

# Perceived Fertility Regulation Costs and Contraceptive Use in Nepal

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## **ABSTRACT**

In this paper I examine the effects of perceived fertility regulation costs on couples' contraceptive behavior. These perceived costs—here measured by both general attitudes toward the acceptability of contraception and by attitudes toward specific dimensions of multiple contraceptive methods—are theorized to influence fertility limiting behavior independent of the actual costs of contraception. This analysis is made possible by unique data from Nepal, which contain measures of both women's and men's perceptions of the availability, effectiveness, and side effects of multiple contraceptive methods, and 9 years of prospective, monthly contraceptive use data. I find that husbands' perceptions of fertility regulation costs have strong consistent effects on method use, independent of their wives perceptions. Further, in this setting, the male contraceptive methods are viewed more positively than female methods by both men and women.

## **INTRODUCTION**

Social scientists have long studied the transition from high to low fertility, and have generated a great deal of theory about its causes. Among these causes, the importance of ideational factors for fertility decline has received increasing attention (Freedman 1979; Caldwell 1982; Lesthaeghe and Surkyn 1988; Kertzer 1995; Thornton 2001). Empirical analyses have supported the ideational link to fertility in several domains; these include the effect of family size preferences on completed fertility (Coombs 1979), the influence of mass education on fertility limitation (Axinn and Barber 2001), the effect of childbearing attitudes on childbearing behavior (Barber 2001), the influence of attitudes toward schooling, careers, and consumer spending on childbearing behavior (Barber 2001), the effect of sex role attitudes on family size and premarital pregnancy (Thornton, Alwin et al. 1983; Plotnick 1992), and the effect of parents' attitudes on their children's childbearing behavior (Barber 2000). In this paper I will examine the relationship between attitudes toward contraception and subsequent fertility regulation.

Attitudes toward contraceptive use are a reflection of individuals' perceptions of the costs of fertility regulation—costs which influence the relationship between the desire to delay or end childbearing and the behaviors necessary to do so. In this paper I examine the effects of perceived fertility regulation costs, in terms of availability, effectiveness, and side effects, on the use of specific contraceptive methods.

Researchers concerned with family planning and unmet need for family planning have, in the last decade, begun to recognize the importance of men's attitudes for couples' childbearing and contraceptive behavior (Bankole and Singh 1998; Mason and Smith 2000; Casterline et al. 2001). Data collection efforts now routinely include both men's and women's fertility preferences and contraceptive attitudes (see the Demographic and Health Surveys, for example).

However, with a few exceptions, survey questions asked of men have been limited to fertility preferences (e.g. desire for more children), and general acceptance of contraception, and have not considered men's knowledge of and attitudes toward specific dimensions of multiple methods, as they have for women (Biddlecom et al. 1997). I will expand on this work by examining the effects of women's *and* their husbands' attitudes toward specific characteristics of multiple contraceptive methods on their fertility limiting behavior.

This analysis is possible because of the availability of unique data from an area where rapid social change has occurred in recent years, including the introduction of contraceptive methods to limit fertility. Data from the Chitwan Valley Family Study in Nepal provide detailed measures of attitudes toward contraceptive methods, along with nine years of prospective, monthly contraceptive use data from all individuals living in 151 sample neighborhoods. I use these measures to investigate the relationship between general attitudes toward contraception, as well as method-specific attitudes about the availability, effectiveness, and side effects of the most often used contraceptive methods in my sample—Depo Provera, pills, vasectomy, and condoms—and their subsequent use.

## **THEORETICAL FRAMEWORK**

According to the Easterlin Synthesis Framework (Easterlin 1975; Easterlin and Crimmins 1985), an oft-cited supply-demand theory of fertility limitation, the effect of the supply of and demand for children on fertility limitation behavior is influenced by fertility regulation costs—the real and perceived financial, social, and psychological prices paid for using fertility-limiting methods. The economic costs of fertility regulation consist of several factors, including monetary and time inputs for obtaining and using a method (Hermalin 1983). In Nepal, where contraceptive use is largely subsidized (His-Majesty's-Government 1983), the financial costs of contraceptive use are

primarily associated with availability—that is, how far one must go to get them. The importance of availability for contraceptive method use has been measured in multiple settings. For example, Entwisle and colleagues (1997) find that the time it takes to travel to a contraceptive method provider, as well as the composition of the actual roads one must take to get there (all weather, seasonal, cart paths, walking trails, etc.) both have significant effects on individuals' contraceptive method use in rural Thailand. Overall, however, research into the effects of actual contraceptive availability—often measured by locality of health service providers—is mixed. Some studies demonstrate relatively strong effects on fertility regulation (Entwisle et al. 1996; Tsui et al. 1981; Tsui and Ochoa 1992) and some find only weak or conditional effects (Entwisle et al. 1989; Bongaarts and Bruce 1995; Tsui 1982).

In addition to actual costs, perceived costs also influence fertility limitation behavior (Easterlin and Crimmins 1985; Bulatao and Lee 1983). These perceptions are believed to affect fertility limitation behavior independent of actual costs. Perceived costs include beliefs about financial costs, as well as psychic costs, which Easterlin defines as “the displeasure associated with the idea or practice of fertility control” (1975). This would include both favor or distaste for contraception in general, beliefs about the benefits and drawbacks of specific contraceptive methods (Easterlin and Crimmins 1985), and beliefs about the cultural, religious, and social acceptability of fertility control (Bogue 1983). These perceived costs are difficult to measure, and thus relatively absent from the empirical literature (Robinson and Cleland 1992; Biddlecom et al. 1997). The data used for this analysis provide a unique opportunity to measure perceived fertility regulation costs because they include measures of feelings toward contraception in general and of perceptions of multiple characteristics of specific contraceptive methods from all subjects in the study. The ability to measure the perceived costs of fertility regulation is

particularly important as it relates to our understanding of unmet need for contraception—if a couple feels that the costs of contraception are higher than the costs of an additional unwanted child, they may do nothing to prevent childbearing even if they want no more children (Easterlin and Crimmins 1985).

The relationship between the perceived costs of contraception and subsequent contraceptive behavior can be expected to resemble any attitude-behavior relationship. Fishbein and Ajzen's theories of reasoned action and planned behavior are among the most widely used frameworks for linking attitudes and behavior (Barber 2001). Attitudes, defined as "disposition[s] to respond favorably or unfavorably to an object, person, institution, or event" (Ajzen 1988) combine with subjective norms (social pressure) to predict intentions. Intentions, in turn, predict behavior. For example, when social pressure to have children is present, individuals with positive attitudes toward childbearing are more likely to bear children (Fishbein and Ajzen 1975; Vinokur-Kaplan 1978; Barber 2001). In addition to this theory of reasoned action, Ajzen posits the theory of planned behavior, in which the concept of behavioral control is incorporated (Ajzen and Madden 1986; Ajzen 1988; Ajzen 1991). According to Ajzen, behavioral control affects the relationship between intentions and behavior in two ways: first, *perceived* behavioral control, or belief in one's ability to perform a particular behavior, affects intentions toward that behavior, and second, *actual* behavioral control affects one's ability to carry out one's intentions (Barber 2001).

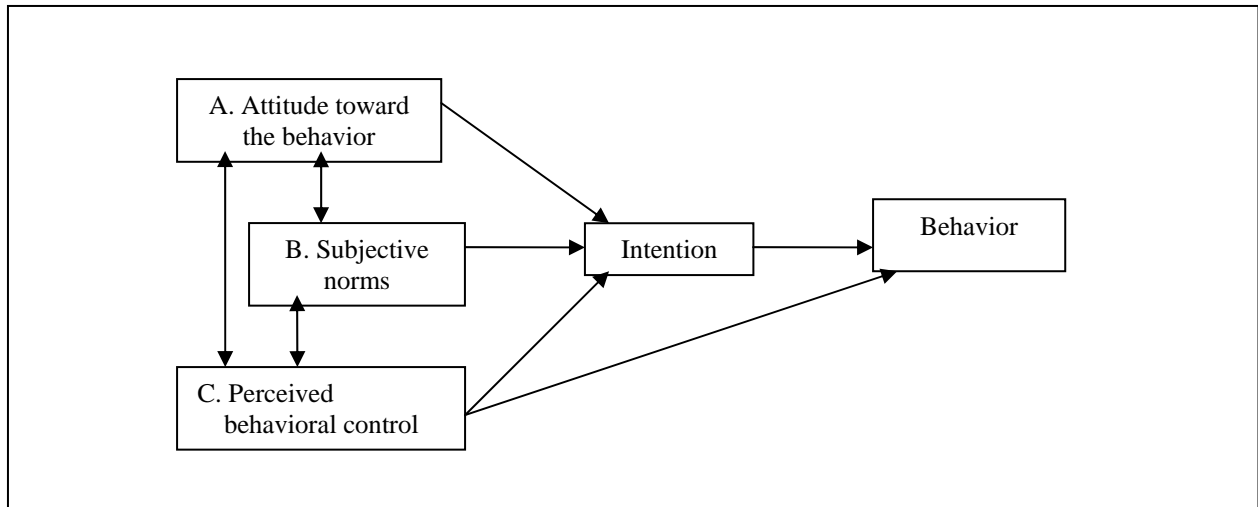


Figure 1. Heuristic representation of Theory of Planned Behavior (Ajzen 1988; Barber 2001)

### General Contraceptive Attitudes

Among the psychic costs of fertility limitation outlined above, individuals' feelings toward the general acceptability of contraception can be thought of as a reflection of greater social, cultural, and religious mores regarding fertility regulation (Ajzen 1988; Casterline et al. 2001). As such, general attitudes toward contraception can be expected to influence behavioral intentions, and thus behavior, as a reflection of subjective norms—the individual's perception of the social acceptability of using a method. General approval of contraception has been documented in the empirical literature as a significant, if not a central, predictor of intentions to limit childbearing, and contraceptive use in some settings (Mahmood and Ringheim 1997; Casterline et al 1997; Bongaarts and Bruce 1995).

Hypothesis 1: Individuals with positive attitudes about the social and religious acceptability of contraceptive methods will begin using a method sooner than peers with more negative attitudes toward the acceptability of contraceptive methods.

## Method-Specific Attitudes

Above and beyond the acceptability of contraception in general, adoption of a particular method depends on an individual's evaluation of the risks and benefits of that method. These risks and benefits—the fertility regulation costs—are weighed against the motivation to limit fertility, and include such considerations as method availability, effectiveness, effects on health, ease and frequency of use, effects on menstruation, permanency, and whether the method is male or female-specific (Garcia et al. 1997; Stash 1999; Ringheim 1993; Grady et al. 1999; Bongaarts and Bruce 1995; Casterline et al. 2001). In this paper, I focus on respondents' perceptions of method availability, effectiveness, and negative side effects.

As outlined above, there are three main pieces influencing one's intentions toward a behavior: attitudes toward that behavior (A), subjective norms (B), and perceived behavioral control (C). How individuals perceive the availability, effectiveness, and potential negative side-effects of specific contraceptive methods is likely to influence their decision to use a contraceptive method through one or more of these three paths. Beliefs about the availability of contraceptive methods are likely to affect contraceptive behavior because they reflect both subjective norms (B) and perceived behavioral control (C). If, for example, contraceptives are perceived as widely available, individuals may take this to mean that they are socially acceptable, and that others are using them as well (Easterlin and Crimmins 1985). Perceived behavioral control plays a role because the perception that contraceptives are accessible may lead the individual to believe that she will be able to successfully carry out her desire to limit her fertility. Both scenarios are likely to positively influence the individual's intentions toward contraceptive use, and thus, her behavior. Indeed, the family planning literature supports the idea that knowledge of a family planning outlet, or the *perceived* availability (as opposed to



actual availability) of family planning services is closely associated with contraceptive use (Pebley and Brackett 1982; Mahmood and Ringheim 1996).

Perceptions of effectiveness of contraceptive methods are likely to affect contraceptive behavior because they influence attitudes toward the behavior (A), and through perceived behavioral control (C). Believing that a contraceptive method actually works is likely to make one's attitudes toward that method more positive, and may lead the individual to feel that using the method will help her achieve her desired fertility. Studies in other settings have demonstrated women's preferences for methods they perceive as highly effective (Garcia, et al. 1997; Grady, et al. 1999).

Perceptions of negative side effects of contraceptive methods are likely to affect contraceptive behavior by influencing attitudes toward the behavior (A). Individuals believing that contraceptive methods have negative side effects are likely to have a more negative attitude toward the method, negatively affecting their intentions to use it, and their consequent behavior (Casterline et al. 2001; Nag 1984; Bongaarts and Bruce 1995; Casterline et al. 1997; Viswanathan et al. 1998; Yinger 1998; Stash 1999; Shah and Shah 1984). For example, Casterline and colleagues (1997) find that, among couples with unmet need in the Philippines, the fear of side effects is the most important obstacle to contraceptive use. Using Demographic and Health Study (DHS) data from multiple countries, Bongaarts and Bruce (1995) find that, on average, health concerns reduce prevalence of method use by 71% for the pill, and 52% for sterilization.

Hypothesis 2: Individuals with positive beliefs about the availability and effectiveness of contraceptive methods, and those who believe they *do not* have unpleasant side effects will begin using a method sooner than peers with more negative beliefs about the availability and effectiveness of contraceptive methods, and those who believe they *do* have unpleasant side effects.

## **The Importance of Husbands' Attitudes**

The family planning and unmet need literature has increasingly focused on the influence of husbands and partners on couples' fertility and contraceptive use. Prior to the last decade, survey measurement and subsequent analyses have tended to focus on women's attitudes, intentions, and behaviors related to fertility, ignoring the role of men, or assuming that women's attitudes and intentions reflect couples' attitudes and intentions. More recent research, however, suggests that men and women do not necessarily share fertility related goals (Bankole and Singh 1998; Becker 1996; 1999; Casterline et al. 1997). Moreover, the male partner may have significant influence over fertility and contraceptive-related decision-making in the household. Using U.S. data, Thompson (1997) finds, for example, that husbands' desires and intentions for a(nother) child have significant influence on couples' subsequent childbearing, net of the wives' own desires and intentions. Further, when husbands' attitudes toward contraceptives are not in agreement with their wives', their rates of future contraceptive use may be decreased. In the Philippines, Biddlecom and colleagues (1997) find that spousal disagreement in attitudes toward contraception (approval of contraceptive use in general) is associated with less current contraceptive use. Though many studies have examined men's overall attitudes toward family planning, studies which analyze men's attitudes toward specific methods are much rarer (Biddlecom et al. 1997; Grady et al. 1999; Ringheim 1993). Because the data used in this analysis include both women's and their husbands' responses to identical questions gauging attitudes toward multiple dimensions of multiple contraceptive methods, I have an unique opportunity to tease out the subtleties of the relationship between husbands' contraceptive attitudes and their spouses' subsequent contraceptive use.

Hypothesis 3: Women whose husbands hold positive beliefs about the availability, effectiveness, and side effects of specific contraceptive methods will begin using a method sooner than women whose husbands hold negative beliefs about the same dimensions of methods, independent of the women's own beliefs.

## **DATA AND MEASURES**

Data used in this analysis come from the Chitwan Valley Family Study (CVFS), in the Western Chitwan Valley of Nepal. The CVFS interviewed every resident between the ages of 15 and 59, and their spouses, in a systematic sample of 171 neighborhoods. This generated 5,271 detailed, retrospective interviews, including life history calendars and attitudinal measures. In addition to these baseline interviews (collected in 1996), each household in 151 of the study neighborhoods is visited on a regular basis to record monthly changes in household composition (births, deaths, etc.), as well as the marital status and contraceptive use of all household members. This monthly household registry has resulted in 108 months of contraceptive use data since the baseline interview.

Chitwan is an ideal setting for this analysis because the transition toward fertility limitation occurred within the lifetimes of its current residents (Thapa 1989; Axinn and Barber 2001). Nepal has maintained relatively high fertility until the very recent past, and through the early 1980's, fewer than 10% of women used contraception (Axinn and Yabiku 2001). More recently, though, contraceptive use has become more widespread in Chitwan. Among women born 1942-51, less than 5% had ever used contraceptives before age 25, but of women born between 1962 and 1971, 35% had used those methods by age 25 (Axinn and Barber 2001). The recency of this transition means that there is considerable variation in contraceptive use within the study area (Axinn and Yabiku 2001). In addition, the detailed, monthly, prospective

collection of contraceptive use data after the baseline interview allows for appropriate temporal ordering to investigate causal relationships.

The sample used in this analysis consists of currently-married women between the ages of 15 and 44, who had not been sterilized, and whose spouses had not been sterilized by the baseline interview in 1996. This includes 862 women. Four separate files were created to model the hazard of first use of each contraceptive method: Depo Provera, pills, vasectomy, and condoms. For models predicting the use of all methods except vasectomy, months were not observed when the respondent reported being pregnant. This is because the women are assumed not to be at risk of using Depo-Provera, Pills, or condoms while pregnant, though still at risk for a husband's vasectomy. Observations were also censored from the time when either vasectomy or tubal ligation was reported, as respondents were considered no longer at risk of using another method. During the 108-month observation period, 270 women reported using Depo Provera, 131 used pills, 185 used vasectomy, and 89 used condoms for the first time.

### **Measures of contraceptive method use**

Contraceptive method use is measured with a time-varying, dichotomous variable, coded 1 in the first month a woman reports using Depo Provera, pills, vasectomy, or condoms. Each contraceptive method is modeled separately. These four methods, Depo Provera, pills, vasectomy, and condoms, were selected for analysis because they were the most frequently used methods in the study area.<sup>1,2</sup>

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<sup>1</sup> In the study area as a whole, the five methods women most often reported ever having used by the baseline interview in 1996 were vasectomy (22%), Depo Provera (9%), tubal ligation (7%), pills (7%), and condoms (5%).

<sup>2</sup> Tubal ligation was also modeled, but there was too little variance among the relatively few women in my sample who reported a tubal ligation in the 108 months after the baseline to estimate the models.

## Measures of attitudes toward contraception

General attitudes toward contraception are measured by three questions asked in the 1996

baseline interview:

- “Do you believe that it is sinful to use contraception?” (Yes=0, No=1)
- “It is wrong to use contraceptives or other means to avoid or delay pregnancy. Would you say you strongly agree, agree, disagree, or strongly disagree?” (Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4)
- “A vasectomized man cannot be blessed by God. Do you strongly agree, agree, disagree, or strongly disagree?” (Strongly Agree=1, Agree=2, Disagree=3, Strongly Disagree=4)

All three general attitude measures are coded from least positive to most positive attitudes toward contraception.

Method-specific attitudes are measured as follows. For each method, three questions were asked at the baseline interview:

- “Is [it] easy to get or difficult to get?” (Easy, Difficult, Don’t Know)
- “Is [it] effective in preventing pregnancy?” (Yes, No, Don’t Know)
- “Does [it] have unpleasant side effects?” (Yes, No, Don’t Know)

Responses are recoded into a dichotomous measures where “1” equals a positive attitude toward the method and “0” reflects a negative or “don’t know” response. For example, reporting that Depo Provera is easy to get, is effective in preventing pregnancy, or *does not* have unpleasant side effects would each be coded as 1. Conversely, reporting that Depo Provera is difficult to get, is not effective, or *does* have unpleasant side effects would each be coded as 0. Don’t know responses for all questions are also coded 0.<sup>3</sup> In addition to the individual measures, the mean of all three attitude measures is calculated for each method, to create an overall index of positive attitude toward that method, ranging from 0 to 1.

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<sup>3</sup> As shown in Table 1, the proportion of respondents reporting “don’t know” to attitudes toward each of the characteristics of each method are relatively large. Numerous methods of coding “don’t know” responses were tested. Models that included dummy responses for positive, negative, and don’t know attitudes revealed that though the negative and don’t know responses were each significantly different than positive responses, they are not statistically significantly different from each other.

The same codes are used for men's responses to the same method-specific attitude questions. Husbands were then matched with and linked to the focal women's records. Table 1 presents the distribution of women's and their husbands' responses to attitude questions about Depo Provera, pills, vasectomy, and condoms.

(Table 1 about here)

Women's perceptions of the availability of each of the methods are largely positive. Over 67% of women believe Depo Provera is easy to obtain, 22% believe it is difficult to obtain, and 11% don't know. The birth control pill elicits similar responses. Women are even more positive about the availability of condoms, with 76% agreeing that condoms are easily available. Likewise, the majority of female respondents are positive about the availability of vasectomy, with 70% agreeing that it is easy to get. For non-sterilizing methods, most women are less positive about effectiveness than availability. Only 48% agree that the pill is effective in preventing pregnancy, and for both Depo Provera and condoms, slightly more than half of respondents felt positively about the methods' effectiveness. Sterilization, however, is seen as more effective; 76% agree that vasectomy is effective at preventing pregnancy. On whom the burden of method use rests also appears to be an important contraceptive characteristic; the women in this sample are more likely to agree that methods used by women have negative side effects, compared with methods used by men. For each of the female methods (Depo Provera and oral contraceptive pills), half or more of women believe that the methods have negative side effects, compared with condoms and vasectomy, to which 33% and 35% attribute negative side effects, respectively.

Husbands' perceptions of method availability are quite similar to their wives', except in the case of condoms, which 84% of husbands perceive to be easily available, compared with

76% of women. Husbands have somewhat more negative beliefs about method effectiveness than their wives, again with the exception of condoms. Fewer husbands than wives attribute negative side effects to contraceptive methods, with the exception of vasectomy, for which they are about the same. For example, 40% of husbands agree that Depo Provera has negative side effects, compared with 53% of the wives. Overall, the male methods (vasectomy and condoms) are viewed more positively on all dimensions—availability, effectiveness, and side effects—than the female methods by both women and their husbands.

### **Controls**

Each model includes controls for characteristics which may influence both contraceptive use and beliefs about contraceptive methods. These include individual characteristics and characteristics of respondents' parents. Individual characteristics include ethnic group, birth cohort, and childbearing behavior. Parental characteristics include mothers' childbearing behavior, parents' education, and parents' contraceptive use.

Ethnicity is controlled because in Nepal, ethnicity is intertwined with religion, and different ethnic groups have different levels of contraceptive use (Axinn and Yabiku 2001). Five categories of ethnicity are controlled: upper caste Hindu, lower caste Hindu, Newar, Terai Tibeto-Burmese, and Hill Tibeto-Burmese. For full descriptions of these groups, see Gurung (1980); Acharya and Bennett (1981); Fricke (1986); Gellner and Quigley (1995). Ethnicity is coded into five dichotomous variables, with upper class Hindu as the reference group—the effects of the other groups are relative to upper caste Hindu.

Birth cohort is controlled because women in older cohorts are likely to have a higher incentive to limit childbearing than women in younger cohorts. However, contraceptive use may be less frequent in the oldest cohorts because contraceptive use in Chitwan has increased over

time (Axinn and Barber 2001). Birth cohort is coded into three categories, using dichotomous variables: age 15-24 at baseline (born 1972-1981), age 25-34 at baseline (born 1962-1971), and age 35-44 at baseline (born 1952-1961). The youngest group (15-24) is used as the reference.

Number of children (by 1996), number of boys (by 1996), and number of children who have died (by 1996) are all controlled because they may affect women's likelihood of using contraceptive methods (Pebley and Brackett 1982; Schuler and Goldstein 1986). I expect number of children born and number of boys born to be positively related to contraceptive use, and number of children died to be negatively associated with contraceptive use. Each is coded as the actual number reported.

Parental characteristics are controlled because they may affect women's use of contraceptives (Axinn and Yabiku 2001). Mothers' childbearing behavior is measured by the number of children ever born to her. Parents' education is measured by two items: "mother ever attended school" and "father ever attended school." Both are coded dichotomously. Parent's contraceptive use is also dichotomous, coded as "1" if respondent reported that either parent ever used a method. Table 2 shows means and standard deviations for all measures used in the analyses.

(Table 2 about here)

## **METHOD OF ANALYSIS**

I use discrete-time hazard models to estimate the effects of key independent variables on the hazards of first use of Depo Provera, pills, vasectomy, and condoms. Data on contraceptive use are available at monthly intervals, thus the unit of analysis is person-months of exposure.

To estimate the discrete-time hazard models, I use logistic regression in the form:



$$\ln\left(\frac{p}{1-p}\right) = a + \sum (\beta_k)(X_k),$$

where  $p$  is the monthly probability of using the focal contraceptive method,  $p/1-p$  is the odds of the contraceptive use occurring,  $a$  is a constant term,  $\beta_k$  represents the effects parameters of the explanatory variables, and  $X_k$  represents the explanatory variables in the model. Although using person-months of exposure to risk as the unit of analysis substantially increases the sample size, Peterson (1986, 1991) and Allison (1982, 1984) have shown that using discrete-time methods does not deflate the standard errors and thus provides appropriate tests of statistical significance. Furthermore, because the probability of adopting a contraceptive method is so small within each month, the estimates obtained using discrete-time methods are similar to those that would be obtained using continuous methods. I exponentiate coefficients from my discrete-time hazard models to get the multiplicative effects of a one-unit change in the independent variable on the *odds* of using a method. A coefficient greater than one indicates an increase in the odds of using the method; a coefficient of less than one indicates a decrease in the odds of using the method.

## **RESULTS**

### **General Attitudes toward Contraception**

Table 3 shows estimates of the effects of women's general feelings toward contraception on the odds of using Depo Provera, pills, vasectomy, and condoms for the first time. All three general contraceptive attitude measures are coded so that responses reflecting positive feelings toward contraception are coded higher than responses reflecting negative feelings toward contraception.

(Table 3 about here)

Overall, measures of general attitudes toward contraception show mixed results when predicting first method use. Models 1 and 7 show that women who report that they *do not*

believe it is sinful to use contraception have 45% higher odds of using Depo Provera, and 129% higher odds of using vasectomy than women who *do* believe it is sinful to use contraception. There is no significant effect of the attitude on the odds of pill or condom use. Models 2, 5, 8, and 11 show the effect of the belief that contraception is wrong on the odds of using a method. Each one-point increase in disagreement with the statement “it is wrong to use contraceptives or other means to avoid or delay pregnancy” results in 21% higher odds of using condoms (compared to women with one point less disagreement), but there are no significant effects of the attitude on first use of Depo Provera, pills, or vasectomy. Model 9 shows a small significant effect of disagreement with the statement “a vasectomized man cannot be blessed by God” on the odds of vasectomy use, but no effect on first use of any other method.

(Table 4 about here)

### **Method-Specific Attitudes**

Table 4 presents logistic regression estimates of the effects of women’s method-specific contraceptive attitudes on the hazard of first use of Depo Provera, pills, vasectomy, and condoms. Recall that all method-specific attitude measures are coded on a scale from zero to one, with one representing the most favorable attitude toward contraception. For all four methods, an index of favorable attitude toward the method is also modeled, comprised of the mean of attitudes toward availability, effectiveness, and side effects, which are also modeled separately.

Table 4 shows that although the coefficients are in the hypothesized direction for all four contraceptive methods, only attitudes toward Depo Provera and condoms have statistically significant effects on subsequent method use. Attitudes toward Depo Provera appear to have particularly strong effects on that method’s subsequent use. For example, women who believe

that Depo Provera is easy to get have 94% higher odds of using the method than those who believe it is difficult to get or don't know. When attitudes toward all three characteristics of the method are averaged (the Index of Favorable Attitude), women with the most favorable attitude toward Depo Provera (an index score of 1) have 170% higher odds of using the method than women with an index score of 0. The effects of attitudes toward condoms on condom use are generally smaller than those for Depo Provera, but statistically significant, with the exception of attitudes toward side effects.

(Table 5 about here)

### **Husbands' Attitudes**

Table 5 presents logistic regression estimates of the effects of husbands' general and method-specific contraceptive attitudes on wives' subsequent method use, controlling for wives' own attitudes. Each panel in the table represents four separate models: one each for Depo Provera use, pill use, vasectomy, and condom use, predicted by the attitude listed. Each model includes the same controls as in Tables 3 and 4.

Husbands' general contraceptive attitudes follow a similar pattern to their wives', with statistically significant effects of husbands' belief that contraception is sinful on subsequent use of Depo Provera, vasectomy, and condoms, but no effect on pill use (Panel A). For the male methods (vasectomy and condoms), men's attitudes about whether contraception is sinful have larger and more significant effects than their wives' attitudes. Women whose husbands believe that contraception is *not* sinful have 131% higher odds of vasectomy and 164% higher odds of condom use than women whose husbands believe that contraception is sinful. Panels B and C show no significant effects of husbands' other general contraceptive attitudes on wives' use of any method.

Panels D through G present the effects of husbands' method-specific attitudes on wives' subsequent method use. Overall, the results show positive, significant, independent effects of husbands' attitudes toward nearly every characteristic of all four methods on subsequent method use (the single exception is husbands' attitudes toward the side effects of Depo Provera, which was not statistically significant, though in the hypothesized direction). In addition, though all of wives' attitudes toward Depo Provera remain statistically significant when husbands' attitudes are included in the model, the effects of wives' attitudes toward condom availability and index of favorable attitude toward condoms are no longer statistically significant when husbands' attitudes are controlled.

Panel E shows positive effects of husbands' positive attitudes toward the availability of all four methods on women's use of each method, controlling for the women's own attitudes. Both husbands' and wives' attitudes toward the availability of Depo Provera have positive, independent effects on subsequent Depo Provera use. For the remaining methods, however, only the husbands' attitudes toward method availability are statistically significant. Panel F shows a similar pattern, with the addition of a significant, independent effect of women's attitudes toward condoms on condom use. Panel G includes the only model in which women's attitudes maintain a significant independent effect and husbands' do not. Women's positive attitudes toward the side effects of Depo Provera have significant positive effects on Depo Provera use, independent of husbands' attitudes. For pills, vasectomy, and condoms, the opposite is true—only husbands' attitudes toward method side effects significantly predict subsequent method use.

### **Controls**

As shown in Table 4, ethnic group, birth cohort, and parity consistently had strong effects on the odds of method use, with some differences by type of method. Compared with upper-caste

Hindus, low-caste Hindus have higher odds of using Depo Provera and pills, and lower odds of using the male methods, vasectomy and condoms. The same is true for Hill Tibeto-Burmese. The directionality of the effects of age on contraceptive use is consistent across methods; compared to the youngest age group (15-24 at baseline), women in the middle cohort (25-34) have higher odds of method use, and women in the oldest group (35-44) have significantly lower odds of method use. Mother's children ever born and parents' contraceptive use have no effects on the odds of method use, while women whose fathers ever attended school have higher odds of using pills and condoms. Women whose mothers ever attended school have significantly higher odds of using pills only. Parity has significant positive effects on subsequent use of all methods, with each additional child resulting in 13-16% higher odds of using a method, depending on method type. The number of male children born has no effect on the odds of using any method. Having a child die results in lower odds of using pills, vasectomy, and condoms, but has no significant effect on Depo Provera use.

## **SUMMARY AND DISCUSSION**

In this paper I examine the relationship between perceived fertility regulation costs and subsequent contraceptive behavior. These perceived costs, here measured by both general attitudes toward the acceptability of contraception and by beliefs about specific dimensions of multiple contraceptive methods, are an important component of the Easterlin Synthesis Framework (1975) and are theorized to influence fertility limiting behavior independent of the actual costs of contraception. I also examine the effect of husbands' feelings toward contraception on their wives' subsequent method use. This analysis is made possible by unique data from Nepal, which contain measures of both women's and men's perceptions of the

availability, effectiveness, and side effects of multiple contraceptive methods, and 9 years of prospective, monthly contraceptive use data.

My results support the relationship between perceived fertility regulation costs and contraceptive use, though the effect of women's attitudes toward contraception on subsequent method use varies by method type. For Depo Provera in particular, women's attitudes toward specific attributes of the method (availability, effectiveness, and side effects) predict subsequent method use more consistently than do attitudes toward contraception in general. The level of importance placed on availability, effectiveness, and side effects also appears to vary by method. Women's perceptions of the effectiveness of depo provera and condoms, and the side effects of depo provera have significant effects on subsequent use. This is consistent with the findings of Grady and colleagues (1999), which emphasize the priority women place on method effectiveness and (lack of) side effects. I find no significant effect of women's attitudes toward any dimension of vasectomy on subsequent vasectomy use.

In this setting, husbands' perceived fertility regulation costs appear to be much more consistent predictors of contraceptive use than the wives' own perceptions. With the exception of the side effects of Depo Provera, husbands' attitudes toward every dimension of every method significantly predict method use, independent of wives' attitudes. This result highlights the need in other settings for more detailed measurement of husbands' attitudes toward different contraceptive methods, and to the particular characteristics of those methods that hold the most salience for men.

While the current analysis does not directly measure unmet need for contraception, the results are significant to the study of unmet need because they emphasize the importance of both the knowledge of contraceptive attributes and beliefs about those attributes for subsequent

adoption of a contraceptive method. In addition to availability, effectiveness, and side effects, the type of method a couple chooses is likely to be influenced by many other factors: the experiences of family and friends, fear of surgery or pelvic exam, whether method is coitus related, and whether it is permanent or must be continuously re-supplied, to name a few (Pebley and Brackett 1982). Detailed measurement of men's and women's perceptions of contraceptive costs and benefits, such as that in the Chitwan Valley Family Study, provides valuable information about setting-specific contraceptive norms and values—what method characteristics are most valued, what types of methods are acceptable from the user's point of view, and where knowledge gaps and incorrect information may occur. In Chitwan, for example, I find that at the macro level, the male methods (vasectomy and condoms) are viewed more positively on all dimensions—availability, effectiveness, and side effects—than the female methods by both women and their husbands. However, vasectomy and condoms also share another difference from the female methods—they are non-hormonal. In this particular instance, and across other settings, more detailed measurement across a wide array of contraceptive attributes is necessary to understand the causes of unmet need, and to tailor programs toward the particular perceived fertility regulation costs which are most influential in each setting.

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**Table 1. Wives' and Husbands' Responses to Contraceptive Attitude Questions (percents):**

Method		Is Available		Is Effective		Has Side Effects	
		Wives	Husbands	Wives	Husbands	Wives	Husbands
Depo Provera	Yes	67.1	63.6	54.8	49.9	52.8	39.7
	No	22	14.7	27	19	29.8	27.2
	DK	10.8	21.7	18.2	31.1	17.4	33.1
Pill	Yes	64.1	64.1	47.6	45.3	56.2	44.1
	No	21.2	13.9	28.9	19.4	21.9	21.1
	DK	14.7	22.1	23.5	35.4	21.8	34.8
Vasectomy	Yes	70	68.1	77.7	71.1	35	36.7
	No	21.9	17.8	10.8	12.2	49	44
	DK	8.1	14.2	11.5	16.7	16	19.4
Condom	Yes	75.6	83.6	54.6	67.2	33	20.1
	No	13.2	5.5	26.2	16.1	43.5	60.5
	DK	11.3	10.9	19.2	16.8	23.5	19.3

n=862

**Table 2. Means and Standard Deviations of Measures Used in Analysis**

	N	Mean	SD	Min	Max
<b>Outcome Measures</b>					
First use of Depo Provera	858	0.31	0.47	0	1
First use of Pills	857	0.15	0.36	0	1
First use of Vasectomy	862	0.22	0.41	0	1
First use of Condoms	859	0.10	0.31	0	1
<b>General Attitudes toward Contraception</b>					
Believe it is sinful to use contraception (reverse coded)	862	0.84	0.37	0	1
It is wrong to use contraceptives to avoid/delay pregnancy	862	2.24	0.84	1	4
Vasectomized man cannot be blessed by God	862	2.56	0.81	1	4
<b>Method-Specific Attitude Measures</b>					
<b>Focal Woman:</b>					
Index of Favorable Attitude toward Depo Provera	858	0.51	0.35	0	1
Availability of Depo Provera	858	0.67	0.47	0	1
Effectiveness of Depo Provera	858	0.55	0.50	0	1
Side Effects of Depo Provera	858	0.30	0.46	0	1
<b>Spouse:</b>					
Index of Favorable Attitude toward Depo Provera	858	0.47	0.37	0	1
Availability of Depo Provera	858	0.64	0.48	0	1
Effectiveness of Depo Provera	858	0.50	0.50	0	1
Side Effects of Depo Provera	858	0.27	0.45	0	1
<b>Focal Woman:</b>					
Index of Favorable Attitude toward Pills	857	0.45	0.34	0	1
Availability of Pills	857	0.64	0.48	0	1
Effectiveness of Pills	857	0.48	0.50	0	1
Side Effects of Pills	857	0.22	0.41	0	1
<b>Spouse:</b>					
Index of Favorable Attitude toward Pills	857	0.43	0.35	0	1
Availability of Pills	857	0.64	0.48	0	1
Effectiveness of Pills	857	0.45	0.50	0	1
Side Effects of Pills	857	0.21	0.41	0	1
<b>Focal Woman:</b>					
Index of Favorable Attitude toward Vasectomy	862	0.66	0.34	0	1
Availability of Vasectomy	862	0.70	0.46	0	1
Effectiveness of Vasectomy	862	0.78	0.42	0	1
Side Effects of Vasectomy	862	0.49	0.50	0	1
<b>Spouse:</b>					
Index of Favorable Attitude toward Vasectomy	862	0.61	0.38	0	1
Availability of Vasectomy	862	0.68	0.47	0	1
Effectiveness of Vasectomy	862	0.71	0.45	0	1
Side Effects of Vasectomy	862	0.44	0.50	0	1
<b>Focal Woman:</b>					
Index of Favorable Attitude toward Condoms	859	0.58	0.36	0	1
Availability of Condoms	859	0.76	0.43	0	1
Effectiveness of Condoms	859	0.55	0.50	0	1
Side Effects of Condoms	859	0.44	0.50	0	1
<b>Spouse:</b>					
Index of Favorable Attitude toward Condoms	859	0.70	0.37	0	1
Availability of Condoms	859	0.84	0.37	0	1
Effectiveness of Condoms	859	0.67	0.47	0	1
Side Effects of Condoms	859	0.61	0.49	0	1

**Table 2, continued. Means and Standard Deviations of Measures Used in Analysis**

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Control Variables					
Ethnic group					
Upper caste Hindu	861	0.42	0.49	0	1
Lower caste Hindu	861	0.12	0.32	0	1
Newar	861	0.06	0.24	0	1
Terai Tibeto-Burmese	861	0.23	0.42	0	1
Hill Tibeto-Burmese	861	0.17	0.38	0	1
Birth cohort					
Age 0-24	862	0.43	0.50	0	1
Age 25-34	862	0.37	0.48	0	1
Age 35-44	862	0.20	0.40	0	1
Parental characteristics					
Mother's children ever born	861	5.98	2.57	1	19
Father ever attended school	854	0.32	0.47	0	1
Mother ever attended school	859	0.07	0.25	0	1
Parent ever used contraceptives	859	0.03	0.46	0	1
Individual characteristics					
Number of children born by 1996	862	2.52	2.08	0	10
Number of boys born by 1996	862	1.14	1.15	0	6
Number of children died by 1996	862	0.25	0.60	0	4

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**Table 3. Logistic Regression Estimates of the Effects of General Attitudes toward Contraception on the Hazard of First Contraceptive Method Use (by Type) for Married Women Ages 15-44.**

Measure	DEPO PROVERA			PILLS			VASECTOMY			CONDOMS		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Believe it is sinful to use contraception	1.45*			0.7			2.29**			1.62		
	(1.96)			(-1.51)			(2.83)			(1.27)		
It is wrong to use contraceptives to avoid/delay pregnancy		0.99			1.01			1.01			1.21 <sup>†</sup>	
		(-0.14)			(0.12)			(0.08)			(1.4)	
Vasectomized man cannot be blessed by God			0.98			0.96			1.14 <sup>†</sup>			1.06
			(-0.2)			(-0.39)			(1.31)			(0.41)
<b>Ethnic Group<sup>a</sup></b>												
Low-caste Hindu	2.06***	2.04***	1.97***	1.43	1.42	1.45	0.56*	0.51**	0.57*	0.25**	0.25**	0.25**
	(3.79)	(3.77)	(3.56)	(1.24)	(1.18)	(1.26)	(-2.11)	(-2.38)	(-2.06)	(-2.63)	(-2.64)	(-2.64)
Newar	1.54*	1.58*	1.58*	1.06	1.05	1.05	1.27	1.34	1.35	0.62	0.65	0.64
	(1.67)	(1.75)	(1.76)	(0.13)	(0.11)	(0.1)	(0.82)	(1.0)	(1.03)	(-1.01)	(-0.93)	(-0.93)
Tarai Tibeto-Burmese	0.81	0.8	0.8	0.82	0.84	0.83	0.74 <sup>†</sup>	0.72 <sup>†</sup>	0.75 <sup>†</sup>	0.54*	0.56*	0.54*
	(-1.12)	(-1.2)	(-1.21)	(-0.72)	(-0.62)	(-0.66)	(-1.51)	(-1.6)	(-1.44)	(-2.05)	(-1.91)	(-2.02)
Hill Tibeto-Burmese	1.81***	1.83***	1.83***	2.54***	2.48***	2.48***	0.41***	0.43***	0.43***	0.35**	0.37**	0.36**
	(3.57)	(3.63)	(3.63)	(4.17)	(4.07)	(4.07)	(-3.33)	(-3.17)	(-3.16)	(-2.74)	(-2.59)	(-2.67)
<b>Birth Cohort<sup>b</sup></b>												
(age 25-34)	1.71***	1.75***	1.78***	1.83**	1.76**	1.78**	2.11***	2.19***	2.13***	1.82*	1.84*	1.85*
	(3.42)	(3.57)	(3.65)	(2.64)	(2.47)	(2.53)	(3.82)	(4.03)	(3.9)	(2.21)	(2.25)	(2.28)
(age 35-44)	0.41***	0.42***	0.41***	0.51*	0.49*	0.53*	0.06***	0.05***	0.05***	0.28**	0.27**	0.27**
	(-3.93)	(-3.84)	(-3.9)	(-1.95)	(-2.01)	(-1.85)	(-3.98)	(-4.0)	(-4.02)	(-2.47)	(-2.55)	(-2.53)
<b>Parental Characteristics</b>												
Mother's children ever born	0.98	0.98	0.98	0.98	0.98	0.98	1.00	1.00	0.99	1.03	1.03	1.03
	(-0.95)	(-0.91)	(-0.92)	(-0.44)	(-0.62)	(-0.41)	(-0.04)	(-0.04)	(-0.23)	(0.67)	(0.6)	(0.58)
Father ever attended school	0.98	0.99	0.98	1.39 <sup>†</sup>	1.39 <sup>†</sup>	1.39 <sup>†</sup>	0.91	0.9	0.9	1.46*	1.48*	1.47*
	(-0.14)	(-0.07)	(-0.15)	(1.61)	(1.62)	(1.6)	(-0.58)	(-0.64)	(-0.6)	(1.65)	(1.7)	(1.67)
Mother ever attended school	0.86	0.86	0.86	1.67*	1.68*	1.68*	0.73	0.71	0.71	0.62	0.59	0.61
	(-0.58)	(-0.6)	(-0.58)	(1.89)	(1.91)	(1.91)	(-1.00)	(-1.08)	(-1.08)	(-1.16)	(-1.28)	(-1.2)
Parent ever used contraceptives	0.91	0.9	0.9	1.22	1.18	1.23	0.96	0.96	0.95	1.31	1.31	1.28
	(-0.66)	(-0.71)	(-0.73)	(0.97)	(0.79)	(1.02)	(-0.22)	(-0.22)	(-0.32)	(1.14)	(1.15)	(1.05)
<b>Individual Characteristics</b>												
Number of children born by 1996	1.17**	1.16**	1.16**	1.14 <sup>†</sup>	1.13 <sup>†</sup>	1.14 <sup>†</sup>	1.17*	1.18*	1.16*	1.15 <sup>†</sup>	1.14 <sup>†</sup>	1.14 <sup>†</sup>
	(2.88)	(2.68)	(2.77)	(1.52)	(1.38)	(1.47)	(2.06)	(2.1)	(1.98)	(1.37)	(1.33)	(1.3)
Number of boys born by 1996	0.99	1.00	1.00	1.17	1.17	1.17	1.14	1.13	1.14	1.02	1.04	1.03
	(-0.12)	(0.02)	(-0.05)	(1.23)	(1.21)	(1.26)	(1.28)	(1.16)	(1.26)	(0.15)	(0.25)	(0.19)
Number of children died by 1996	1.05	1.02	1.02	0.69*	0.73 <sup>†</sup>	0.71 <sup>†</sup>	0.7*	0.64*	0.66*	0.61 <sup>†</sup>	0.58*	0.59*
	(0.38)	(0.18)	(0.12)	(-1.79)	(-1.48)	(-1.62)	(-1.79)	(-2.19)	(-2.08)	(-1.57)	(-1.74)	(-1.68)
-2 Log L	3125	3127	3129	1754	1744	1756	2420	2416	2429	1148	1148	1149
Count	45458	45259	45458	54027	53922	54027	67746	67548	67746	55293	55094	55293

Notes: Dependent variable is referenced by column heading. T-ratios in parentheses.

<sup>a</sup> Comparison group is high-caste Hindus

<sup>b</sup> Comparison group is the birth cohort aged 15-24

<sup>†</sup>p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001 (one-tailed)



**Table 4. Logistic Regression Estimates of Method-Specific Contraceptive Attitudes on the Hazard of First Contraceptive Method Use (by Type), for Married Women Ages 15-44.**

Measure	DEPO PROVERA				PILLS				VASECTOMY				CONDOMS			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16
Index of Favorable Attitude	2.7*** (5.33)				1.34 (1.12)				1.05 (0.4)				1.72* (1.72)			
Availability																
Method is hard to get or easy to get?		1.94*** (4.3)				1.11 (0.55)				1.06 (0.62)				1.5† (1.33)		
Effectiveness																
Method is effective in preventing pregnancy?			1.63*** (3.78)				1.13 (0.69)				1.05 (0.55)				1.5* (1.79)	
Side Effects																
Method has unpleasant side effects?				1.57*** (3.52)				1.29 (1.25)				0.98 (-0.21)				1.2 (0.83)
Ethnic Group <sup>a</sup>																
Low-caste Hindu	1.87*** (3.3)	2.01*** (3.69)	1.89*** (3.37)	1.86*** (3.28)	1.47† (1.34)	1.48† (1.36)	1.46† (1.3)	1.48† (1.35)	0.55* (-2.2)	0.55* (-2.19)	0.54* (-2.21)	0.54* (-2.22)	0.26** (-2.59)	0.25** (-2.65)	0.25** (-2.64)	0.25** (-2.63)
Newar	1.44† (1.39)	1.52† (1.6)	1.49† (1.53)	1.5† (1.56)	1.01 (0.03)	1.04 (0.09)	1.03 (0.07)	1.01 (0.02)	1.34 (1.00)	1.33 (0.99)	1.35 (1.04)	1.34 (1.01)	0.67 (-0.86)	0.63 (-0.97)	0.67 (-0.86)	0.66 (-0.89)
Tarai Tibeto-Burmese	0.78† (-1.3)	0.88 (-0.69)	0.76† (-1.5)	0.77† (-1.41)	0.84 (-0.6)	0.85 (-0.58)	0.83 (-0.65)	0.84 (-0.61)	0.74† (-1.47)	0.75† (-1.44)	0.74† (-1.53)	0.72† (-1.64)	0.55* (-1.95)	0.55* (-1.94)	0.55* (-1.97)	0.53* (-2.1)
Hill Tibeto-Burmese	1.69*** (3.15)	1.77*** (3.41)	1.78*** (3.47)	1.74*** (3.3)	2.42*** (3.96)	2.48*** (4.07)	2.46*** (4.04)	2.41*** (3.91)	0.43*** (-3.15)	0.43*** (-3.13)	0.43*** (-3.14)	0.43*** (-3.18)	0.36** (-2.71)	0.36** (-2.7)	0.36** (-2.7)	0.36** (-2.69)
Birth Cohort <sup>b</sup>																
(age 25-34)	1.73*** (3.44)	1.71*** (3.43)	1.77*** (3.59)	1.75*** (3.53)	1.76** (2.46)	1.77** (2.49)	1.77** (2.49)	1.77** (2.49)	2.14*** (3.92)	2.13*** (3.91)	2.13*** (3.91)	2.14*** (3.94)	1.91** (2.38)	1.86* (2.29)	1.89** (2.33)	1.9** (2.36)
(age 35-44)	0.42*** (-3.78)	0.42*** (-3.82)	0.41*** (-3.87)	0.42*** (-3.8)	0.55* (-1.76)	0.54* (-1.82)	0.54* (-1.82)	0.55* (-1.77)	0.05*** (-4)	0.05*** (-3.99)	0.05*** (-4)	0.05*** (-4.02)	0.27** (-2.51)	0.28** (-2.44)	0.27** (-2.52)	0.26** (-2.56)
Parental Characteristics																
Mother's children ever born	0.99 (-0.42)	0.98 (-0.92)	0.98 (-0.63)	0.99 (-0.54)	0.99 (-0.37)	0.99 (-0.4)	0.98 (-0.42)	0.98 (-0.4)	1.00 (-0.11)	1.00 (-0.09)	1.00 (-0.12)	1.00 (-0.08)	1.03 (0.6)	1.03 (0.56)	1.03 (0.63)	1.03 (0.62)
Father ever attended school	1.00 (-0.03)	1.01 (0.04)	0.97 (-0.22)	0.99 (-0.1)	1.37† (1.55)	1.37† (1.55)	1.37† (1.55)	1.38† (1.59)	0.91 (-0.54)	0.92 (-0.53)	0.91 (-0.55)	0.92 (-0.5)	1.44† (1.58)	1.44† (1.57)	1.45† (1.62)	1.46* (1.65)
Mother ever attended school	0.78 (-0.99)	0.79 (-0.92)	0.82 (-0.8)	0.84 (-0.7)	1.72* (2.01)	1.7* (1.96)	1.69* (1.95)	1.73* (2.02)	0.71 (-1.07)	0.71 (-1.08)	0.71 (-1.06)	0.71 (-1.11)	0.58+ (-1.29)	0.59 (-1.26)	0.59 (-1.25)	0.59 (-1.26)
Parent ever used contraceptives	0.91 (-0.66)	0.88 (-0.91)	0.91 (-0.67)	0.93 (-0.52)	1.21 (0.9)	1.22 (0.97)	1.22 (0.95)	1.22 (0.97)	0.95 (-0.31)	0.95 (-0.3)	0.95 (-0.3)	0.95 (-0.28)	1.25 (0.94)	1.28 (1.06)	1.26 (0.99)	1.26 (0.98)
Individual Characteristics																
Number of children born by 1996	1.15** (2.6)	1.15** (2.52)	1.15** (2.65)	1.17** (2.84)	1.13† (1.38)	1.14† (1.45)	1.14† (1.44)	1.13† (1.42)	1.16* (1.92)	1.16* (1.89)	1.16* (1.96)	1.16* (1.97)	1.15† (1.35)	1.15† (1.34)	1.15† (1.32)	1.15† (1.33)
Number of boys born by 1996	1.00 (0.03)	1.00 (0.04)	1.00 (-0.04)	1.00 (-0.05)	1.17 (1.28)	1.17 (1.28)	1.17 (1.26)	1.17 (1.23)	1.13 (1.2)	1.14 (1.22)	1.13 (1.2)	1.14 (1.24)	1.03 (0.17)	1.02 (0.15)	1.03 (0.21)	1.03 (0.18)
Number of children died by 1996	1.1 (0.72)	1.12 (0.86)	1.06 (0.49)	1.01 (0.11)	0.72† (-1.55)	0.72† (-1.58)	0.72† (-1.57)	0.71† (-1.64)	0.67* (-2.04)	0.67* (-2.04)	0.66* (-2.06)	0.66* (-2.07)	0.6† (-1.63)	0.58* (-1.71)	0.6† (-1.63)	0.59* (-1.65)
-2 Log L	3100	3109	3114	3117	1755	1756	1755	1754	2430	2430	2430	2430	1147	1148	1146	1149
Count	45458	45458	45458	45458	54027	54027	54027	54027	67746	67746	67746	67746	55293	55293	55293	55293

Notes: Dependent variable is referenced by column heading. T-ratios in parentheses.

<sup>a</sup> Comparison group is high-caste Hindus

<sup>b</sup> Comparison group is the birth cohort aged 15-24

†p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001 (one-tailed)

**Table 5. Logistic Regression Estimates of Husbands' General and Method-Specific Contraceptive Attitudes on the Hazard of First Contraceptive Method Use (by Type), for Women Ages 15-44.**

Measure		Depo Provera	Pills	Vasectomy	Condoms
General Contraceptive Attitudes <sup>a</sup>					
Panel A. Believe it is sinful to use contraception					
	Husband	1.42* (1.94)	1.31 (1.09)	2.31** (2.86)	2.64** (2.45)
	Wife	1.48* (2.06)	0.7 (-1.46)	1.35 <sup>†</sup> (1.32)	1.61 (1.26)
Panel B. Wrong to use contraceptives to avoid/delay pregnancy					
	Husband	0.87 (-1.89)	1.03 (0.3)	0.95 (-0.56)	1.01 (0.06)
	Wife	1.02 (0.23)	1.00 (0)	1.00 (0.02)	1.17 (1.12)
Panel C. A vasectomized man cannot be blessed by God					
	Husband	1.08 (0.87)	0.92 (-0.75)	1.11 (1.04)	1.18 (1.09)
	Wife	0.92 (-1.04)	0.92 (-0.74)	1.14 (1.24)	1.00 (-0.02)
Method-Specific Contraceptive Attitudes <sup>a</sup>					
Panel D. Index of Favorable Attitude					
	Husband	1.79*** (3.37)	1.66* (1.98)	1.76** (2.6)	2.64** (2.6)
	Wife	2.7*** (5.31)	1.37 (1.18)	1.02 (0.16)	1.5 (1.26)
Panel E. Availability					
	Husband	1.7*** (3.65)	1.34 <sup>†</sup> (1.48)	1.52* (2.32)	1.91 <sup>†</sup> (1.62)
	Wife	1.85*** (3.97)	1.08 (0.38)	1.04 (0.46)	1.41 (1.11)
Panel F. Effectiveness					
	Husband	1.41** (2.71)	1.31 <sup>†</sup> (1.53)	1.56* (2.32)	1.96** (2.38)
	Wife	1.61*** (3.67)	1.15 (0.79)	1.04 (0.44)	1.38 <sup>†</sup> (1.41)
Panel G. Side Effects					
	Husband	1.16 (1.05)	1.31 <sup>†</sup> (1.34)	1.27 <sup>†</sup> (1.58)	1.87** (2.46)
	Wife	1.58*** (3.57)	1.29 (1.26)	0.98 (-0.21)	1.16 (0.67)

Note: Dependent variable is referenced by column heading. All models include controls as in Tables 3 and 4.

Note: T-ratios in parentheses. Each panel represents four models, one for each dependent variable.

<sup>a</sup>Attitude measures are coded so that higher scores indicate more positive attitudes toward contraception.

<sup>†</sup>p<.10 \*p<.05 \*\*p<.01 \*\*\*p<.001 (one-tailed)