

Heterogamy and Effective Contraceptive Use among Married and Cohabiting Women

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Abstract

Heterogamy is linked to less effective contraceptive use amongst adolescents. It is not known whether this holds for married/cohabiting women, though the couple context of dating partners differs from stable relationships with respect to communication and power. We explore the association between heterogamy and women's choice of contraception by analyzing partnered women from the 2006-2010 National Survey of Family Growth. Multinomial logistic regressions are used to determine whether educational, age or racial heterogamy is associated with the use of effective contraceptive methods. Women aged 20-34 in heterogamous relationships are less likely to use any type of contraception relative to no method. The more dimensions on which a couple differs, the less likely they are to use effective contraception. There were no consistent associations between heterogamy and contraceptive choice among women aged 35-45. Despite the more permanent nature of these relationships, differences between partners may factor into the contraceptive decision-making process.

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Introduction

It is estimated that over half (51%) of pregnancies in the United States were unintended in 2008, indicating that there has been no improvement in the rate of unintended pregnancies since 2001 (Finer & Zolna, 2014). While there is a significant body of research exploring factors contributing to teenagers' unintended pregnancies (e.g. Abma et al., 1998; DiClemente et al., 2002; Ford et al., 2001; Manning et al., 2012), less attention has been paid to unintended pregnancies amongst older and partnered (i.e. married and cohabiting) women. Finer and Zolna (2011), however, highlight that this group of women comprise a large share of unintended pregnancies, with respective unintended pregnancy rates of 35 and 152 per 1000 women aged 15-44. Indeed, between 2001 and 2008, the greatest increase in unintended pregnancies among all individual subgroups was among cohabiting women (Finer & Zolna, 2014).

Given that rates of unintended pregnancies among married and cohabiting women are persisting, and even increasing, it is important to understand the determinants of effective contraceptive use for this sub-set of women. The ability to delay births and increase time between children have been linked to better educational and earnings outcomes for women (e.g. Karimi, 2014; Miller, 2009; Pettersson-Lindbom & Thoursie, 2009; Waldfogel, 1998). There is also evidence that unintended pregnancies are associated with children having suboptimal health and lower developmental outcomes (Crissey, 2005; Hummer et al., 2004; Shah et al., 2009).

It has traditionally been assumed that a couple's choice of contraceptive is primarily in the female domain due to most methods being geared towards women and women experiencing the childbearing and often childrearing risk in the case of an unintended pregnancy (Miller & Pasta, 1996). However, there is growing evidence that a couple's relationship dynamics factor heavily into various decision-making processes including the decision on what method of contraceptive to use. In particular, previous research on teenage contraceptive use points to heterogamy between partners being a significant contributor to lower rates of contraceptive use (DiClemente et al., 2002; Gleib, 1999; Manlove et al., 2001; Manlove et al., 2003; Manlove et al., 2007; Manlove et al., 2014; Manning et al., 2000). This literature postulates that differences between partners may lead to within-couple inequities and discomfort in communicating about sex and contraception. Previous research on heterogamy and contraceptive choice has largely overlooked married and cohabiting couples. When this issue has been explored amongst married couples, the focus has been on the link between heterogamy and power differentials. In particular, these studies explore how age, educational, and racial heterogamy can lead to a couple choosing contraceptive methods that are

avored by men versus women and have focused on irreversible contraceptive choices (i.e. male and female surgical sterilization) (Bean et al., 1987; Bertotti, 2013; Dereuddre et al., 2014) or relative ratings of different contraceptive methods (Grady et al., 2010), as opposed to effective contraceptive use.

Although there is evidence that heterogamy is linked to less effective contraceptive use amongst adolescents, we do not know whether this is also the case amongst married and cohabiting women. Yet this is an important issue to explore because the couple context of casual, dating partners may differ from more stable relationships with respect to communication and power. We build off of existing literature by exploring whether being in a heterogamous couple is associated with partnered women's choice of effective contraceptives. We also address whether relationship status matters among partnered women, distinguishing between marriage and cohabitation. Using data from the 2006-2010 National Survey of Family Growth (NSFG), we look at how three sources of heterogamy – education, age, and race heterogamy – are associated with a woman's likelihood of using female sterilization, male sterilization, long acting reversible contraceptive methods (LARCs), other hormonal methods, or less effective methods versus no method amongst women at risk for an unintended pregnancy.

Background

Heterogamy Theory

Relationships are commonly formed between individuals sharing characteristics such as age, education, and race (e.g. Blossfeld & Timm, 2003; Laumann et al., 1994; Qian, 1998), though couples where partners differ with respect to these characteristics are not unusual. The preference for similarity is generally associated with positive outcomes for individuals, for example with respect to earnings and careers (e.g. Bernasco, 1994; Dribe & Nystedt, 2013; Huang et al., 2009; Lefgren & McIntyre, 2006) through better access to information and social networks as well as a higher level of understanding of work-related demands, but also with respect to the organization of family life, notably relationship status and transitions (Goldstein & Harknett, 2006). The stratification literature, however, documents that increasing homogamy, though beneficial for individual men and women, may contribute to economic inequality (e.g. Burtless, 1999; Gottschalk & Danziger, 2005). In the present context, the consequences of partner choice along the lines of education, age, and race are a source of concern insofar as partner choice widens disparities in women's use of effective contraception and unwanted pregnancies.

The hypothesized effect of heterogamy on the contraceptive effectiveness choice is not completely straightforward and depends on the perspective employed. Homogamy can serve as an indicator of homogeneity in partners' preferences. Couples in which both partners share characteristics (i.e. are the same age, have attained equal amounts of schooling, and share race/ethnicity background) also share knowledge and experiences. These partners may, therefore, be closer to each other and agree more on issues relating to family formation, child investments, and the organization of family life – including decisions on what methods of contraception to use – and may solve these matters in a frictionless manner compared to heterogamous couples (cf. McPherson, Smith-Lovin & Hook, 2001). According to heterogamy theory, socio-demographic differences (e.g. age, race, education, or religion) between couples place additional strain on relationships and lead to higher levels of conflict and lower levels of marital satisfaction (Bean et al., 1987; Eeckhaut, 2012; Pyke & Adams, 2008). Some previous research supports this viewpoint (e.g. Amato et al., 2003; Kalmijn, 1998; Pyke & Adams, 2010). In such a case, one might expect that a couple would have poorer communication and less agreement, and a heterogamous couple is, therefore, less likely to have discussions regarding contraceptive use and method effectiveness. Among adolescents, evidence points to couples with better communication being more likely to practice effective contraception (Brown & Eisenberg, 1995). Indeed, this link between communication and contraceptive use has largely been used to explain findings indicating that heterogamy is associated with less contraceptive use amongst adolescents. Most of these findings relate to age heterogamy and its negative association with contraception use (Abma et al., 1998; DiClemente et al., 2002; Ford et al., 2001; Gibbs 2013; Johnson et al., 2014; Kusunoki & Upchurch, 2011; Manlove et al., 2003; Manlove et al., 2007; Manlove et al., 2014; Manning et al., 2000; Weisman et al., 1991).

Less attention has been given to couple dynamics and contraceptive choices amongst older women in more stable relationships. Previous research among married couples has found that joint decision-making is an important factor in determining effective contraceptive use (Severy & Silver, 1993). Miller and Pasta (1996) provide important insights into why this may be the case. The authors find that even when a couple uses methods in the female domain (i.e. oral contraceptives), men's and women's method preferences are formed based on considerable sharing of information between partners. The authors also find that an individual's preference for methods within their control (i.e. diaphragms for women and condoms for men), spousal preferences are as heavily or more heavily factored into the decision to use these methods. Given evidence pointing to less effective communication among heterogamous couples and to communication about preferences being associated with the use of effective contraceptives, one might expect heterogamous couples to be *less* likely to use effective contraceptives. In the limited research that extends beyond adolescents,

this does appear to be the case. Manlove et al. (2011) find that an increasing level of partner asymmetry (as measured by age, race, and educational differences) is associated with a lower likelihood of any method use, hormonal method use, or dual method use among dating women aged 18 to 26.

However, there is also evidence that heterogamy is *not* associated with greater relationship strain (e.g. Jorgensen & Klein, 1979; Vera et al., 1985). Some literature argues that heterogamous couples are not necessarily less stable and, indeed, are more likely to be open-minded (Bean et al., 1987). This argument would lend support to the idea that individuals in these couples may be more open to newer, more effective methods of contraception such as LARCs. Further, Bean et al. (1987) note that even in instances where heterogamy introduces strain and discord, individuals may be less open to introducing children into the relationship and, therefore, *more* likely to be using highly effective contraceptive methods. Indeed, the authors find that age and religious heterogamy are associated with a higher likelihood of obtaining sterilization among married couples in the United States and attribute this finding to these couples being more open to newer contraceptive methods. There is also some evidence of a positive association between racial heterogamy and contraceptive use among adolescents, as Ford et al. (2001) finds that adolescents in racially heterogamous relationships are more likely to use contraception. However, most literature looking at racial heterogamy and contraception has found a statistically insignificant association between these variables (Ku et al., 1994; Kusunoki & Upchurch, 2011; Manlove et al., 2011; Manning et al., 2000; Manning et al., 2012). Overall, it is not clear how one might expect heterogamy to impact contraceptive effectiveness based on previous research exploring heterogamy theory.

Relative Resource Perspective

It is also argued that some types of heterogamy (e.g. age, education, or income) may introduce power differentials into the relationship. The resource perspective postulates that those bringing more social or economic resources into the relationship will have greater influence over choices within the relationship (Blood & Wolfe, 1960; Edwards, 1969; see also Bertotti et al., 2013; Grady et al., 2010). In the contraceptive effectiveness choice context, this can translate into a contraceptive choice that favors the preferences of the partner with more power. Grady et al. (2010) find some evidence of this. The authors find that as the woman's relative education increases, the influence of her contraceptive preferences for condoms on dual method use increase, and those of her husband decline. Further, it can be argued that if certain types of contraceptives introduce a greater burden onto men or women, then the partner with more leverage may opt not to use these methods. For instance, Bertotti et al. (2013) test the hypothesis that female sterilization is more burdensome for

women and, therefore, less likely to be chosen by women with more power (and vice versa). Among partners who have opted for male or female sterilization, they find that white, socio-economically privileged women have a higher likelihood of having a vasectomized partner, as opposed to undergoing tubal ligation themselves. However, their findings do not ultimately support bargaining theory, as they find that women who were more educated than their partners were less likely to have vasectomized partners. Soler et al. (2000) provides the only test of the effect of power differentials due to labor force heterogamy (i.e. whether the woman or the man worked more hours). The authors' findings do not support the resource perspective, as they find that homogamous partners are less likely to be consistent contraceptive users relative to occasional users.

At first, the relative resource perspective is compatible with economic bargaining models (Lundberg & Pollak 1994), which allow partners to hold different preferences regarding family formation and the organization of family life, with negotiations determining individual and joint strategies for the provision of market and household goods and services. There are, however, some further complications with respect to resource theory and what it would predict with respect to contraceptive decisions. While under-provision of household public goods (e.g. housework) is a potential outcome of the non-cooperative bargaining (Behrman 1997), this is not really an option – at least not for the woman - when it comes to contraception. In cases where the woman brings in greater resources, this may also imply a higher relative cost of an unintended pregnancy to the woman and, therefore, the choice of a highly effective contraceptive method. This effect would be highly reliant, however, on factors such as the presence of children and parity. As pointed out by Eeckhaut, Stanfors, and Van de Putte (2012), the presence of young children is likely to reinforce the traditional division of labor in family contexts, which may translate into decreased bargaining power for women even if they are bringing greater resources into the relationship. As such, the resource perspective also does not clearly predict whether heterogamous couples are more or less likely to use more effective contraceptives.

Overall, irrespective of the perspective used, it is not wholly clear how heterogamy might impact the contraceptive effectiveness choice. As such, it is a question that should be explored empirically. Further, when exploring this issue, it is important to take into consideration whether any potential association between heterogamy and contraceptive choice is due to partnership strain and poor communication or power differentials between partners. We investigate this by analyzing three different sources of heterogamy – education, age, and race. We further investigate the couple context by considering whether heterogamy has the same implications for married and cohabiting women's contraceptive choices.

Data and methods

Data

We used data from the 2006-2010 National Survey of Family Growth (NSFG). The NSFG is a nationally representative survey of women aged 15 to 44 in the civilian, non-institutionalized population in the United States. For the 2006–2010 cycle, 12,279 women were interviewed. The data can be made nationally representative with the use of sample weights that correct for oversampling, non-response, and non-coverage (Lepkowski et al., 2006).

Our base case sample consisted of women identified as being at risk for an unintended pregnancy if they were currently not pregnant, not seeking pregnancy, they or their partners were not sterile (due to natural causes), and if they had reported heterosexual intercourse in the three months preceding the interview. We further limited our sample to women between the age of 20-45 and who were in a heterosexual partnership (i.e. married or cohabiting). After limiting the study sample using these inclusion criteria, the sample size decreased to 4,280 women.

Measures

- *Dependent variable*

The dependent variable was *contraceptive choice*, which subdivided women into six groups: those who used female sterilization; those who used male sterilization; those who used long acting reversible contraceptives (LARCs) (i.e. implant, injectable, or intrauterine device (IUD)); those who used other hormonal methods (i.e. the pill, patch, or ring); those who used less effective alternative methods (i.e. diaphragm, male or female condom, foam, cervical cap, sponge, suppository, jelly, cream, natural family planning, calendar rhythm, withdrawal, emergency contraception or another method); and those who used no method at all (chance). Women were asked which method they currently used (i.e. their current contraceptive status) from a list of options. In cases of multiple method use, a woman's contraceptive method was taken to be the method that the woman identified as her first priority method.

- *Independent variables*

Our key independent variables were related to the couple context. We measured three types of heterogamy along the lines of age, education, and race. For age heterogamy, we used different thresholds of more than two, five, and ten year differences between partners. In our base case, we used the greater than five year threshold, which is greater than the age difference between spouses

in most western countries (where women typically are 2-3 years younger than their spouses, see Bergstrom & Lam 1989; Ní Brolcháin 1992; Presser 1975; Van Poppel et al. 2001). We also constructed binary variables indicating whether the man or the woman in the couple was older. For educational heterogamy, we constructed variables indicating whether the respondent and her partner had less than high school, high school, some college, a bachelor's degree or a graduate degree. If the one partner's level of education did not match the other partner's level of education, the couple was considered heterogamous. As with age, we also constructed variables indicating whether the woman was more highly educated than her partner or vice versa. Finally, race/ethnicity was measured with a categorical variable indicating whether the individual was non-Hispanic white, non-Hispanic black, Hispanic, or other. If the respondent was in a different category than her partner, she were considered to be heterogamous (i.e. any type of race/ethnicity heterogamy).

In addition to measuring heterogamy for each of these traits, we also constructed a heterogamy scale, indicated whether the couple was homogamous, or heterogamous on one, two, or all three traits. Finally, we constructed a binary variable indicating whether the couple differed with respect to any of these traits.

- *Control variables*

There are also a number of other factors that may impact a woman's attitude towards contraceptive choice. Age, presence of a partner, number of children ever born, and religiosity have been found to be negatively associated with the use of more effective contraceptives (Culwell & Feinglass, 2007; Frost et al., 2007; Heck et al., 1997; Mosher et al., 2004; Raine et al., 2003). Some of these factors may be capturing pregnancy ambivalence, which has also been found to be associated with less any contraceptive use (Bruckner et al., 2004). Meanwhile, insurance, education and labor force participation have been found to have a positive association with more effective contraceptive use (Culwell & Feinglass, 2007; Sen, 2006; Mosher et al., 2004; Frost & Daroche, 2004; Luker, 1984). The association between household income (Frost et al., 2007; Frost & Daroche, 2004; Luker, 1984) and race (Frost et al., 2007; Frost & Daroche, 2004; Jacobs & Stanfors, 2013; Wilcox, 1990; Zabin et al., 1993) and the use of more effective contraceptives are less clear in the literature.

We controlled for the above factors, including basic demographic characteristics such as age and race (i.e. Hispanic, non-Hispanic White, Black, and other). We also controlled for whether the individual was married (versus cohabiting), together with the number of previous births, as these factors can influence the degree of pregnancy ambivalence a woman might experience. To control for socio-economic factors that were important for the contraception decision, we included an indicator for whether the woman had public or private health insurance, her level of education (i.e. less than high

school, some high school, some college, or a college degree), and labor force status (i.e. full-time, part-time, or no participation). We expected that higher education and labor force participation levels would lead to a higher contraceptive effectiveness due to the higher opportunity cost of an unwanted birth. Household income was controlled for with four indicator variables ranging from less than \$20,000; \$20,000 to \$39,000; \$40,000 to \$70,000; and over \$70,000. Income was inflation adjusted to 2010 dollars. We controlled for the woman's place of residence (i.e. different degrees of urbanization) with indicators for whether the woman resided in a Metropolitan Statistical Area (MSA) central city, other MSA, or a non-MSA region as a means of capturing her potential access to contraception as well as differences between geographical differences that may influence a couple's preferences with respect to family formation and the organization of family life.

We also included attitudinal controls in our empirical model. A woman's degree of religiosity was measured by the frequency of religious service attendance (weekly or more, monthly or more, or never), which might be expected to have a negative influence on contraception use, depending on the religious affiliation. We controlled for religious affiliation with a series of dummies indicating whether the woman was Protestant, Roman Catholic, other, or had no affiliation. The number of sexual partners in the previous 12 months was also included because previous research has indicated that women with multiple or casual sexual partners may be more likely to use condoms or less likely to use oral contraceptives (Krings et al., 2008; Manlove et al., 2011; Van Wagoner et al., 2011). We controlled for whether the respondent had previously been dissatisfied with a hormonal method before, as this may influence her likelihood of choosing a hormonal method again. Finally, we controlled for whether a woman indicated that she wanted (or was not sure if she wanted) any more children (versus not wanting any more).

Analysis

We studied differences in women's contraceptive effectiveness to see which variables were associated with their contraceptive choice. The multiple-choice setting of highly effective contraceptives versus other methods or no method led to the setup of a multinomial logit model.

Our empirical model was a model of the optional outcomes of contraceptive status, i.e., using female sterilization, male sterilization, LARCs, other hormonal methods, other non-hormonal methods, or no method at all for a woman. The model contains a set of explanatory variables, including couple-level characteristics (i.e. heterogamy variables) and individual characteristics. We first explored whether any type of heterogamy was associated with contraceptive effectiveness. Next, we explored how increasing levels of heterogamy were associated with contraceptive effectiveness using the constructed heterogamy scale. To see which factors were driving any significant associations, we

explored each of the heterogamy factors separately. To determine whether these differences could be attributed to power differences within the relationship, we explored whether it mattered if the man or the woman was the older partner and whether a more or less educated man or women in the couple had different associations with the contraceptive effectiveness choice.

We ran our analysis on all married or cohabiting women aged 20 to 44 who were at risk for an unintended pregnancy. Because of evidence suggesting that the effect of heterogamy on relationship dynamics may become less pronounced as individuals gain more life experience (Pyke & Adams, 2010), we sub-divided women into younger women (aged 20-34) and older women (aged 35-44). We chose age 35 as the cut-off for our older group, as there is a body of research indicating that between ages 35 and 50, there is a gender crossover effect that leads to greater sharing of decision-making among couples (Pyke & Adams, 2010).

Due to the use of complex sample survey data, the statistical estimation technique requires the use of weights to properly compute regression coefficients. Further adjustments were also required for the estimation of standard errors. Standard error estimations used the Huber-White sandwich estimator to correct for heteroskedasticity. All results are presented as relative risk ratios. We use the relative risk ratio of the first five contraceptive choice alternatives, *Female sterilization*, *Male sterilization*, *LARCs*, *Other hormonal*, and *Non-hormonal*, compared to the base category of *No method*. The relative risk ratio indicates how the probability of choosing a given alternative relative to the base category changes if the independent variable is increased by one unit. In our case, it is likely that a woman would decide upon a relative level of contraceptive effectiveness by comparing the different alternatives available to her. Furthermore, a base category of *No Method* is likely to factor into her decision-making process, as it represents an extreme alternative in terms of cost and effectiveness.

Sensitivity Analyses

We ran a number of sensitivity analyses to determine how robust our findings were to variable and sample modifications. We first altered the age heterogamy variable, looking at how a difference of over two years and over ten years impacted our results. Next, we restricted our sample to women who indicated that they wanted more children or were unsure if they wanted more children, as well as those who indicated they did not want more children. This sample restriction was to determine whether any age heterogamy effects we might find are simply driven by pregnancy ambivalence when one partner is older. We then modified the dependent variable, including a category for the male condom, a method in the male domain. This was to determine whether any of the potentially power-related sources of heterogamy (i.e. education and age) had different associations with

methods of contraception in the male or female domain. We also ran models where we excluded permanent methods of contraception (i.e. male and female sterilization) to determine whether this altered our results. Finally, we explored whether the heterogamy effect differed for married versus cohabiting women. In these analyses, we conducted sub-sample analyses among only married women or only cohabiting women. These analyses did not divide women into two age groups, as the sub-samples were too small to run these models.

Results

We first present a descriptive overview of our sample in Table 1, sub-divided by age group. We find that for the younger women, the most commonly used forms of contraception are LARCs (31.85%) and other hormonal methods (25.66%). The smallest proportion of women in this age group are contraceptive non-users (6.14%). The majority of women in the sample are in heterogamous relationships (72.73%), though of those in heterogamous relations, the average number of characteristics on which they differ was 1.37. Approximately 29.5% of heterogamous women differed from their partners with respect to two characteristics, and only 3.92% differed with respect to three characteristics. Around 70% of the women were married, as opposed to cohabiting. Most women in the sample had some college (21.28%) or at least a college degree (38.19%) and most were participating full-time (48.75%) or part-time (23.52%) in the labor force. The largest proportion of women were in the middle two income categories, with the largest proportion (33.68%) earning between \$40,000 and \$75,000 per year. The younger women were mostly privately insured, though a sizable portion (18.14%) had public insurance. On average, women in our sample had 1.4 children, and the majority (53.76%) indicated that they wanted more children at some point or were unsure if they wanted more children. Almost half of the women indicated that they were previously dissatisfied with a hormonal method of contraception. With respect to religion, most women attended a religious service weekly or less than weekly, and the largest proportion (45.12%) were Protestant.

Table 1 about here

The older women in our sample more often opted for female sterilization, with 36.66% of women indicating this was their primary contraceptive method. Meanwhile, hormonal methods were much less commonly used, and the second largest proportion of women (20.43%) used no method. Around 75% of women were heterogamous along some line (education, age, and race). Approximately 29.2% of heterogamous women differed from their partners with respect to two

characteristics, and only 2.45% differed with respect to three characteristics. We found that most women were heterogamous with respect to education, with 60% of the younger women and 61% of the older women indicating some difference in educational attainment relative to their partner. Fewer women – 28% of younger women and 32% of older women – had a five or more year difference with their partner. Around 12% of younger women and 8% of older women were in a racially heterogamous partnership.

The vast majority (89.41%) of women were married. Just under 45% of women in the sample had at least a college degree and most were employed either full-time (49.53%) or part-time (24.14%). The majority of women were in the top two income categories and more than three-quarters were privately insured. Over half of the older women were Protestants, and the majority attended religious service weekly or less than weekly. Very few women wanted more children (7.56%) and just over a third had previously been dissatisfied with a hormonal contraceptive method.

Table 2 about here

When we look at how contraceptive choice varied by whether women were heterogamous or not (Table 2), we do not see strong indications with respect to most methods. We find that among the younger women, those in heterogamous relationships were significantly less likely to use female sterilization and significantly more likely to use non-hormonal methods. Among older women, we found no significant differences with respect to heterogamous and homogamous women.

When we control for a number of factors in our multivariate analysis, however, we find a somewhat different picture. As outlined in Table 3a, we find that young women in heterogamous relationships are significantly less likely to use any type of contraception relative to no method compared to homogamous women. Young women have the smallest likelihood of using any type of sterilization, but also are around half as likely to use LARCs and other hormonal methods (RRR, 0.48 and 0.49 respectively) relative to no method. When we use the heterogamy scale, we find that the impact of heterogamy appears to get stronger as individuals differ with respect to more characteristics. Women who differ along at least two characteristics are significantly less likely to use any form of contraception. We do not find a significant association for women differing with respect to three characteristics.

Table 3a about here

With respect to other covariates, we find that most variables are in the expected directions. Hispanic women are more likely to use male sterilization, LARCs, and other hormonal methods, while Black women are less likely to use any hormonal methods or non-hormonal methods relative to White

women. More educated women are significantly more likely to use male sterilization, LARCs, or other hormonal methods, as well as non-hormonal methods. We also find that women working full-time are more likely to use male sterilization, LARCs, and non-hormonal methods. Low income women are less likely to use other hormonal methods. Privately insured women are more likely to use female sterilization, less likely to use male sterilization, as well as less likely to use other hormonal methods, which is somewhat unexpected. We find women with more children are significantly more likely to use the most highly effective and longer term methods (sterilization and LARCs). Finally, we find that previously being dissatisfied with a hormonal method is associated with a lower likelihood of using any hormonal methods.

When we look at the older women (Table 3b), we do not find that heterogamy is significantly associated with contraceptive choice. The direction of the association between heterogamy and contraceptive use is positive, though the coefficient is only statistically significant when we look at the heterogamy scale in one instance. Women with at least one difference appear to be more likely to use female sterilization relative to no method (RRR, 1.73).

Table 3b about here

With respect to other covariates, we find that Black women are less likely to use non-hormonal methods and those with at least some college are more likely to use all methods relative to no method. Women who are privately insured are less likely to use male sterilization while those with public insurance are less likely to use female sterilization. Again, those with more children are much more likely to use any of the methods, while less religious individuals are more likely to use other hormonal methods and male sterilization.

Breaking the heterogamy variable into its different components, we find that there are certain types of heterogamy that are driving our findings. For younger women (Table 4a), we find that being in a couple where the female partner is more educated makes women less likely to use male sterilization (0.32), LARCs (RRR, 0.42), other hormonal methods (RRR, 0.48), and non-hormonal methods (RRR, 0.28). Meanwhile, having a more educated male partner is associated with a lower likelihood of female sterilization (RRR, 0.42). When it comes to age heterogamy, we find that being in a relationship where the woman is older is negatively associated with any contraceptive use relative to non-use. Similarly, having an older man in the relationship is associated with a lower likelihood of male sterilization, LARCs, and other hormonal methods. Racial heterogamy seems to be positively associated with women opting for female sterilization and LARCs for younger women. When we look at comparable findings for the older women (Table 4b), these results are not consistent. The only significant finding is that having an older man in the relationship is associated with LARC use.

Sensitivity analyses

The results of our sensitivity analyses (not shown) indicate that when we adjust the age difference between partners, there are some differences. Amongst the younger women, having a partner who is more than two years older, as opposed to five years, is not as consistently associated with any type of contraceptive use. However, we still find that couples where the woman is at least two years older had a lower likelihood of female sterilization and using hormonal methods, though the negative association is not as pronounced as when we use the five year age gap (respective RRRs, 0.49 and 0.59 versus RRRs, 0.43 and 0.49). When we use the ten year age difference between partners, there are no significant associations for partnerships where the man is older, but partnerships where the woman is older are less likely to use female sterilization (RRR, 0.35), LARCs (RRR, 0.44), and other hormonal methods (RRR, 0.49). These relative risk ratios are smaller (i.e. the association is more negative) or equivalent to those in our base case analysis (respective RRRs, 0.43, 0.43, 0.49).

We also conducted sub-group analyses dividing women into groups of those who indicated that they did *not* want any more children versus all other women. We found that for young women, our results were consistent with our base case analysis amongst women who indicated that they did not want more children, though the associations were even stronger than in our base case analysis. Further, we found that for these couples, the source of the heterogamy was educational and age heterogamy, but it did not matter if the man or the woman was more educated or older. Amongst women who did want more children (women who were sterilized or had a sterilized partner were not included in this analysis), we only found significant impacts for LARCs, where women were increasingly less likely to use LARCs with each additional source of heterogamy (RRRs, 0.44, 0.40, 0.10). We did not find significant results among older women. Finally, when we separated out methods that were in the male domain (i.e. male condoms), we did not find appreciable differences between the association between heterogamy and other non-hormonal methods versus male condoms. We also did not find any differences when we excluded individuals opting for male and female sterilization.

When we separated married women from cohabiting women and conducted sub-analyses among each group, we did not find that any heterogamy measures were significantly associated with the choice of any contraceptive method. Cohabiting women were significantly more likely to choose a non-hormonal method (RRR, 6.27) relative to no method.

Discussion

In this paper we have explored the association between heterogamy along three dimensions and effective contraceptive use. We have found that young women who are in heterogamous relationships are less likely to use any type of contraceptive relative to no method. These findings are in line with literature on heterogamy amongst adolescents that finds a negative association between heterogamy and contraceptive use (Abma et al., 1998; DiClemente et al., 2002; Ford et al., 2001; Gibbs 2013; Johnson et al., 2014; Kusunoki & Upchurch, 2011; Manlove et al., 2003; Manlove et al., 2007; Manlove et al., 2014; Manning et al., 200). Our findings were, however, not consistent for older women. Further, as with Manlove et al. (2007) and Manlove et al. (2011), it appears that the more heterogamous a couple (i.e. the greater the number of dimensions on which a couple differs), the less likely they are to use effective contraception. Though we did not find significant effects for those with three types of heterogamy, this is likely explained by very small sample sizes in this group (i.e. 79 for the younger women and 57 for the older women).

While there are a number of possible explanations for our results, our sensitivity analyses help to narrow down which of these explanations are most likely. The significant heterogamy findings for younger women are driven primarily by age heterogamy and educational heterogamy. This supports resource theory and the possibility that power differentials playing a role in these differences. With respect to age heterogamy, it could be that having an older partner who is ready to have children factors more heavily in the formation of contraceptive preferences for the couple. One could argue that these couples are more ambivalent about an unwanted pregnancy due to an age effect from one of the partners and would, therefore, be less likely to use more effective contraception.

However, it is unlikely that this is driven solely by an age effect given the consistent educational heterogamy findings and the results of our sensitivity analysis which restricted the sample to women who did *not* want any more children. This analysis indicated that regardless of which partner was more educated or older, heterogamous couples were less likely to use more effective contraceptives. This sub-set of women would be the least ambivalent about an unwanted pregnancy, and yet heterogamous couples among this group were still less likely to use effective contraceptives. This lends support to heterogamy theory and the idea that there may be communication issues about pregnancy or contraceptive preferences when there is a large educational or age gap between partners.

The fact that the effects of heterogamy are not significant among older women also supports the idea that these differences may be related to strain from heterogamy. Previous research points to marital strain from age heterogamy diminishing with age, as the younger partner gains more experience and the couple's roles and communication evolve (Pyke & Adams, 2010). There could

also be an element of selection, as the older couples may represent marriages that have less strain and, therefore, have lasted longer.

The finding that racial heterogamy is linked to a higher likelihood of female sterilization and LARC use among younger women was also quite interesting. It is in line with findings relating to race heterogamy from Ford et al. (2001) and also in line with findings relating to religious and age heterogamy from Bean et al. (1987). As Bean et al. conclude, this could be an indication that couples in racially heterogamous relationships are more open minded and, therefore, more open to newer, more effective methods of contraception. This is especially the case since we see a significant result for LARCs, but not other hormonal methods. None of the existing literature that has had statistically insignificant findings for racial heterogamy has explored the use of LARCs as an outcome variable (Ku et al., 1994; Kusunoki & Upchurch, 2011; Manlove et al., 2011; Manning et al., 2000; Manning et al., 2012).

Limitations

There are some important limitations to keep in mind. First, as we are using cross-sectional data, we cannot account for factors like unobserved heterogeneity. There may be unobservable, individual level factors that are associated with women in heterogamous relationships that we cannot account for. As such, we do not claim that these are causal effects of heterogamy on contraceptive effectiveness choice. Instead, we view our findings as a descriptive overview of this relationship. Further, we note that although our key independent variable (heterogamy) is meant to capture relationship dynamics and proxy the role of such dynamics in the contraceptive choice, we do not explicitly model the male partner's involvement in this process. We note that this is an important next step in this line of research.

Conclusion

This study provides a first step in exploring the association between heterogamy and effective contraceptive use among married and cohabiting women. While this group of women is not the focus of most heterogamy research, our findings highlight the idea that in spite of the more permanent nature of these relationships, significant differences between partners may still factor into the contraceptive decision making process. Despite their intention not to have any more children and despite bearing the brunt of the burden in the case of an unintended pregnancy, there is still a significant and consistent heterogamy effect for married and cohabiting young women. These findings call for further exploration of the pathways through which this association is developing.

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Table 1: Descriptive overview of sample.

	Young women			Older women		
	N	Mean/ Proportion	SE	N	Mean/ Proportion	SE
Contraceptive choice	2414			1866		
Female sterilization	393	16.96%	0.01	683	36.66%	0.02
Male sterilization	339	11.72%	0.01	109	5.91%	0.01
LARCs	710	31.85%	0.02	216	11.98%	0.01
Other hormonal	644	25.66%	0.01	353	16.92%	0.01
Non-Hormonal	198	7.67%	0.01	169	8.09%	0.01
None	130	6.14%	0.01	336	20.43%	0.01
Heterogamy	2387	72.73%	0.01	1855	75.80%	0.02
Heterogamy scale	1772	1.37	0.02	1479	1.34	0.02
Educational heterogamy	2406	59.97%	0.01	1864	61.26%	0.02
Age heterogamy (5 years)	2395	27.86%	0.01	1857	32.45%	0.02
Racial heterogamy	2412	11.82%	0.01	1866	8.11%	0.01
Race/ethnicity	2414			1866		
Hispanic	645	18.79%	0.02	415	15.77%	0.02
White	1342	67.00%	0.02	1116	68.38%	0.02
Black	289	8.80%	0.01	222	8.46%	0.01
Other	138	5.41%	0.01	113	7.39%	0.01
Age	2414			1866		
20-24	516	21.70%	0.01			
25-34	1898	78.30%	0.01			
Education	2414			1866		
Less than HS	460	15.60%	0.01	310	14.23%	0.01
HS	617	24.93%	0.01	472	25.15%	0.02
Some College	522	21.28%	0.01	299	15.87%	0.01
College Degree	815	38.19%	0.02	785	44.74%	0.02
Labour Force Particiation	2414			1866		
Non-participant	771	27.73%	0.01	554	26.34%	0.02
FT	1111	48.75%	0.02	888	49.53%	0.02
PT	532	23.52%	0.02	424	24.14%	0.01
Income	2414			1866		
<\$20,000	509	17.34%	0.01	263	11.50%	0.01
\$20,000-\$39,000	723	28.18%	0.01	406	19.57%	0.02
\$40,000-\$75,0000	763	33.68%	0.02	576	30.98%	0.02
>\$75,000	419	20.80%	0.01	621	37.96%	0.02
Insurance	2412			1863		
None	408	14.96%	0.01	283	13.30%	0.01
Private	1493	66.90%	0.02	1374	77.80%	0.02
Public	511	18.14%	0.01	206	8.89%	0.01
Married	2414	70.69%	0.02	1866	89.41%	0.01
Children ever born	2414	1.4	0.04	1866	2.04	0.03
Religiosity	2410			1865		
Weekly attendance	715	30.39%	0.02	696	36.93%	0.02

Less than weekly	1130	47.60%	0.02	824	45.24%	0.02
Never	565	22.02%	0.01	345	17.83%	0.02
Religious affiliation	2414			1866		
None	475	18.71%	0.01	278	13.52%	0.01
Protestant	1003	45.12%	0.02	865	51.00%	0.02
Catholic	688	25.73%	0.02	557	25.79%	0.02
Other	248	10.44%	0.02	166	9.69%	0.01
Number of sexual partners	2413	1.05	0.01	1866	1	0.01
Metropolitan residence	2414			1866		
Central city	971	32.07%	0.02	604	25.13%	0.02
Other SMSA	1035	45.91%	0.03	943	54.21%	0.03
Non-SMSA	408	22.02%	0.03	319	20.67%	0.03
Disatisfaction with hormonal	2414	45.47%	0.01	1866	33.17%	0.02
Wants more children	2414	53.76%	0.02	1866	7.56%	0.01

Source: National Survey of Family Growth, 2006-2010.

Table 2: Bivariate analysis of contraceptive choice by age and heterogamy.

	Young women					Older women				
	Homogamous		Heterogamous		Sig	Homogamous		Heterogamous		Sig
	Proportion	SE	Proportion	SE		Proportion	SE	Proportion	SE	
Contraceptive type										
Female sterilization	21.56%	0.03	15.10%	0.01	*	35.98%	0.03	36.96%	0.02	
Male sterilization	12.90%	0.02	11.30%	0.01		5.21%	0.01	6.14%	0.01	
LARCs	31.06%	0.03	32.11%	0.02		11.43%	0.02	12.23%	0.01	
Other hormonal	24.87%	0.02	26.14%	0.02		17.41%	0.03	16.81%	0.01	
Non-hormonal	4.10%	0.01	8.93%	0.01	**	9.14%	0.02	7.45%	0.01	
None	5.50%	0.01	6.41%	0.01		20.82%	0.03	20.41%	0.02	

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < 0.001$.

Source: See Table 1.

Table 3a: Relative risk ratios of different methods of contraception relative to no method, women aged 20-34.

	Female Sterilization			Male Sterilization			LARCs			Other Hormonal			Non-Hormonal			Female Sterilization			Male Sterilization			LARCs			Other Hormonal			Non-Hormonal			
	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	
Heterogamy	0.28	0.09	***	0.38	0.12	**	0.48	0.15	*	0.49	0.15	*	0.4	0.15	*																
Heterogamy Scale																															
Homogamous (Ref)																															
One													0.27	0.11	**	0.46	0.15	*	0.57	0.19	†	0.58	0.18	†	0.48	0.2	†				
Two													0.26	0.1	***	0.28	0.1	***	0.33	0.11	**	0.34	0.12	**	0.25	0.12	**				
Three													0.75	0.65		0.34	0.27		0.65	0.41		0.96	0.6		0.85	0.88					
Race/ethnicity																															
White (Ref)																															
Hispanic	1.23	0.52		2.65	0.92	**	2.11	0.71	*	2.18	0.67	*	1.3	0.65		1.24	0.53		2.7	0.93	**	2.16	0.71	*	2.21	0.67	*	1.35	0.7		
Black	0.6	0.25		1.23	0.45		0.34	0.12	**	0.37	0.11	***	0.15	0.09	**	0.62	0.26		1.28	0.46		0.36	0.13	**	0.39	0.12	**	0.16	0.1	**	
Other	1.26	1.05		0.82	0.35		0.59	0.23		1.33	0.5		0.2	0.19	†	1.22	1.07		0.91	0.41		0.67	0.26		1.5	0.59		0.22	0.22		
Age																															
20-24	0.59	0.26		2.2	0.75	*	1.28	0.43		1.1	0.38		1.28	0.8		0.56	0.24		2.15	0.72	*	1.25	0.42		1.08	0.38		1.24	0.77		
25-34																															
35-44 (Ref)																															
Education																															
Less than HS (Ref)																															
HS	1.28	0.49		1.51	0.63		1.61	0.73		1.36	0.57		1.45	0.86		1.34	0.51		1.52	0.65		1.62	0.75		1.39	0.6		1.46	0.87		
Some College	1.65	0.83		3.47	1.75	*	3.19	1.65	*	3.06	1.57	*	4.29	2.89	*	1.67	0.86		3.4	1.75	*	3.12	1.66	*	3.02	1.58	*	4.11	2.82	*	
College Degree	1.14	0.63		2.53	1.29	†	4.19	2.13	**	3.17	1.55	*	3.18	2.13	†	1.14	0.66		2.35	1.23		3.9	2.07	*	2.99	1.54	*	2.91	2.02		
LFP																															
Non-participant (Ref)																															
FT	1.62	0.53		1.79	0.63	†	1.83	0.58	†	1.26	0.38		2.13	0.87	†	1.62	0.54		1.8	0.63	†	1.82	0.59	†	1.25	0.38		2.11	0.87	†	
PT	1.02	0.4		1.72	0.7		1.46	0.57		1.01	0.35		1.61	0.75		1.01	0.39		1.73	0.71		1.46	0.57		1.02	0.36		1.65	0.77		
Income																															
<\$20,000	1.47	0.51		0.7	0.22		0.89	0.28		0.46	0.12	**	0.34	0.23		1.48	0.52		0.7	0.22		0.88	0.28		0.45	0.12	**	0.34	0.23		

\$20,000-\$39,000 (Ref)																						
\$40,000-\$75,0000	0.75	0.27	1.09	0.32	1.26	0.36	1.02	0.26	1.65	0.72	0.76	0.27	1.12	0.33	1.3	0.37	1.04	0.27	1.72	0.75		
>\$75,000	0.86	0.37	1.17	0.49	0.96	0.36	0.89	0.33	2.5	1.33 †	0.94	0.4	1.3	0.53	1.07	0.39	0.99	0.36	2.82	1.51 †		
Insurance																						
None (Ref)																						
Private	1.85	0.66 †	0.59	0.19 †	1.32	0.42	0.57	0.15 *	2.05	1.11	1.78	0.63	0.57	0.18 †	1.29	0.41	0.56	0.15 *	2.01	1.09		
Public	1.34	0.47	0.99	0.34	1.79	0.65	0.75	0.26	1.48	1.04	1.31	0.45	0.95	0.33	1.7	0.63	0.71	0.25	1.42	1.01		
Married	1.1	0.36	1.2	0.33	0.67	0.17	1.11	0.32	2.69	1.23 *	1.13	0.37	1.18	0.32	0.66	0.17 †	1.1	0.32	2.62	1.21 *		
Children ever born																						
None (Ref)																						
One	5.86	6.56	2.62	1.13 *	0.37	0.12 **	0.59	0.2	0.34	0.21 †	5.84	6.52	2.68	1.14 *	0.38	0.12 **	0.59	0.2	0.33	0.21 †		
Two	20.7	22.37 **	4.68	2.02 ***	0.38	0.14 **	0.6	0.23	1.04	0.56	20.5	22.23 **	4.68	2.01 ***	0.38	0.14 **	0.59	0.22	1	0.54		
Three	50.24	52.33 ***	6.24	3.1 ***	0.33	0.14 **	0.68	0.28	1.9	1.17	50.11	52.46 ***	6.08	2.97 ***	0.32	0.13 **	0.65	0.27	1.79	1.12		
Religiosity																						
Weekly attendance (Ref)																						
Less than weekly	0.67	0.23	1.31	0.44	1.01	0.31	0.84	0.25	1	0.46	0.67	0.23	1.31	0.43	1.02	0.31	0.85	0.25	1.04	0.47		
Never	0.6	0.25	1.05	0.46	0.87	0.33	0.74	0.28	0.85	0.52	0.62	0.26	1.06	0.47	0.88	0.34	0.75	0.29	0.9	0.54		
Religious affiliation																						
None (Ref)																						
Protestant	1.18	0.46	0.89	0.39	1.63	0.59	1.56	0.61	1.06	0.57	1.21	0.48	0.88	0.38	1.62	0.58	1.55	0.6	1.09	0.57		
Catholic	0.67	0.28	0.79	0.34	1.36	0.57	1.45	0.61	0.79	0.42	0.64	0.27	0.77	0.32	1.33	0.56	1.41	0.59	0.79	0.42		
Other	0.29	0.19 †	1.42	0.73	1.43	0.69	1.28	0.66	0.58	0.42	0.31	0.2 †	1.48	0.76	1.52	0.74	1.36	0.7	0.65	0.47		
Number of sexual partners	1.51	0.46	0.99	0.29	0.65	0.2	1.42	0.42	0.28	0.18 *	1.46	0.45	0.98	0.3	0.62	0.2	1.35	0.38	0.27	0.16 *		
Metropolitan residence																						
Non-SMSA (Ref)																						
Central city	0.32	0.17 *	0.36	0.17 *	0.55	0.24	0.72	0.32	0.37	0.22 †	0.32	0.17 *	0.37	0.17 *	0.57	0.25	0.73	0.32	0.37	0.22 †		
Other SMSA	0.59	0.3	0.44	0.19 †	0.8	0.32	0.93	0.4	0.56	0.3	0.55	0.28	0.44	0.19 †	0.78	0.32	0.9	0.39	0.54	0.29		
Disatis hormonal	0.8	0.25	0.98	0.25	0.62	0.16 †	1.7	0.37 *	1.04	0.34	0.81	0.25	0.98	0.25	0.62	0.16 †	1.71	0.37 *	1.04	0.34		
More children	0	0 ***	0.91	0.24	0.92	0.25	1.26	0.31	0	0 ***	0	0 ***	0.89	0.24	0.9	0.24	1.24	0.3	0	0 ***		
Constant	0.64	0.8	0.59	0.65	6.81	6.39 *	2.5	2.61	1.84	2.73	0.66	0.83	0.62	0.68	7.52	7.17 *	2.78	2.92	2.04	3.05		
N	2380											2380										

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < 0.001$. Note: Ref=reference category. Source: See Table 1.

Table 3b: Relative risk ratios of different methods of contraception relative to no method, women aged 35-45.

	Female Sterilization			Male Sterilization			LARCs			Other Hormonal			Non-Hormonal			Female Sterilization			Male Sterilization			LARCs			Other Hormonal			Non-Hormonal				
	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig		
Heterogamy	1.63	0.49		1.42	0.62		1.31	0.43		1.3	0.39		1.38	0.44																		
Heterogamy Scale																																
Homogamous (Ref)																																
One													1.73	0.54	†	1.71	0.77		1.27	0.44		1.4	0.4		1.5	0.49						
Two													1.57	0.59		0.9	0.5		1.55	0.63		1.23	0.52		1.3	0.52						
Three													0.81	0.65		1.13	1.11		0.68	0.63		0.63	0.47		0.5	0.39						
Race/ethnicity																																
White (Ref)																																
Hispanic	1.34	0.51		1.87	0.93		1.62	0.82		1.85	0.73		1.06	0.44		1.48	0.57		1.96	0.94		1.76	0.86		2.05	0.81	†	1.2	0.51			
Black	1.35	0.62		0.87	0.57		0.86	0.35		1.08	0.5		0.17	0.09	***	1.38	0.63		0.93	0.58		0.89	0.37		1.12	0.52		0.2	0.09	***		
Other	0.69	0.29		0.77	0.48		0.33	0.19	†	2.45	1.04	*	0.42	0.22		0.71	0.3		0.78	0.49		0.34	0.2	†	2.52	1.12	*	0.4	0.24			
Age																																
20-24																																
25-34																																
35-44 (Ref)																																
Education																																
Less than HS (Ref)																																
HS	1.81	0.87		1.05	0.6		1.45	0.86		2.41	1.35		2.98	1.72	†	1.81	0.87		1.05	0.61		1.44	0.84		2.42	1.36		3	1.71	†		
Some College	2.89	1.33	*	4.53	2.51	**	3.9	1.95	**	4.76	2.34	**	5.39	3.1	**	2.9	1.34	*	4.78	2.66	**	3.82	1.92	**	4.79	2.34	**	5.4	3.14	**		
College Degree	0.81	0.39		2.03	1.14		2.61	1.25	*	2.44	1.18	†	2.69	1.48	†	0.81	0.39		2.06	1.17		2.61	1.24	*	2.43	1.17	†	2.7	1.47	†		
LFP																																
Non-participant (Ref)																																
FT	1.38	0.47		2.33	0.96	*	1.51	0.59		1.53	0.54		1.85	0.73		1.37	0.46		2.28	0.94	*	1.5	0.59		1.51	0.54		1.8	0.72			
PT	1.01	0.4		2.61	1.12	*	0.85	0.42		0.86	0.36		2.02	0.96		0.99	0.39		2.57	1.11	*	0.84	0.41		0.84	0.34		2	0.95			
Income																																
<\$20,000	2.55	1.33	†	1.64	1.07		1.36	0.83		1.79	0.93		1.19	0.86		2.52	1.31	†	1.68	1.09		1.32	0.8		1.77	0.91		1.2	0.86			
\$20,000-\$39,000 (Ref)																																
\$40,000-\$75,000																																
>\$75,000	0.77	0.28		1.18	0.57		1.95	0.92		0.62	0.24		1.08	0.42		0.8	0.29		1.27	0.63		1.98	0.94		0.64	0.25		1.1	0.44			
Insurance	0.88	0.37		1.57	0.84		1.61	0.94		0.69	0.31		1.24	0.52		0.9	0.38		1.62	0.87		1.6	0.94		0.71	0.32		1.3	0.54			

None (Ref)																														
Private	0.6	0.24		0.26	0.13	**	1.68	0.9		0.61	0.27		1.39	0.7		0.61	0.25		0.25	0.12	**	1.79	0.96		0.63	0.27		1.4	0.71	
Public	0.41	0.21	†	1.05	0.72		1.79	1.37		0.35	0.24		0.41	0.29		0.41	0.22	†	1.04	0.7		1.86	1.44		0.36	0.25		0.4	0.3	
Married	1	0.37		3.59	1.61	**	0.68	0.3		2.41	0.98	*	2.01	1		1	0.37		3.67	1.67	**	0.7	0.3		2.42	0.98	*	2	1	
Children ever born																														
None (Ref)																														
One	1.26	0.77		4.14	3.67		0.61	0.32		1.06	0.47		1.63	0.82		1.25	0.75		4.05	3.55		0.61	0.31		1.06	0.46		1.6	0.79	
Two	9.61	5.87	***	20.37	17.03	***	1.69	0.89		2.45	1.19	†	6.01	2.84	***	9.22	5.55	***	19.6	16.38	***	1.65	0.86		2.36	1.11	†	5.7	2.59	***
Three	21.5	13.62	***	13.14	10.97	**	1.06	0.54		2.52	1.3	†	4.96	2.38	***	20.5	12.94	***	12.5	10.54	**	1.02	0.53		2.42	1.23	†	4.7	2.17	***
Religiosity																														
Weekly attendance (Ref)																														
Less than weekly	1.75	0.51	†	4.12	1.74	***	1.55	0.5		1.84	0.63	†	1.38	0.48		1.77	0.51	†	4.24	1.8	***	1.54	0.51		1.85	0.63	†	1.4	0.48	
Never	1.17	0.48		5.61	3.41	**	0.76	0.37		2.55	1.23	†	1.94	0.89		1.17	0.48		5.7	3.48	**	0.74	0.37		2.57	1.23	†	2	0.9	
Religious affiliation																														
None (Ref)																														
Protestant	0.77	0.32		0.9	0.49		0.6	0.24		0.88	0.4		0.93	0.37		0.77	0.32		0.93	0.52		0.58	0.23		0.86	0.39		0.9	0.37	
Catholic	0.4	0.19	†	0.63	0.4		0.5	0.23		0.89	0.52		0.64	0.26		0.39	0.19	†	0.62	0.39		0.5	0.23		0.88	0.51		0.6	0.26	
Other	0.29	0.19	†	1.09	0.8		0.44	0.27		0.9	0.52		0.62	0.32		0.29	0.19	†	1.14	0.83		0.42	0.26		0.89	0.51		0.6	0.33	
Number of sexual partners	0.29	0.13	**	0.59	0.21		0.19	0.12	**	0.38	0.14	**	1.03	0.39		0.28	0.13	**	0.6	0.21		0.18	0.12	**	0.38	0.13	**	1	0.38	
Metropolitan residence																														
Non-SMSA (Ref)																														
Central city	0.88	0.32		1.58	0.85		1.51	0.65		2.32	0.95	*	0.98	0.42		0.88	0.32		1.58	0.83		1.52	0.65		2.32	0.95	*	1	0.42	
Other SMSA	0.64	0.21		0.97	0.47		0.67	0.26		1.44	0.55		0.73	0.26		0.64	0.21		0.97	0.46		0.68	0.27		1.45	0.55		0.7	0.27	
Disatis hormonal	0.93	0.27		2.01	0.74	†	0.27	0.1	***	1.49	0.44		0.97	0.3		0.93	0.27		2.05	0.73	*	0.26	0.1	***	1.48	0.43		1	0.3	
More children	0	0	***	1.66	0.86		0.93	0.38		1.3	0.46		0	0	***	0	0	***	1.69	0.85		0.89	0.37		1.27	0.45		0	0	***
Constant	3.1	3.56		0	0.01	***	2.76	3.2		0.27	0.28		0.07	0.08	*	3.11	3.58		0	0.01	***	2.78	3.24		0.27	0.28		0.1	0.08	*
N	1852												1852																	

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < 0.001$.

Note: Ref=reference category.

Source: See Table 1.

Table 4a: Relative risk ratios of different methods of contraception relative to no method, women aged 20-34

	Female Sterilization			Male Sterilization			LARCs			Other Hormonal			Non-Hormonal		
	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig
Educational homogamy (Ref)															
Woman more educated	0.60	0.19		0.32	0.10	***	0.42	0.12	**	0.48	0.14	*	0.28	0.10	***
Man more educated	0.42	0.14	**	0.65	0.19		0.85	0.22		0.93	0.23		1.18	0.45	
Age Homogamy (Ref)															
Woman older	0.43	0.13	**	0.52	0.15	*	0.43	0.11	***	0.49	0.12	**	0.41	0.15	*
Man older	0.68	0.46		0.21	0.17	†	0.19	0.09	***	0.34	0.20	†	0.00	0.00	***
Racial heterogamy	2.59	1.34	†	1.79	0.70		2.47	0.92	*	1.83	0.69		2.25	1.26	
Race/ethnicity															
White (Ref)															
Hispanic	1.26	0.58		2.82	1.00	**	2.12	0.77	*	2.31	0.75	*	1.44	0.74	
Black	0.64	0.28		1.27	0.48		0.35	0.13	**	0.38	0.12	**	0.15	0.09	**
Other	1.00	0.90		0.64	0.29		0.43	0.18	*	1.05	0.42		0.14	0.13	*
Age															
20-24	0.56	0.25		1.99	0.67	*	1.16	0.40		1.00	0.35		1.12	0.69	
25-34															
35-44 (Ref)															
Education															
Less than HS (Ref)															
HS	1.10	0.47		1.72	0.78		1.77	0.85		1.55	0.68		1.84	1.12	
Some College	1.29	0.72		4.50	2.36	**	4.02	2.11	**	3.88	2.01	**	6.41	4.31	**
College Degree	0.82	0.55		3.76	2.28	*	6.05	3.40	**	4.55	2.39	**	6.99	5.08	**
Labour Force Participation															
Non-participant (Ref)															
FT	1.52	0.51		1.94	0.69	†	2.00	0.66	*	1.35	0.42		2.71	1.19	*
PT	0.96	0.38		1.65	0.67		1.40	0.54		0.97	0.33		1.72	0.79	
Income															

<\$20,000	1.56	0.53		0.75	0.22		0.95	0.30		0.50	0.13	*	0.40	0.29
\$20,000-\$39,000 (Ref)														
\$40,000-\$75,0000	0.75	0.27		1.07	0.31		1.23	0.35		1.01	0.26		1.68	0.72
>\$75,000	1.02	0.43		1.25	0.51		1.03	0.37		0.96	0.34		2.60	1.40 †
Insurance														
None (Ref)														
Private	1.83	0.64 †		0.52	0.17 *		1.16	0.37		0.52	0.13 *		1.74	0.92
Public	1.25	0.46		0.96	0.34		1.79	0.68		0.75	0.26		1.51	1.06
Married	1.11	0.36		1.22	0.34		0.67	0.17		1.11	0.33		2.87	1.41 *
Children ever born														
None (Ref)														
One	6.55	7.49 †		2.84	1.20 *		0.41	0.13 **		0.63	0.21		0.37	0.22 †
Two	22.76	25.19 **		4.99	2.13 ***		0.41	0.14 *		0.63	0.23		1.06	0.56
Three	52.91	56.71 ***		6.57	3.15 ***		0.35	0.15 *		0.70	0.29		1.99	1.24
Religiosity														
Weekly attendance (Ref)														
Less than weekly	0.63	0.22		1.26	0.42		0.99	0.30		0.81	0.24		0.95	0.44
Never	0.58	0.23		1.00	0.43		0.83	0.32		0.71	0.27		0.83	0.49
Religious affiliation														
None (Ref)														
Protestant	1.19	0.48		0.83	0.37		1.53	0.55		1.48	0.57		0.96	0.51
Catholic	0.64	0.27		0.73	0.31		1.27	0.54		1.36	0.57		0.77	0.40
Other	0.36	0.23		1.47	0.74		1.47	0.69		1.30	0.66		0.58	0.43
Number of sexual partners	1.54	0.49		0.96	0.28		0.62	0.20		1.36	0.40		0.31	0.15 *
Metropolitan residence														
Non-SMSA (Ref)														
Central city	0.30	0.15 *		0.33	0.15 *		0.50	0.22		0.67	0.29		0.33	0.19 †
Other SMSA	0.54	0.27		0.40	0.17 *		0.71	0.28		0.84	0.36		0.49	0.27
Disatis hormonal	0.77	0.23		1.02	0.25		0.63	0.15 †		1.72	0.35 **		1.15	0.36
More children	0.00	0.00 ***		0.93	0.24		0.92	0.24		1.26	0.29		0.00	0.00 ***

Constant	0.56	0.72	0.53	0.57	6.87	6.70 †	2.28	2.38	1.02	1.51
N	2380									

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < 0.001$.

Note: Ref=reference category.

Source: See Table 1.

Table 4b: Relative risk ratios of different methods of contraception relative to no method, women aged 35-45

	Female Sterilization			Male Sterilization			LARCs			Other Hormonal			Non-Hormonal		
	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig	RRR	SE	Sig
Educational homogamy (Ref)															
Woman more educated	1.54	0.46		1.04	0.53		1.28	0.51		0.92	0.32		0.80	0.28	
Man more educated	0.94	0.31		1.10	0.52		1.20	0.48		1.23	0.43		1.20	0.40	
Age Homogamy (Ref)															
Woman older	1.20	0.37		0.97	0.40		1.04	0.36		1.18	0.36		1.10	0.34	
Man older	2.27	1.40		1.38	1.08		3.93	2.15 *		1.35	0.81		1.35	1.08	
Racial heterogamy	0.77	0.35		0.55	0.34		0.56	0.29		0.61	0.31		0.96	0.52	
Race/ethnicity															
White (Ref)															
Hispanic	1.26	0.49		2.04	1.09		1.62	0.84		2.11	0.81 †		1.10	0.47	
Black	1.30	0.61		0.90	0.58		0.84	0.34		1.10	0.51		0.18	0.10 **	
Other	0.80	0.35		0.92	0.60		0.44	0.27		2.91	1.36 *		0.42	0.22 †	
Age															
20-24															
25-34															
35-44 (Ref)															
Education															
Less than HS (Ref)															
HS	1.54	0.78		1.03	0.64		1.38	0.86		2.54	1.49		3.10	1.85 †	
Some College	2.36	1.14 †		4.62	2.72 *		3.63	1.78 **		5.34	2.73 ***		6.33	3.68 **	
College Degree	0.59	0.32		2.08	1.38		2.35	1.14 †		2.91	1.58 †		3.30	1.91 *	
Labour Force Participation															
Non-participant (Ref)															
FT	1.35	0.47		2.34	0.99 *		1.53	0.62		1.55	0.56		1.98	0.79 †	
PT	1.03	0.41		2.66	1.15 *		0.89	0.43		0.86	0.36		2.06	0.98	

Income											
<\$20,000	2.45	1.31 †	1.65	1.08	1.34	0.85	1.76	0.94	1.25	0.91	
\$20,000-\$39,000 (Ref)											
\$40,000-\$75,0000	0.80	0.29	1.23	0.59	2.05	0.97	0.63	0.24	1.13	0.44	
>\$75,000	0.97	0.42	1.64	0.92	1.70	0.98	0.69	0.32	1.28	0.55	
Insurance											
None (Ref)											
Private	0.62	0.26	0.26	0.13 **	1.89	0.95	0.63	0.27	1.32	0.69	
Public	0.41	0.22 †	1.08	0.72	1.85	1.41	0.36	0.25	0.42	0.31	
Married	1.03	0.38	3.56	1.67 **	0.75	0.34	2.34	0.99 *	2.05	1.03	
Children ever born											
None (Ref)											
One	1.20	0.74	4.21	3.70	0.60	0.31	1.11	0.49	1.65	0.83	
Two	9.15	5.64 ***	20.27	16.69 ***	1.70	0.87	2.50	1.19 †	6.16	2.91 ***	
Three	20.74	13.43 ***	12.94	10.84 **	1.05	0.54	2.59	1.33 †	5.01	2.41 ***	
Religiosity											
Weekly attendance (Ref)											
Less than weekly	1.76	0.52 †	4.24	1.85 ***	1.58	0.51	1.95	0.66 †	1.42	0.49	
Never	1.14	0.47	5.77	3.52 **	0.78	0.37	2.65	1.26 *	2.06	0.94	
Religious affiliation											
None (Ref)											
Protestant	0.80	0.33	0.91	0.50	0.60	0.24	0.89	0.41	0.96	0.39	
Catholic	0.40	0.19 †	0.62	0.39	0.50	0.22	0.87	0.50	0.64	0.26	
Other	0.33	0.19 †	1.09	0.82	0.43	0.27	0.84	0.48	0.61	0.32	
Number of sexual partners	0.31	0.14 **	0.63	0.21	0.19	0.12 **	0.40	0.14 **	1.05	0.39	
Metropolitan residence											
Non-SMSA (Ref)											
Central city	0.91	0.33	1.58	0.84	1.51	0.63	2.29	0.92 *	0.93	0.40	
Other SMSA	0.65	0.21	0.96	0.47	0.64	0.25	1.42	0.53	0.72	0.26	
Disatis hormonal	0.90	0.27	2.02	0.73 †	0.27	0.10 ***	1.50	0.44	0.97	0.30	

More children	0.00	0.00 ***	1.66	0.84	0.87	0.35	1.31	0.47	0.00	0.00 ***
Constant	3.93	4.67	0.01	0.01 ***	2.37	2.80	0.24	0.26	0.07	0.08 *
N	1852									

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < 0.001$

Note: Ref=reference category.

Source: See Table 1.