having a stable career).

The questionnaire will take approximately ten minutes to complete.

We are currently recruiting men and women aged 18 years and over. All responses and any identifiable information provided will be held confidentially and retained for up to three months from the date this survey is completed. After three months all identifiable information will be deleted and the data will be completely anonymised. All data will be stored on computers that are password protected.

Participation in this study is entirely voluntary. If you choose to participate you are free to withdraw from the study at any time. The project has received ethical approval from the School of Psychology Ethics committee, Cardiff University.

Psychology Ethics committee details:

Email: psychethics@cardiff.ac.uk

Phone: +44 (0)292070360

If you have any questions about this project then please contact the principle investigator Professor Jacky Boivin (cardiffertilitystudies@cardiff.ac.uk)

Thank you very much for helping us with this project on participation in research

Next

0% complete

**School of Psychology, Cardiff University
Consent Form**

I understand that my participation in this project will involve completing a questionnaire about my general background and my attitudes and intentions towards participating in research which will take approximately ten minutes of my time.

I understand that participation in this study is entirely voluntary and that I can withdraw from the study at any time without giving a reason or discuss my concerns with Professor Jacky Boivin.

I understand that any identifying information provided by me will be held confidentially, such that only the experimenter and Professor Jacky Boivin can trace this information back to me individually.

I understand that my data will be anonymised three months after completing the current survey and after this point no one will be able to trace my information back to me. The anonymous information will be retained for up to seven years when it will be deleted/destroyed.

I understand that I can ask for the information I provide to be deleted/destroyed at any time up until the data has been anonymised

I also understand that at the end of the study I will be provided with additional information and feedback about the purpose of the study.

If you are 18 years of age or over, understand the statement above and freely consent to participate in this study please tick 'YES' and leave your email address.

If you are 18 years of age or over, understand the statement above and freely consent to participate in this study please tick 'YES' and leave your email address.

Yes

Email address:

Next

 12% complete

PART 1: About your background

- | | Male | Female |
|---|-----------------------|-----------------------|
| 1. Are you | <input type="radio"/> | <input type="radio"/> |
| 2. How old are you? | | |
| <input type="text"/> | | |
| 3. Have you ever given birth/fathered a child? | | |
| <input type="radio"/> Yes | | |
| <input type="radio"/> No | | |
| <input type="radio"/> I am/My partner is currently pregnant | | |
| 4. Do you plan to have a/another child in the future? | | |
| <input type="radio"/> Yes | | |
| <input type="radio"/> No | | |
| <input type="radio"/> I am/My partner is currently pregnant | | |

Next

25% complete

PART 2: About your childbearing desires and intentions

How strong is your desire to have a/another child? Please indicate on the response scale where [1] means no desire and [10] means a very strong desire.

1	2	3	4	5	6	7	8	9	10
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you have a partner, how strong do you believe their desire is to have a/another child? Please indicate on the response scale where [1] means no desire and [10] means a very strong desire.

If you do not have a partner please tick the 'X'

1	2	3	4	5	6	7	8	9	10
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
X									
<input type="radio"/>									

How strong is your intention to have a/another child? Please indicate on the response scale where [1] means no intention at all and [10] means a very strong intention.

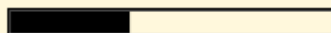
1	2	3	4	5	6	7	8	9	10
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you have a partner, how strong do you believe their intention is to have a/another child? Please indicate on the response scale where [1] means no intention at all and [10] means a very strong intention.

If you do not have a partner please tick the 'X'

1	2	3	4	5	6	7	8	9	10
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
X									
<input type="radio"/>									

Next


 37% complete

PART 2: About your intentions to participate in childbearing research

Suppose that a research project on childbearing was announced. Please indicate to what extent you agree or disagree with the following statements regarding participation in this project using the response scale: Strongly disagree to strongly agree.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I would want to participate in the research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would intend to participate in the research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would expect to participate in the research on childbearing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Next

 50% complete

PART 3: About your attitudes towards research on childbearing

1. How important to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly unimportant and [5] means highly important.

1 2 3 4 5

2. How valuable to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly worthless and [5] means highly valuable.

1 2 3 4 5

3. How beneficial to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly harmful and [5] means highly beneficial.

1 2 3 4 5

4. How enjoyable to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly unenjoyable and [5] means highly enjoyable.

1 2 3 4 5

5. How favourable to you is participating in research on childbearing? Please indicate on the response scale where [1] means highly unfavourable and [5] means highly favourable.

1 2 3 4 5

6. How interested are you in participating in research on childbearing? Please indicate on the response scale where [1] means uninterested and [5] means very interested.

1 2 3 4 5

7. Please rate the following statement using the scale where [1] means bad and [5] means good.

For me participating in research on childbearing is...

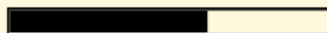
1 2 3 4 5

8. Please rate the following statement using the scale where [1] means unpleasant and [5] means pleasant.

For me participating in research on childbearing is...

1 2 3 4 5

Next

 62% complete

PART 4: Factors that may influence childbearing decisions

There are many things that people feel they need to achieve before having a/another child. Please indicate how important it is to you to achieve each item using the response scale: Not at all important to extremely important.

	Not at all important	Somewhat important	Moderately important	Very important	Extremely important
Finish education or training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have a stable career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have financial security	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be in permanent employment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be in a stable relationship	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be with a partner who has a strong desire for a child	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Feel personally ready to become a father/mother	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Be with a partner who feels personally ready to have a child	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

There are also many concerns that people have about having a/another child. Please indicate to what extent you agree or disagree with the following statements using the response scale: Strongly disagree to strongly agree.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Having a/another child would leave me with less freedom to do the things I enjoy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a/another child would interfere with my career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a/another child would impact negatively on my relationship with my partner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Having a/another child would cause financial strain	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Next

 75% complete

Thank you for taking the time to complete this study

In the last decade considerable changes in childbearing decision making have been observed, which in turn has impacted fertility trends in many countries. Numerous studies have examined the potential factors that may influence the decision of whether and when to have children. However this research has predominantly been carried out with female respondents. Where there is research on men their participation rates are low compared to women. Previous research examining the reasons why men have lower participation rates has highlighted attitudes to be the main determinant of whether or not men and women participate in research.

The questionnaire you received two weeks ago asked questions examining your attitudes towards childbearing. We then randomly assigned you to one of three information groups: One group received no information, another received general information in the form of a newspaper article about the childbearing behaviour of the general public, while the third group information in the form of a newspaper article about the childbearing behaviour of men. The information you received was fictional and designed to encourage you to form more favourable attitudes towards childbearing research.

The current study measured whether the persuasive message (information you received) changed your attitudes towards participation in childbearing research by asking you to complete the attitude and intention measures for a second time. At this second time we also asked you more general questions about your childbearing preferences and behaviours.

Having two parts to the current study allowed us to assess whether the persuasive information resulted in more favourable attitudes towards participation in childbearing research in addition to whether implementation of the message would increase the likelihood of you participating in childbearing research in the future.

You were not told at the beginning of the survey that there would be a second part to the study as providing you with this information may have affected your responses to the questions and your future participation. The email address you have provided in both surveys will be used to match your responses.

We will delete your email address and will not use it to contact you again in the future.

Any identifiable information provided will be held confidentially, according to the data protection act, until
If you have any further questions about this research then please contact China Harrison or Professor Jacky Boivin:

China Harrison
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Cardiff university
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Cardiff, Wales
CF10, 3AT

Professor Jacky Boivin
School of psychology
Cardiff university
Tower Building, Park Place
Cardiff, Wales

Psychology Ethics committee details:

Email: psychethics@cardiff.ac.uk

Phone: +44 (0)292070360

Submit

 87% complete

Appendix Q: Email sent to universities across England and Wales

Dear [insert name here]

I am a postgraduate student within the School of Psychology, at Cardiff University. As part of my PhD I am investigating male participation in childbearing research. I am writing to enquire whether you would be willing to forward the study email shown below to the students and staff at your university.

Previous research shows that the participation of men in childbearing research is considerably lower than that of women. This means that the research base is not providing a good account of men's attitudes towards whether, when and how many children to have. The aim of the present study is to examine what men and women think about childbearing issues. We hope this research can provide clues as to why men participate less and what can be done about it.

EMAIL TO BE CIRCULATED

We are currently recruiting men and women aged 18 years and over. The study is about what men think about childbearing issues. The questionnaire takes between 5 and 10 minutes to complete.

The project has received ethical approval from School of Psychology Ethics Committee, Cardiff University. If you have any further questions about this project then please feel free to contact China Harrison at harrisonc4@cardiff.ac.uk or Professor Jacky Boivin at boivin@cardiff.ac.uk.

Many thanks in advance for your consideration of this project.

If you would like to participate please click this link:
<http://psych.cf.ac.uk/home2/surveys/fertility.shtml>

(if the survey does not immediately open when you click the link, paste the link in your browser)

China Harrison

China Harrison
Postgraduate student
School of psychology
Cardiff University
02920 870707
Harrisonc4@cardiff.ac.uk

Professor Jacky Boivin
Professor
School of psychology
Cardiff University
02920 875289
Boivin@cardiff.ac.uk

Appendix R: Post-hoc analysis Chapter 5

The two experimental conditions (i.e., GPG, PPG) were collapsed and computed into an experimental group (EXPG) to see whether there was a difference between attitudes, intentions and behaviour as a function of having information (EXPG) compared to having no information (CG).

The effect of information on attitudes

A 2 (Condition: EXPG, CG) X 2 (Time: baseline, time 2) X 2 (Gender) mixed ANOVA, with time as the repeated measure on attitudes towards participation in childbearing research was completed. Analysis showed that the main effect of attitudes ($F(1, 470)=2.89, p = .09$) was not significant. Additionally the interactions between attitude and condition ($F(1, 470)=.08, p = .78$), attitude and gender ($F(1, 470) = .11, p = .74$) and attitudes, gender and condition ($F(1, 470)=.79, p = .38$) were not significant. However, there was a significant main effect of gender ($F(1, 470)=6.26, p < .05$) and a marginally significant main effect of condition ($F(1, 470)=3.60, p = .058$). Men had significantly less favourable attitudes towards participation in childbearing research than women ($\eta_p^2 = .01$) as did the respondents in the CG condition compared to those in the EXPG condition ($\eta_p^2 = .01$).

The effect of information on intentions

A 2 (Condition: EXPG, CG) X 2 (Time: baseline, time 2) X 2 (Gender) mixed ANOVA, with time as the repeated measure on intentions towards participation in childbearing research was completed. Analysis showed that the main effect of intentions ($F(1, 470)=2.49, p = .12$) was not significant. Additionally the interactions between

intention and condition ($F(1, 470)=.57, p=.45$), intention and gender ($F(1, 470)=.03, p=.87$) and intentions, gender and condition ($F(1, 470)=.18, p=.67$) were not significant. However, there was a significant main effect of gender ($F(1, 470)=4.54, p<.05$) condition ($F(1, 470)=4.33, p<.01$) and a significant interaction between gender and condition ($F(1, 470)=3.80, p=.05$). Men had significantly lower intentions to participate in childbearing research than women ($\eta_p^2=.01$) as did respondents in the CG condition compared to those in the EXPG ($\eta_p^2=.01$).

Simple comparisons (Figure 5.8) revealed that men in the control group rated intentions significantly lower than women in the control group ($F(1, 470)=7.11, p<.01, \eta_p^2=.02$). There was no significant difference between the intentions of men and women in the experimental group ($F(1, 470)=.02, p=.89$). Additionally the difference between the intention to participate in childbearing research for women in the control group and the experimental group was not significant ($F(1, 470)=.02, p=.89$). There was however a significant difference for men. Men in the experimental condition had significantly higher intentions than men in the control condition ($F(1, 470)=5.25, p<.05, \eta_p^2=.01$)

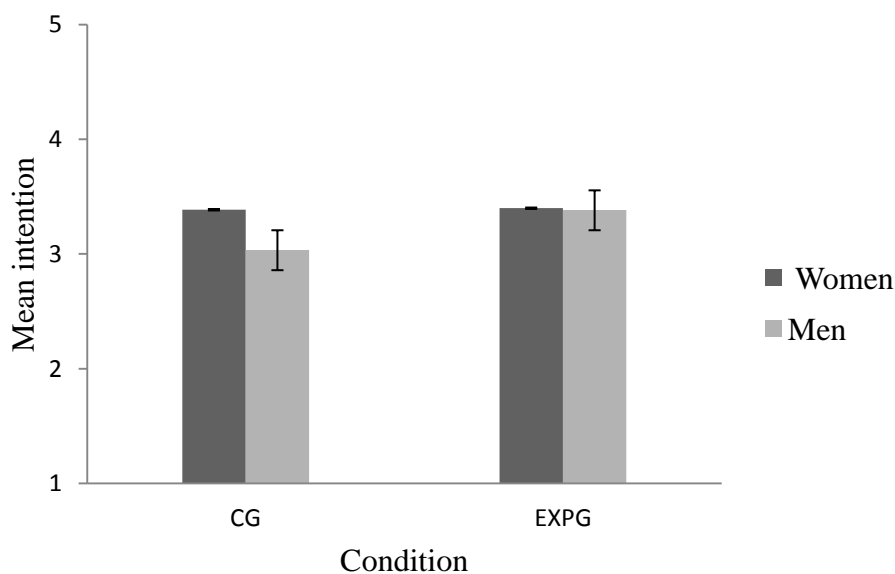


Figure S1. Mean intention to participate in childbearing research as a function of gender and condition. Error bars represent standard errors.

Appendix S: Post-hoc survey: what does the word childbearing mean to men and women?

We are interested in what the word 'childbearing' means to men and women.

We are currently recruiting men and women aged 18 years and over.
All responses will be completely anonymous and participation in the survey is entirely voluntary. If you choose to participate you are free to withdraw from the study at any time.

The survey will take approximately 5 minutes to complete.

This study has received ethical approval from the School of Psychology Ethics Committee, Cardiff University.

If you are 18 years of age or older and freely consent to participate in this study please tick 'YES'

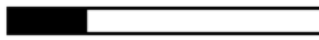
YES

Next

0% complete

Please tell us what the word childbearing means to you?

Next

 25% complete

About your background

Are you Male Female

How old are you?

What is your marital status? Married/cohabiting Single

Have you ever given birth/fathered a child?

Yes

I am/my partner is currently pregnant

No

What is the highest level of education you have achieved?

No education

Primary school/Elementary school

Post secondary school/No degree (e.g., BTEC, NVQ, HND)

Undergraduate college or university (e.g., BA, BSc)

Graduate and post graduate school (e.g., MA, PhD)

50% complete

Thank you for taking time to complete this survey

When given the opportunity to participate in childbearing research, men participate much less than women. We are interested in what the word childbearing means to men and women and whether the way in which it is interpreted can help explain the disproportionately low participation rates of men.

The data you have provided is completely anonymous. If you have any further questions about this research then please contact China Harrison or Professor Jacky Boivin:

China Harrison
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Professor Jacky Boivin
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Cardiff University
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Park place
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