

Contraceptive use over the reproductive life course

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This paper uses unit record data from the Household Income and Labour Dynamics in Australia (HILDA) survey. The HILDA Project was initiated by the Australian Government Department of Families, Community Services and Indigenous Affairs (FaCSIA) and is managed by the Melbourne Institute for Economic and Social Research (MIAESR). The findings and views reported in this paper, however, are those of the author and should not be attributed to either FaCSIA or the MIAESR.

Paper prepared for Annual Meeting of the American Population Association, New Orleans, 17–19 April 2008.

Abstract

This paper examines the contraceptive use of women in reproductive ages (18–44) using questions collected as part of the 2005 HILDA (Wave 5, Special Topic on Fertility). We compare the patterns of contraceptive use found in HILDA to previous Australian representative surveys and find similar patterns of contraceptive use. Previous research on contraceptive practice in Australia using representative surveys typically applies age as a proxy for reproductive history, however, in this study, in addition to age, we examine two important factors associated with contraceptive use: parity and fertility intentions.

The main findings indicate that the most commonly used methods are the oral contraceptive pill (25%), condom (19%) and methods of sterilisation (around 8% for female methods: tubal ligation and hysterectomy, and a further 9% for male methods: vasectomy of partner). The use of these methods varies substantially by the stage of a woman's reproductive life course. As expected, women use permanent methods when they have completed their family. Logistic regression models are used to investigate the use of the four main contraceptive methods by parity and age controlling for socio-demographic factors. This paper argues that while age and other socio-demographic factors are useful for understanding contraceptive use, investigations of contraceptive practice should also consider parity and fertility intentions as measures of reproductive life course stage.

Fertility levels in Australia have declined over the last 45 years. In 2005, the total fertility rate (TFR) was 1.81 (a recent upturn from a low of 1.73 in 2001; ABS 2006). This compares with the TFR at the height of the baby boom, which was 3.56 in 1961 (Kippen 2004). Cohort parity measures of fertility, which are arguably more informative in terms of the dynamics leading to fertility decline,¹ show increasing ages at both first and second births for women (Kippen 2004).

National fertility levels reflect fertility behaviour at the individual level. The fertility of women in Australia today is typically controlled by contraceptive use: contraception is used to delay and space pregnancy, and limit the number of children born. Surveys of contraceptive use have been irregularly conducted in Australia. The National Health Survey, conducted by the Australian Bureau of Statistics, has been the main source of nationwide information about use of contraceptive methods. Direct questions on contraceptive use were asked in 1989–90 and in 2001. Prior to that (in 1977 and 1983), contraceptive use was inferred from questions on medication use. Detailed surveys of contraceptive use and contraceptive histories have also been collected as part of various family surveys (for example, the Australian Family Formation project, Melbourne 1971 and 1977; the Australian Family Project 1986). The most recent representative survey that was specifically designed to investigate the sexual behaviour of adults (including contraceptive practices) was conducted during 2001–02 (The Australian Study of Health and Relationships, for an overview, see Richters, *et al.* 2003).

This paper examines the contraceptive use of women in the reproductive ages, 18–44 years. Previous research on contraceptive practice in Australia using representative surveys typically applies age as a proxy for reproductive history. While it is important to understand patterns of contraceptive use by age, we argue that an alternative way of examining contraceptive use would be more informative: reproductive stage of the life course should also be considered. The focus of this paper is to extend research on contraceptive practice by considering the relationship between reproductive life course stage and contraception.

Background

Typically research that describes contraceptive use provides patterns of use by age. The most recently published research based on representative samples of women in reproductive ages finds that the most commonly used contraceptive method for women is the oral contraceptive ('the pill'), with tubal ligation/hysterectomy and condom use also widely used (Yusuf & Siedlecky, 2007; Richters *et al.* 2003). Based on the 2001 National Health Survey, Yusuf and

Siedlecky (2007) report that 27 per cent of women aged 18–49 used oral contraceptives, 23 per cent used condoms and 14 per cent reported tubal ligation or hysterectomy. Richters *et al.* (2003) found that of women aged 16–59 who used contraception, 34 per cent used oral contraceptive, 22.5 per cent used a form of sterilization (tubal ligation or hysterectomy) and 21 per cent used condom.

Both Yusuf and Siedlecky (2007) and Richters *et al.* (2003), like those that preceded them (Santow, 1991; Caldwell *et al.* 1973), found that age was associated with different patterns of contraceptive use.² Although the percentages of women using different methods are not directly comparable across these samples,³ it is evident that the contraceptive pill is the most commonly used form when women are in the twenties, condom use is generally by younger women (particularly in recent studies), and permanent methods like tubal ligation and hysterectomy occur in later age ranges (from aged 35 onwards).

What these studies demonstrate is that contraceptive practice varies by age group. This makes sense. As a woman ages, she is more likely to have had children or be restricting her fertility. But this is simply using age as a proxy for life course stage rather than age being an explainer *per se*. To provide a simple example, let's compare two 30 year-old women. One woman has three children and does not intend to have any more children. The other woman has no children but intends to have a child: hopefully in three to five years. It is not age *per se* that is driving the contraceptive practice of these women. What is important is the number of children they have, the number they want, and when they want them.

A reproductive life course perspective is a potentially powerful framework for studying contraceptive use. Individual trajectories of reproductive behaviour do not follow set age-based paths, people move in and out of life course stages at different times and in different sequences. Given that the main reason for using contraception is to control pregnancy, i.e. to control the timing or occurrence of a major life event, considering life course stage will provide a better understanding of contraceptive practice than by using age alone as a proxy for life stage.

Very few studies have actually considered the role of reproductive life stage in terms of contraceptive practice. Caldwell *et al.* (1973) and Santow (1991) provided information on contraceptive use by parity (number of children born). Santow (1991), whose study included sterilization methods, found that women with no children were more likely to use methods of contraception that were not permanent. However, neither of these studies included models

that included both age and parity in order to separate out the different effects. We note that there is important research that is being done along these lines, but that this research tends to focus on developing countries. For example, Khatun (2005) uses a life course perspective to look at contraceptive use, non-use and changes in use over a reproductive career using longitudinal data from Bangladesh. Hosseini-Chavoshi has also used retrospective contraceptive histories to examine varying patterns of contraception across the reproductive life course in Iran (Hosseini-Chavoshi 2007). In developed countries, it is rare to have these types of data.

We extend past research on contraceptive practice by examining key factors associated with contraceptive use: a woman's parity and fertility intentions, including timing intentions. Other factors related to contraceptive use are also considered. Due to data limitations, this study focuses on contraceptive use at one point in time, however, future analyses will be able to utilize a longitudinal perspective as data become available.

Data and method

We investigate differences in the use of contraceptive methods by women at different stages of their reproductive life course. The investigation focuses on the use of contraceptive method by parity and by fertility intentions, controlling for age and other related effects. Due to the different levels of permanency of the main contraceptive measures, we expect that parity influences the use of contraceptive type in the following ways:

1. Women at the start of their reproductive life course are more likely to use measures which are easily reversible;
2. Women who want to delay their childbearing are more likely to use a medium-term method; and
3. Women are more likely to use permanent methods at older ages and at higher parity.

In order to analyse the effect of life course stage on contraceptive practice, we use data from the Wave 5 collection of the Household, Income and Labour Dynamics in Australia (HILDA) survey (information on the Wave 5 data collection is available at MIAESR 2007).

Questions on contraceptive use were asked for the first time in the 2005 wave of HILDA as part of a fertility module. In turn, this module was part of the Generations and Gender Programme (GGP): an international survey program coordinated by the United Nations

(UNECE).⁴ This module of questions will be asked of respondents again in the 2008 wave of HILDA and this will allow longitudinal analyses of contraceptive behaviour. The fertility module was asked of all females aged 18 to 44 years and partnered males aged 18 to 54. Respondents (both females and males) aged less than 18 who lived independently of their parents were also asked this module of questions. The sample used for this paper is female respondents aged 18 to 44 (n=3,044 weighted).

We start by examining the use of various contraceptive methods by background factors and then conduct logistic regression models of the factors associated with the use of any form of contraceptive method. We then examine factors associated with the four main methods of contraception used.

The analytical strategy employed to examine factors associated with the main contraceptive methods is logistic regression as the dependent variable takes the form of a dichotomous variable: (0) Respondent does not use ‘X’ contraceptive, (1) Respondent uses ‘X’ contraceptive. The analysis is conducted for the four main methods of contraception used.

We model the effect of parity, age, relationship type, education, area of residence, and whether English is the respondent’s first language (construction of model variables is described in Appendix 1). One factor that is also related to contraceptive method practice that we include is a woman’s stated fertility intentions, but this is only modelled for the ‘non-permanent’ contraceptive methods. Fertility intentions were not asked of women who used a permanent method of contraception: it is assumed that respondents who use a permanent method do not intend to have any more children. Multiple classification analysis is then used to estimate proportions using the contraceptive methods based on the model coefficients.⁵

An example of the form that the logistic model takes is presented for one contraceptive method (Oral contraceptive):

P: estimated probability of using oral contraceptive

where,

In log odds form the model is:

$$\text{Log O} = a_1 + b_1 X_1 + c_1 X_2 + d_1 X_3 + \dots \quad \text{(Equation 1)}$$

In probability form the model is (to calculate the probabilities using MCA:

$$P = 1 / (1 + e^{-(a_1 + b_1 X_1 + c_1 X_2 + d_1 X_3 + \dots)}) \quad \text{(Equation 2)}$$

Descriptive results

Of all women aged 18 to 44, just over 60 per cent were using a contraceptive method at the time of the survey (Table 1). The pattern of use varied by age with women aged 40 or over most likely to be using a contraceptive method (71 per cent), while only 51 per cent of women aged 18 or 19 report using a method. Of women who did not use any method, four per cent stated that they were pregnant, nine per cent that they believed that there was a physical or health reason that would make it difficult to become pregnant,⁶ and the remaining 26 per cent stated that they were not using any contraceptive method.

Table 1 about here.

Respondents who did not use permanent methods of contraception could state more than one method of contraceptive use. Those who used permanent methods were not asked about other forms of contraceptive use. We note recent research by Parr and Siedlecky (2007) who found that dual protection methods were quite commonly used in Australia. For this reason, we show the proportion of oral contraceptive users who also use condoms.

The distribution of the use of different contraceptive methods (Table 2) is similar to that found in other studies (e.g. Yusuf and Siedlecky, 2007; Richters *et al.* 2003). As previously noted (see endnote 3), the populations surveyed vary between these studies, however general trends are apparent. The most commonly used form of contraception is oral contraception which is used by 25 per cent of all women aged 18 to 44 (this equates to 41 per cent of women who are using a contraceptive method). Seven per cent (11 per cent of users) of women use oral contraception in combination with condoms.

The second most commonly used method is the condom (about 19 per cent of all women and 31.5 per cent of contraceptors). Permanent methods of contraception are the next most commonly used: around eight per cent of women aged 18 to 44 have had a tubal ligation or hysterectomy, and nine per cent have a partner who has had a vasectomy.

The use of what we term ‘medium-use’ methods, that is, women who use an intrauterine device or implantation is around six per cent of contraceptors. While not a large group, we focus further investigation on these women in the multivariate analyses due to our interest in the use of different contraceptive methods depending on fertility timing intentions.

Various other methods were only used by very small numbers of women. These methods include ‘natural’ methods such as withdrawal or safe period method accounting for only three per cent of women.

Table 2 about here.

The use of different contraceptive methods varies substantially by parity, age and other characteristics of the woman (for construction of variables see Appendix 1; summary indicators are provided at Appendix Table 1.). The use of any form of contraceptive method increases as the number of children born increases (Table 3). Around 60 per cent of women with no children are using a form of contraception. The percentage increases to over 80 per cent of users for women with two or more children. The relationship between age and contraception use is a little different: use increases from age 18 up to 30 and is lower in the 30 to 34 age group, the peak age group for childbearing. Contraceptive use is highest at ages 35 and over. There is little variation by education, but those who are cohabiting or married (as compared to singles) are more likely to be using a method, as are those who have English as a first language.

Table 3 about here.

However, the patterns of use vary substantially by characteristics of the woman depending on the method of contraceptive used. At the bivariate level, we can see that women who have no, or few, children are much more likely to use oral contraceptive or condoms while women who have three or more children are more likely to use a permanent method. Age shows a similar pattern, with women aged less than 30 more likely to use oral contraceptives or condoms, while women aged 35+ more likely to use a permanent method. Condoms are most commonly used by women aged 18–19. Those who are single are more likely to use oral contraceptives or condoms than permanent methods. Women who are cohabiting are more likely to use oral contraceptives or medium-term methods than are women who are married or single. These patterns are consistent with the proposition that contraceptive practice is associated with the stage of a woman’s reproductive life course.

Multivariate results

This section presents results of the general model of contraceptive use (Table 4) and the logistic regression models for oral contraception, condom use, medium-term and permanent methods (Figure 1 and Appendix Tables 2–5). As indicated, we are primarily interested in the influence of reproductive life course stage, as measured by the number of children ever born and fertility intentions including timing (except for women who use permanent methods), and age on the use of contraceptive methods. These factors are measured as a series of binary dummy variables. We also control for other factors associated with contraception use: education, relationship type, region of residence and English-speaking background.

For each of the main methods analysed, we run a model that is for all women (Model 1: excluding women who are pregnant and women who have known physical difficulties) and a model for women who could be considered ‘at-risk of pregnancy’ (Model 2: Model 1 exclusions and excluding women who use a permanent method). For the second model, we are able to also include fertility intentions of the woman.

In examining the use of any form of contraception, the factor that has the largest impact (in terms of magnitude) on using contraception is the number of children a woman has (Table 4). Women who have two or more children are much more likely to be using a contraceptive method than women who have no children or one child. Relationship type is also an important factor, with women who are cohabiting or married more likely to be using contraception as compared to women who are single. After controlling for the number of children a woman has, the pattern of contraceptive use decreases for age. Women aged 30 and above are less likely to use a form of contraception than younger women. There is little variation by education, although those with less than Year 12 education have lesser odds of using contraception as compared to those with a degree. Also, those with English as a first language are more likely to be using any method. In Model 2, women who intend to have a child in the next three years are much less likely to be using a method than those who do not want to have another child.

Table 4 about here.

We now move to the examination of the four main methods of contraception used: oral contraception; condom use; medium-term methods and permanent measures (tubal

ligation/hysterectomy/vasectomy⁷). It should be reiterated that the collection of the contraceptive methods allowed multiple responses (The construction of these variables is available at Appendix 1). This means that women who answered ‘yes’ to using oral contraception may also have responded ‘yes’ to the use of condoms.⁸

Oral contraception

The pattern of oral contraceptive use varies by the number of children ever born (for model patterns see Figure 1 for predicted probabilities. Model coefficients and standard errors are available at Appendix Table 2). Women are more likely to use oral contraception when they have no children or few children and their use declines with higher parity (Figure 1). If this pattern is considered in the context of other contraceptive choices (Appendix Tables 3–5), it is evident that women with higher parity (larger numbers of children) are much more likely to use a permanent method of contraception. If fertility intentions are also considered, it is evident that the women who intend to have a child in the next three years are the least likely to be using oral contraception as compared with women who do not want children. These patterns of use are consistent with the expectation that women who have fewer children, or who intend to have a child relatively soon, are more likely to use an easily reversible contraceptive method.

The percentage using drops markedly after having the second child (from 27 to 15 per cent). We estimate that only six per cent of women with four or more children use oral contraceptives.

Figure 1 about here.

However, less expectedly, an extremely strong pattern of use is also found by age. Oral contraception is much more likely to be used by younger women, that is, women aged below 30. Almost 40 per cent of women aged less than 20 are estimated to use oral contraception, increasing to over 55 per cent for women aged 20 to 29. This falls to around 20 per cent of women aged 35–44. Overall, controlling for other factors, age itself shows a strong association with oral contraception use; younger women are more likely to use oral contraception. As this effect is independent of parity and birth intentions, it is not the result of reproductive life stage and perhaps reflects some nervousness related to long-term use of hormonal methods.

In terms of how other factors are related to the use of oral contraception, the estimation finds that women in a regional or remote area, those who have a partner (whether cohabiting or married), and women who speak English as a first language have a greater propensity to use oral contraceptives. There is slight evidence of greater propensity to use oral contraceptives for those who have completed high school compared to those who have not.

Condoms

Condom use shows a very similar pattern to that found for women who used oral contraception. When examining the model that includes all women, it is evident that women who have higher parity are less likely to use condoms (Appendix Table 3). This pattern is attenuated in the model of 'at risk' women, with no pattern by children ever born evident (see Figure 1 and Appendix Table 3).

In terms of magnitude, age has a much greater relationship to condom use. Women are most likely to use condoms when aged less than 20. Almost forty-five per cent of women aged 18–19 are estimated to use condoms for contraception. This compares with 17 per cent of women aged 25–29 and nine per cent of women aged 40–44. Condom use shows some differences in comparison to the patterns found for users of oral contraception by background characteristics. Women who live in a major city are more likely to use condoms than those who live in a regional or remote area, and condom use does not differ by English-speaking background.

What is perhaps most striking in terms of condom use is the difference in use by relationship status. Controlling for other factors, this method is more likely to be used in a marital relationship than by those who are single or cohabiting. We estimate that almost 40 per cent of married women at risk of pregnancy use condoms compared with 13 per cent of cohabiters. This shows a stark contrast in the types of contraception used by married and cohabiting women: cohabiting women are more likely to use oral contraception and medium methods (see below). These results are open for interpretation, but could be related to women using more reliable methods in cohabiting relationships.

In terms of fertility intentions, we again find that women who plan to have children in the next three years are the least likely to be using this contraceptive method.

Medium-term methods

The use of medium-term methods is relatively low, so predicted probabilities are not presented for these women. However, the model estimates (Appendix Table 4) show distinct

patterns of use. Specifically we find that women who have two children are much more likely to use a medium-term method than those who have no children, controlling for other factors. There also appears to be some pattern by age, with these methods being used by women in their late 20s and less use by women aged 40–44. Women who are cohabiting are much more likely to be using these types of methods than women who are single or married.

What is perhaps most striking is the lesser use of these methods by women who intend to have children. This does not vary by timing, with women who state a timeframe for their childbearing intentions being less likely to use a medium-term method than women who do not intend to have children in the future. This supports our proposition that women who intend to have children are less likely to use a method that is not easily reversed, but we expected this pattern to be more discernable. The emphasis is not on when women plan to have their children; the results suggest it is simply whether or not they plan to have children.

Permanent methods

Permanent methods for preventing pregnancy, such as tubal ligation, hysterectomy and vasectomy vary substantially by the number of children ever born, but independently, also by age (Appendix Table 5). A negligible per cent of women have used a permanent method of contraception⁹ at either low parity or at younger ages. It is estimated that five per cent of women with two children have used permanent methods. This increased to 14 per cent and 22 per cent of women have used permanent methods if they have three children or four or more children have respectively. Considering the percentage of women estimated to have used a permanent method by age, around seven per cent of women aged 35–39, and 14 per cent of women aged 40–44, had used a permanent method. Both parity and age are important factors in using a permanent method of fertility control.

Discussion

This paper presents results of contraception use for four methods of contraception. We speculated that contraception use does not vary only by age, but contraceptive method is also associated with factors associated with the stage of a woman's reproductive life course. Using the Wave 5 of HILDA data, we were provided with the opportunity to test these hypotheses. Data on contraceptive use is not typically available together with parity and other detailed information on the person, particularly in developed countries.

We find that independent of each other, the number of children ever born, age and fertility intentions are associated with the type of contraceptive method used. Women at low parity are more likely to use oral contraception or condoms. These are methods that can be easily reversed if necessary. Age is also closely related to the use of these methods, and is in fact a very important factor: the use of oral contraception and condoms is much more likely at younger ages.

The pattern of medium-term methods such as intrauterine devices or implantation, while used by only a small percentage of women, is associated with fertility intentions. While these methods could be considered a suitable method of postponing fertility, they were more likely to be used by women who did not intend to have children in the future. There was little evidence of use to postpone pregnancy.

When estimating permanent methods of contraception directly, we find that the use of permanent methods is strongly associated with both the number of children a woman has ever had and her age. These variables are both positively associated with the use of a permanent method. These methods are not used at the beginning of a reproductive life course.

Previous studies have focussed on the relationship between age and contraceptive method with age being used as a proxy for stage in the reproductive history. In this study, we use direct measures of stage in the reproductive history (parity and birth intention and timing). As expected, these direct measures have strong associations in the expected directions with use of contraception and with type of contraception used. Easily reversible measures are used at the start of women's reproductive careers, medium-term measures are mainly used by those women who do not want children (whether they are at the end of their reproductive careers or simply intend to have no children) and permanent measures are rightly left to the end of reproductive life courses.

However, the intriguing result from the study is that age is associated with contraceptive method independent of these measures of reproductive stage: condoms and oral contraception are more popular with younger women than women age 30 and above. In relation to the pill, this may reflect nervousness related to the long-term use of hormonal methods. In relation to the condom, it may reflect the fact that partnered women are relatively more likely to be cohabiting than married. Alternatively, given that the study is based on cross-sectional data, these could potentially be cohort patterns. This will be clearer once results from the 2008 wave of HILDA become available.

Endnotes

¹ Relatively little national data is available in Australia to investigate parity-based measures of fertility (Corr and Kippen 2006). Kippen (2004) uses perinatal birth registration to investigate age at first and second birth. Analysis using HILDA data to investigate parity progression is also available (Gray, Evans and Kippen 2007).

² It should be noted that sterilization was not a commonly used method until the early 1970s, so this method is not provided in Caldwell *et al.* (1973).

³ Different denominators are used in different publications. Results from the 1971 survey provide contraceptive use for married women aged 15 to 44 (Caldwell *et al.* 1973). In 1986 (Santow 1991) the sample included married and unmarried women aged 20 to 59. Yusuf and Siedlecky (forthcoming) use 2001 data to investigate all women aged 18 to 49, while Richters *et al.* (2003) present aged-based information for women at risk of pregnancy.

⁴ Information on the Generations and Gender Programme can be found at: <http://www.unecce.org/pau/ggp/>

⁵ Retherford and Choe (1993) demonstrate the use of multiple classification analysis to estimate predicted probabilities.

⁶ Women who were pregnant or stated they had a physical or health reason making it difficult to have children were excluded from the analysis of method use as they were not asked questions about contraceptive method.

⁷ A logistic regression model comparing the use of tubal ligation/hysterectomy v vasectomy showed that there was no variation by background characteristics in terms of parity, age, education or region. The only variation evident is that women who have English as a first language were more likely to have a partner who had had a vasectomy.

⁸ Women who used permanent methods were not asked about other contraceptive use.

⁹ Of course there are a number of women who use permanent methods of 'contraception' for reasons related to health rather than contraception. In fact the term contraception for many of these women is quite inappropriate. From these data it is impossible to tell the reason for sterilization.

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Appendix 1

Construction of variables

Oral contraception

Definition: Discrete variable indicating whether respondent uses oral contraception, other method or no method.

Construction: Oral contraceptive use is based on EFTCPILL (whether currently using contraceptive pill, EFTCANY (whether currently using some form of contraception) and EFTIOP (whether had operation that makes it impossible to have children), where 0=Uses oral contraception; 1=Uses other method; 2=Does not use contraception.

Condom

Definition: Discrete variable indicating whether respondent uses condom, other method or no method.

Construction: Condom use is based on EFTCCON (whether currently using condoms, EFTCANY (whether currently using some form of contraception) and EFTIOP (whether had operation that makes it impossible to have children), where 0=Uses condoms; 1=Uses other method; 2=Does not use contraception.

Permanent method: Tubal ligation/hysterectomy/vasectomy

Definition: Discrete variable indicating whether respondent or respondent's partner has had an operation that makes it impossible to have children, other method or no method.

Construction: Permanent method is based on EFTIOP and EFTIPOP (whether respondent or respondent's partner had operation that makes it impossible to have children) and EFTCANY (whether currently using some form of contraception), where 0=Permanent method; 1=Uses other method; 2=Does not use contraception.

Reproductive life course stage: Children ever born

Definition: Number of children ever born.

Construction: Based on ETCHAD (Number of children ever had). For multivariate models the number of children ever had was converted to a series of dummy variables up to 4+.

Age

Definition: Age in years.

Construction: Based on EHGAGE (Age in years). For multivariate models age was converted to a series of dummy variables representing five-year age groups (<20 only includes those aged 18-19).

Education

Definition: Discrete variable indicating respondent's highest level of education.

Construction: Education is based on EEDHIGH (highest level of education). Education is regrouped: 0=Bachelor or higher (1,2,3); 1=Advanced diploma/diploma (4); 3=Certificate (5,6,7); 4=Yr12 (8); 5=<Yr12(9). For multivariate models these were converted to a series of binary (1,0) dummy variables representing these education categories.

Relationship status

Definition: Discrete variable indicating respondent's relationship status (single, cohabiting, married).

Construction: Relationship status is based on EMRCURR (marital status). Relationship status is regrouped: 0=Single (3,4,5,6: separated, divorced, widowed, never married and not de facto); 1=Cohabiting (2: De Facto); 2=Married (1=Legally married). For multivariate models these were converted to two binary (1,0) dummy variables with 'single' being the reference category.

Area of residence

Definition: Binary (1,0) dummy variable for respondent lives in a major city, or not.

Construction: Use EHHRA (Remoteness area) , coded as 0=Inner/Outer regional Australia or Remote and 1=Major city.

English

Definition: Binary (1,0) dummy variable for whether a respondent who was born overseas spoke English as their first language, or not.

Construction: Use EANENGF (Is English the first language you learned to speak as a child).

Fertility intentions: Whether respondent intends to have a(ny more) child(ren) and when

Definition: (Intention) Number of (additional) children respondent intends to have. (When) Measure of when respondent expects to have another child.

Construction: (Intention) Based on EICN (Number of (additional) children respondent intends to have). (When) Based on EICNY (If answered a year) or EICNO (If answered by response category).

Respondents who answered by a given year were combined into response categories (i.e. within 3 years, 4-5 years, 6-10 years, or unable to say).

For multivariate models the intention and timing were converted to a series of dummy variables with not intending to have another child being the reference group.

Table 1: Whether respondent uses a contraceptive method by age (cross-tabulation).

<i>Whether contraceptive method is used</i>	<i>Age group</i>						<i>Total</i>
	18-19	20-24	25-29	30-34	35-39	40-44	
Yes	50.7	56.6	60.0	55.6	64.2	71.0	60.7
No: not using any method	43.3	32.6	22.7	28.1	22.0	19.5	26.3
No: pregnant	1.8	3.0	7.6	7.3	4.5	0.0	4.3
No: physical difficulties ^a	4.1	7.7	9.7	9.0	9.3	9.5	8.7
Total (n)	217	530	497	620	578	569	3,011

Data weighted by ehwhtrps (cross-sectional responding person population weight rescaled to sum to the number of responding persons)

^a Respondents who answer yes to Q: 'Based on medical advice, do you know of any physical or health reason that would make it difficult for you/your partner to have children/more children'.

N=3,044 (33 refused).

***p<0.0001

Table 2: Contraceptive method, all women and women who used a form of contraception (per cent).

<i>Contraceptive method</i>	All women	Women who use a contraceptive method ^a
	% (n=3,044)	% (n=1,846)
Oral contraceptive	25.3	41.3
Oral contraceptive only	18.3	29.9
Condom	19.3	31.5
Condom only	12.4	20.2
Oral contraceptive + condom	7.0	11.4
Tubal ligation or hysterectomy ^b	8.4	13.8
Vasectomy ^b	8.8	14.5
Intrauterine device	1.4	2.3
Injectable	1.8	2.9
Implant	2.3	3.8
Withdrawal	2.1	3.5
Safe period method	1.4	2.2
Other ^c	1.0	1.6

Data weighted by ehwhtrps (cross-sectional responding person population weight rescaled to sum to the number of responding persons)

^a Percentages do not add up to 100 because of multiple responses.

^b Respondents who answer yes to having a tubal ligation or hysterectomy, or yes to partner having a vasectomy were not asked about use of other contraceptive methods.

^c 'Other' includes: diaphragm/cervical cap, foam/cream/jelly/suppository, Persona, hormonal emergency contraception.

N=3,044 (33 refused).

Table 3: Per cent using contraceptive methods. Main methods of contraception and use of any method by characteristics of the woman.

<i>Characteristic</i>	Oral contraceptive	Condom	Medium term method ^a	Permanent method ^b	Use of any method
	Per cent using method				
Total children ever had	***	***	**	***	***
0	38.7	28.1	3.6	2.3	61.1
1	27.9	24.6	3.0	7.3	62.3
2	24.3	17.4	7.2	29.8	81.5
3	13.3	12.3	2.7	52.2	82.9
4+	6.5	9.2	3.9	60.1	83.0
Age (years)	***	***	**	***	***
18–19	36.8	35.3	2.0	-	53.9
20–24	43.0	29.8	3.8	-	63.4
25–29	41.7	25.3	7.8	3.2	72.5
30–34	28.7	24.1	3.7	12.5	66.5
35–39	16.5	15.9	5.2	33.9	74.5
40–44	15.7	12.0	2.5	44.5	78.4
Highest level education	**	**	*	***	*
Bachelor or higher	31.5	25.8	4.3	13.1	72.0
Advanced diploma/dip	30.4	22.9	4.7	16.3	70.2
Certificate	29.5	23.2	5.3	22.5	74.0
Yr 12	33.0	23.4	5.6	12.9	67.5
<Yr 12	22.9	17.0	2.3	26.1	66.8
Relationship status	***		**	***	***
Single	33.0	24.0	3.8	5.8	56.0
Cohabiting	39.7	21.1	7.2	9.4	73.2
Married	21.9	21.0	3.7	32.8	81.1
Region of residence				***	***
Major city	28.5	28.5	4.2	15.2	67.4
Inner regional Aust	30.4	30.4	4.4	26.5	76.0
Outer regional Aust/remote	30.2	30.2	4.7	25.4	75.0
English as a first language	***			***	***
No	17.9	23.8	3.9	10.8	57.6
Yes	31.1	22.0	4.3	19.8	72.0
Fertility intentions	***	***		n/a	n/a
No children	20.1	15.7	4.9		
One child	33.0	27.9	3.8		
Two children	39.4	27.0	4.3		
Three+ children	40.6	32.6	-		
When do you intend to have next child?	***	***		n/a	n/a
Within 3 years	32.5	24.1	3.8		
4 to 5 years	47.0	33.0	2.9		
6-10 years	41.8	36.0	2.7		
Unable to answer	34.0	21.3	7.1		

Data weighted by ehwhtrps (cross-sectional responding person population weight rescaled to sum to the number of responding persons)

^a Definition of a 'medium-term method' includes respondents who use an intrauterine device or implantation.

^b Definition of 'permanent method' includes respondents who have had a tubal ligation or hysterectomy and respondents whose partners have had a vasectomy. Respondents who answer yes to having a permanent method were not asked about use of other contraceptive methods.

N=2,620 (excludes 129 pregnant women and 262 women who have physical difficulties).

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.0001$.

Table 4: Logistic regression: (1) Use of any contraceptive method; (2) Use of non-permanent contraceptive methods.

<i>Characteristic</i>	(1)			(2)		
	B	SE	ExpB	B	SE	ExpB
Total children ever had						
0 (ref)	0.00		1.00	0.00		1.00
1	-0.09	0.145	0.91	0.02	0.150	1.02
2	0.83***	0.155	2.30***	0.45**	0.168	1.57**
3	0.88***	0.202	2.42***	-0.01	0.228	0.99
4+	0.99***	0.255	2.68***	-0.20	0.305	0.82
Age (years)						
18–19	-0.16	0.179	0.85	-0.15	0.182	0.86
20–24 (ref)	0.00		1.00	0.00		1.00
25–29	-0.03	0.157	0.97	0.12	0.164	1.12
30–34	-0.61***	0.156	0.54***	-0.54**	0.171	0.58**
35–39	-0.56**	0.176	0.57**	-0.93***	0.199	0.40***
40–44	-0.34 ⁺	0.178	0.71 ⁺	-0.93***	0.208	0.39***
Highest level of education						
Bachelor or higher (ref)	0.00		1.00	0.00		1.00
Advanced diploma/dip	-0.09	0.174	0.91	-0.04	0.181	0.96
Certificate	0.01	0.154	1.01	-0.07	0.162	0.93
Yr 12	-0.11	0.137	0.90	-0.18	0.141	0.84
<Yr 12	-0.48***	0.137	0.62***	-0.66***	0.145	0.52***
Relationship status						
Single (ref)	0.00		1.00	0.00		1.00
Cohabiting	0.69***	0.136	2.00***	0.92***	0.148	2.50***
Married	1.14***	0.122	3.13***	1.21***	0.136	3.34***
Region of residence						
Major city	-0.19 ⁺	0.109	0.83 ⁺	-0.11	0.115	0.90
Inner/outer regional or remote (ref)	0.00		1.00	0.00		1.00

Table 4 continues...

Table 4 (continued): Logistic regression: (1) Use of any contraceptive method; (2) Use of non-permanent contraceptive methods.

<i>Characteristic</i>	(1)			(2)		
	B	SE	ExpB	B	SE	ExpB
English as a first language						
No (ref)	0.00		1.00	0.00		1.00
Yes	0.79***	0.124	2.20***	0.68***	0.129	1.97***
Fertility intentions		n/a				
Do not intend to have children				0.00		1.00
Within 3 years				-0.94***	0.146	0.39***
4 to 5 years				-0.16	0.192	0.85
6-10 years				-0.27	0.197	0.76
Unable to answer				-0.48*	0.208	0.62*
Constant	-0.05	0.200	0.95	0.36	0.252	1.44

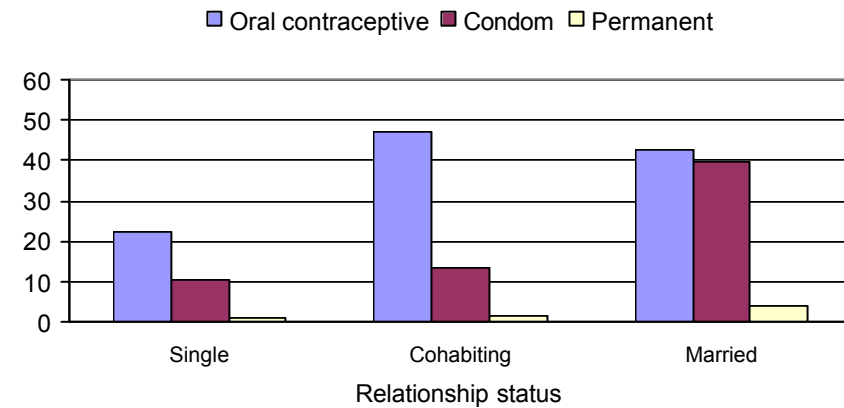
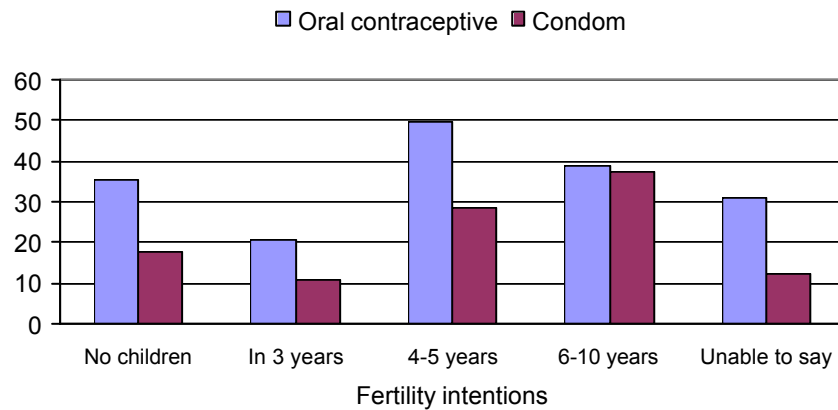
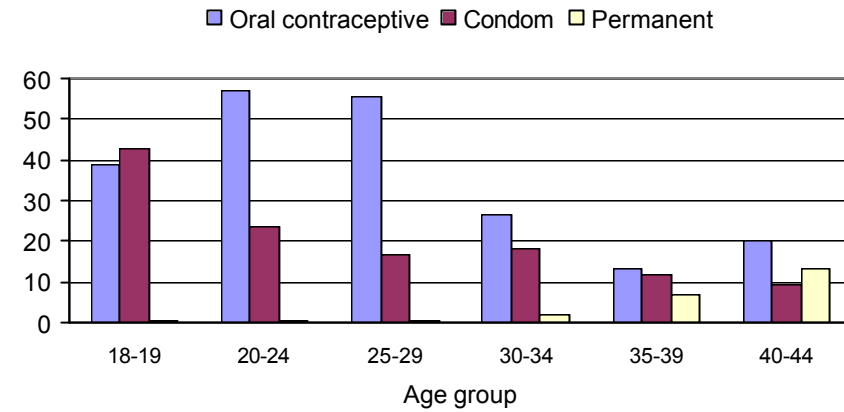
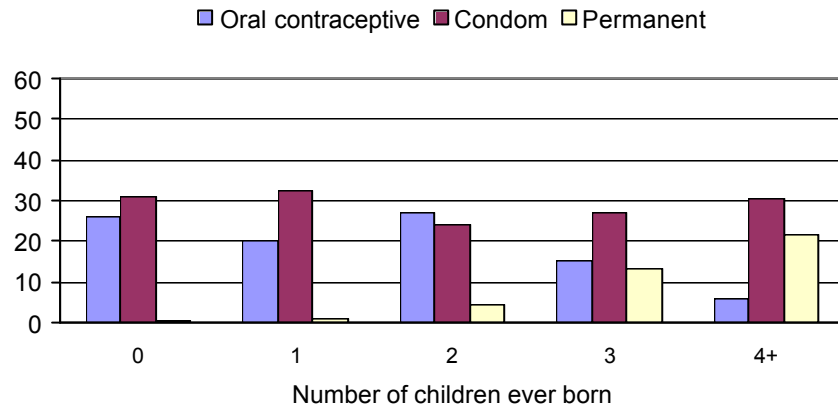
(1) N=2,620 (excludes 129 pregnant women and 262 women who have physical difficulties).

(2) N=2,178 (excludes 129 pregnant women, 262 women who have physical difficulties and 442 women who use a permanent method). These women could be considered 'at risk' of pregnancy.

Variables included as binary dummies.

⁺ p<0.10, *p<0.05, **p<0.01, ***p<0.0001.

Figure 1: Predicted probabilities of type of contraceptive used.



Note: Predicted probabilities for oral contraception and condom based on models for 'at-risk' women.

Appendix Table 1: Descriptives: Model variables and contraceptive method.

<i>Characteristic</i>	Oral contraceptive n=762	Condom n=582	Medium method ^a n=112	Permanent method ^b n=482	Total n=2,620
	Mean (standard deviation)				
Total children ever had	0.7 (1.08)	0.8 (1.12)	1.3 (1.32)	2.6 (1.25)	1.2 (1.39)
Age (years)	28.4 (7.24)	28.7 (7.47)	31.0 (6.83)	38.4 (4.58)	31.3 (7.84)
	Per cent				
Highest level of education					
Bachelor or higher	27.1	29.1	24.8	17.9	25.0
Advanced diploma/dip	10.2	10.1	10.9	8.6	9.8
Certificate	16.7	17.2	20.5	20.0	16.5
Yr 12	24.8	23.0	29.0	15.3	21.9
<Yr 12	21.1	20.7	14.7	38.2	26.9
Relationship status					
Single	45.4	43.2	35.6	12.7	40.0
Cohabiting	21.0	14.7	25.9	7.8	15.4
Married	33.6	42.1	38.5	79.5	44.6
Region of residence					
Major city	69.3	75.8	69.2	58.4	70.6
Inner regional Aust	20.7	16.4	20.4	28.3	19.7
Outer regional Aust/remote	10.0	7.9	10.3	13.3	9.6
English as a first language					
No	9.5	16.6	14.7	9.2	15.6
Yes	90.5	83.4	85.3	90.8	84.4
Fertility intentions				n/a	n/a
No children	33.9	34.8	58.5		
One child	13.6	15.1	11.0		
Two children	33.7	30.3	26.0		
Three+ children	14.9	15.3	4.5		
When do you intend to have next child?				n/a	n/a
Within 3 years	38.2	37.6	44.9		
4 to 5 years	26.3	24.7	15.6		
6-10 years	25.0	28.7	17.1		
Unable to answer	10.6	8.9	22.4		

Data weighted by ehwhtrps (cross-sectional responding person population weight rescaled to sum to the number of responding persons)

^a Definition of a 'medium-term method' includes respondents who use an intrauterine device or implantation.

^b Includes respondents who have had a tubal ligation or hysterectomy and respondents whose partners have had a vasectomy. Respondents who answer yes to having a permanent method were not asked about use of other contraceptive methods.

N=2,620 (excludes 129 pregnant women and 262 women who have physical difficulties)

Appendix Table 2: Logistic regression: (1) Use of oral contraceptive; (2) Use of oral contraceptive by women ‘at risk’ of pregnancy.

<i>Characteristic</i>	(1)			(2)		
	B	SE	ExpB	B	SE	ExpB
Total children ever had						
0 (ref)	0.00		1.00	0.00		1.00
1	-0.14	0.149	0.87	-0.16	0.153	0.86
2	-0.12	0.148	0.88	0.03	0.161	1.03
3	-0.87***	0.213	0.42***	-0.35	0.233	0.71
4+	-1.61***	0.353	0.20***	-1.03**	0.376	0.36**
Age (years)						
18–19	-0.20	0.180	0.82	-0.22	0.183	0.80
20–24 (ref)	0.00		1.00	0.00		1.00
25–29	-0.04	0.147	0.96	-0.02	0.154	0.99
30–34	-0.54***	0.154	0.58***	-0.46**	0.168	0.63**
35–39	-1.13***	0.184	0.32***	-0.91***	0.202	0.40***
40–44	-1.09***	0.184	0.34***	-0.64**	0.207	0.53**
Highest level of education						
Bachelor or higher (ref)	0.00		1.00	0.00		1.00
Advanced diploma/dip	0.10	0.169	1.10	0.10	0.175	1.11
Certificate	-0.17	0.149	0.84	-0.04	0.155	0.96
Yr 12	-0.07	0.133	0.93	0.00	0.137	1.00
<Yr 12	-0.33*	0.141	0.72*	-0.27 ⁺	0.145	0.76 ⁺
Relationship status						
Single (ref)	0.00		1.00	0.00		1.00
Cohabiting	0.37**	0.131	1.45**	0.47**	0.140	1.60**
Married	0.10	0.125	1.11	0.41**	0.135	1.51**
Region of residence						
Major city	-0.20 ⁺	0.105	0.82 ⁺	-0.25*	0.109	0.78*
Inner/outer regional or remote (ref)	0.00		1.00	0.00		1.00

Table 5 continues...

Appendix Table 2 (continued): Logistic regression: (1) Use of oral contraceptive; (2) Use of oral contraceptive by women ‘at risk’ of pregnancy.

<i>Characteristic</i>	(1)			(2)		
	B	SE	ExpB	B	SE	ExpB
English as a first language						
No (ref)	0.00		1.00	0.00		1.00
Yes	0.80***	0.146	2.23***	0.91***	0.147	2.49***
Fertility intentions		n/a				
Do not intend to have children				0.00		1.00
Within 3 years				-0.34*	0.145	0.71*
4 to 5 years				0.20	0.182	1.23
6-10 years				0.06	0.193	1.07
Unable to answer				-0.08	0.212	0.92
Constant***	-0.75	0.209	0.47	-0.91	0.256	0.40

(1) N=2,620 (excludes 129 pregnant women and 262 women who have physical difficulties).

(2) N=2,178 (excludes 129 pregnant women, 262 women who have physical difficulties and 442 women who use a permanent method). These women could be considered ‘at risk’ of pregnancy.

Variables included as binary dummies.

⁺ p<0.10, *p<0.05, **p<0.01, ***p<0.0001.

Appendix Table 3: Logistic regression: (1) Use of condom; (2) Use of condom by women ‘at risk’ of pregnancy.

<i>Characteristic</i>	(1)			(2)		
	B	SE	ExpB	B	SE	ExpB
Total children ever had						
0 (ref)	0.00		1.00	0.00		1.00
1	0.03	0.158	1.03	0.03	0.163	1.03
2	-0.28 ⁺	0.163	0.75 ⁺	-0.16	0.176	0.86
3	-0.59**	0.225	0.56**	-0.08	0.243	0.93
4+	-0.77*	0.312	0.46*	-0.01	0.339	0.99
Age (years)						
18–19	0.43*	0.185	1.53*	0.37*	0.188	1.45*
20–24 (ref)	0.00		1.00	0.00		1.00
25–29	-0.33*	0.161	0.72*	-0.23	0.169	0.80
30–34	-0.37*	0.166	0.69*	-0.17	0.181	0.84
35–39	-0.83**	0.195	0.44**	-0.46*	0.214	0.63*
40–44	-1.14**	0.204	0.32**	-0.62**	0.228	0.54**
Highest level of education						
Bachelor or higher (ref)	0.00		1.00	0.00		1.00
Advanced diploma/dip	-0.05	0.179	0.95	-0.06	0.185	0.94
Certificate	-0.11	0.156	0.90	0.03	0.162	1.03
Yr 12	-0.26 ⁺	0.142	0.77 ⁺	-0.23	0.145	0.79
<Yr 12	-0.42**	0.149	0.66**	-0.36*	0.154	0.70*
Relationship status						
Single (ref)	0.00		1.00	0.00		1.00
Cohabiting	0.05	0.150	1.05	0.17	0.158	1.18
Married	0.51***	0.136	1.66***	0.86***	0.146	2.37***
Region of residence						
Major city	0.21 ⁺	0.116	1.23 ⁺	0.19	0.120	1.22
Inner/outer regional or remote (ref)	0.00		1.00	0.00		1.00

Table 6 continues...

Appendix Table 3 (continued): Logistic regression: (1) Use of condom; (2) Use of condom by women ‘at risk’ of pregnancy.

<i>Characteristic</i>	(1)			(2)		
	B	SE	ExpB	B	SE	ExpB
English as a first language						
No (ref)	0.00		1.00	0.00		1.00
Yes	0.08	0.136	1.08	0.17	0.139	1.18
Fertility intentions		n/a				
Do not intend to have children				0.00		1.00
Within 3 years				-0.35*	0.155	0.70*
4 to 5 years				0.32	0.195	1.37
6-10 years				0.48*	0.205	1.61*
Unable to answer				-0.24	0.236	0.78
Constant***	-0.96	0.213	0.38	-1.28	0.269	0.28

(1) N=2,620 (excludes 129 pregnant women and 262 women who have physical difficulties).

(2) N=2,178 (excludes 129 pregnant women, 262 women who have physical difficulties and 442 women who use a permanent method). These women could be considered ‘at risk’ of pregnancy.

Variables included as binary dummies.

⁺ p<0.10, *p<0.05, **p<0.01, ***p<0.0001.

Appendix Table 4: Logistic regression: (1) Use of medium-term method; (2) Medium-term method by women ‘at risk’ of pregnancy.

<i>Characteristic</i>	(1)			(2)		
	B	SE	ExpB	B	SE	ExpB
Total children ever had						
0 (ref)	0.00		1.00	0.00		1.00
1	0.19	0.368	1.21	0.00	0.374	1.00
2	1.39***	0.305	4.00***	1.15***	0.317	3.15***
3	0.41	0.460	1.51	0.47	0.471	1.61
4+	0.95 ⁺	0.521	2.58 ⁺	1.12*	0.532	3.06*
Age (years)						
18–19	-0.49	0.575	0.61	-0.49	0.579	0.61
20–24 (ref)	0.00		1.00	0.00		1.00
25–29	0.60 ⁺	0.321	1.81 ⁺	0.50	0.333	1.64
30–34	-0.36	0.378	0.69	-0.53	0.397	0.59
35–39	-0.07	0.387	0.93	-0.18	0.404	0.84
40–44	-0.83	0.438	0.44	-0.79 ⁺	0.457	0.45 ⁺
Highest level of education						
Bachelor or higher (ref)	0.00		1.00	0.00		1.00
Advanced diploma/dip	0.11	0.362	1.11	0.02	0.367	1.02
Certificate	0.20	0.310	1.22	0.24	0.315	1.28
Yr 12	0.30	0.277	1.35	0.33	0.282	1.39
<Yr 12	-0.76*	0.342	0.47*	-0.81*	0.346	0.45*
Relationship status						
Single (ref)	0.00		1.00	0.00		1.00
Cohabiting	0.53*	0.263	1.70*	0.77**	0.281	2.16**
Married	-0.43	0.268	0.65	-0.10	0.278	0.90
Region of residence						
Major city	-0.04	0.227	0.96	-0.05	0.230	0.95
Inner/outer regional or remote (ref)	0.00		1.00	0.00		1.00

Table 7 continues...

Appendix Table 4 (continued): Logistic regression: (1) Use of medium-term method; (2) Use of medium-term method by women ‘at risk’ of pregnancy.

<i>Characteristic</i>	(1)			(2)		
	B	SE	ExpB	B	SE	ExpB
English as a first language						
No (ref)	0.00		1.00	0.00		1.00
Yes	-0.08	0.288	0.92	0.05	0.293	1.05
Fertility intentions						
Do not intend to have children		n/a		0.00		1.00
Within 3 years				-0.81**	0.306	0.44**
4 to 5 years				-1.16*	0.453	0.31*
6-10 years				-0.81 ⁺	0.461	0.44 ⁺
Unable to answer				0.15	0.393	1.16
Constant***	-3.34	0.458	0.04	-2.88	0.543	0.06

(1) N=2,620 (excludes 129 pregnant women and 262 women who have physical difficulties).

(2) N=2,178 (excludes 129 pregnant women, 262 women who have physical difficulties and 442 women who use a permanent method). These women could be considered ‘at risk’ of pregnancy.

Variables included as binary dummies.

⁺ p<0.10, *p<0.05, **p<0.01, ***p<0.0001.

Appendix Table 5: Logistic regression: Permanent method.

<i>Characteristic</i>	B	SE	ExpB
Total children ever had			
0 (ref)	0.00		1.00
1	0.07	0.305	1.07
2***	1.38	0.246	3.99
3***	2.17	0.263	8.78
4+***	2.49	0.290	12.02
Age (years)			
18–19**	-2.61	0.793	0.07
20–24***	-2.79	0.541	0.06
25–29***	-2.44	0.312	0.09
30–34***	-1.38	0.179	0.25
35–39**	-0.47	0.148	0.63
40–44 (ref)	0.00		1.00
Highest level of education			
Bachelor or higher (ref)	0.00		1.00
Advanced diploma/dip	-0.17	0.245	0.84
Certificate**	0.60	0.207	1.83
Yr 12	0.29	0.210	1.34
<Yr 12*	0.43	0.181	1.53
Relationship status			
Single (ref)	0.00		1.00
Cohabiting	0.27	0.252	1.31
Married***	1.06	0.181	2.88
Region of residence			
Major city*	-0.33	0.137	0.72
Inner/outer regional or remote (ref)	0.00		1.00
English as a first language			
No (ref)	0.00		1.00
Yes***	0.82	0.203	2.27
Constant***	-3.16	0.369	0.04

(1) N=2,620 (excludes 129 pregnant women and 262 women who have physical difficulties).

Variables included as binary dummies.

+ p<0.10, *p<0.05, **p<0.01, ***p<0.0001.