Male Education and Son Preference in India

by

Rebha Sabharwal

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Graduate Supervisory Committee:

Sarah Hayford, Chair
Victor Agadjanian
Scott Yabiku

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ABSTRACT

The study of son preference in India has been the focus of research for a few decades. The desire for sons leads to unfavorable consequences for daughters such as unequal access to resources, abortion, and female infanticide. Work on men's education and son preference is relatively scarce and this dissertation contributes to existing literature by exploring this relationship from a life course perspective. I have argued that education changes men's attitudes towards son preference by encouraging them to re-evaluate traditional gender roles and that this relationship is mediated by wealth. I use the National Family and Health Survey-III to examine fertility intentions and behaviors as measures of son preference. I have found support for some of my hypotheses. The findings from three studies walk through the different phases of reproduction for the Indian man. They show that son preference manifests itself at the beginning when there are no children, is strongly present after the birth of children, and then shows itself again at the end when the man wishes to stop childbearing. Being educated leads to the preference of sons being weaker and this is perhaps due to traditional gender roles being challenged. Wealth may mediate the relationship between men's education and son preference at the beginning, but does not act as a mediator once children are born.

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Chapter 1

INTRODUCTION

The purpose of this dissertation is to understand how son preference in India is

associated with men's education. This dissertation also looks at the mediating role of

wealth in this relationship. Son preference is a large part of India's fertility and that is

why it is necessary to know why it exists, what its consequences are and what factors

influence it. Numerous studies have been conducted on the relationship between female

education and reproductive health outcomes. Past research has extensively studied the

role of son preference in this relationship. Although some studies on developing countries

have been conducted on the characteristics of husbands or partners that influence

reproductive decisions, the literature on such matters is relatively less. A scarce amount is

known about how male education influences son preference in a country such as India

that exhibits a tradition of preferring sons over daughters. This dissertation helps to fill

the gap in the literature by exploring son preference in India from a male perspective.

Another contribution made by this dissertation is the exploration of son preference from a

life course standpoint. The data for this dissertation comes from the National Family and

Health Survey-III (NFHS-III) which was conducted in 2005-2006 under the supervision

of the Demographic and Health Surveys (DHS). This project consists of three inter-

related studies that explore the motivations behind son preference and how they are

connected to the education of men in India.

This chapter sets up the dissertation with an explanation of son preference and its

place in India, literature on male education and son preference, and the data used for the

analysis. Each of the following three analytic chapters contains a review of relevant

literature, methodology, results, and a discussion. The final chapter consists of a brief conclusion that summarizes and brings together the findings from the analytic chapters.

Chapter 2, "Male education, son preference, and fertility intentions of childless men", studies one aspect by which education can influence fertility intentions of Indian men. The aim of this chapter is to look at fertility intentions via the ideal number of children desired by childless men. The results of this study contribute to existing research on son preference by providing evidence of the fertility desires of Indian men with varying levels of education and mediation by wealth.

Chapter 3, "Male education, son preference, and intentions to stop childbearing among men with children", examines another aspect by which education can influence fertility intentions of Indian men. This chapter looks at fertility intentions via the desire for more children. It adds to current research by exploring fertility intentions within the context of existing children, different educational and wealth levels.

Chapter 4, "Male education, son preference, and contraceptive use among men who want to stop childbearing", looks at the effect of male education on fertility behaviors. The aim of this chapter is to look at fertility behaviors via current contraceptive usage for men who do not want any more children. This study contributes to literature on reproductive behaviors as well as provides us with a better understanding of characteristics that influence fertility control depending on the existing composition of children.

Chapter 5 brings together the results of these three analyses and goes into detail about what these results mean for India and provides a direction for future research.

Son preference is said to be present when an individual or couple indicates a preference for sons over daughters. This is not restricted to India alone; indeed it is a widespread cultural phenomenon that has been seen in some countries of East Asia, South Asia, Middle East and North Africa (Arnold, 1987; Cleland, Verrall, & Vaessen, 1983; Williamson, 1976). It is extensively found in India which is why it is important to understand what it is and what its consequences are. This preference for sons manifests itself though individual actions that at times lead to unfavorable consequences for daughters such as unequal access to resources, abortion, and female infanticide. It is important to look as these consequences as they provide explanations for why son preference is an important issue in many countries. Firstly, the desire for sons can lead to families having children until a desired number of sons have been born (Leone, Matthews, & Zuanna, 2003). This raises the fertility of the family and their family size increases. Some families do not have the resources to accommodate a larger family size and thus need to choose which children they wish to invest in. Very often, sons are given priority in health, nutritional, and educational resources thus leaving the daughters with limited resources. For example, research has shown that when parents have a strong son preference, they provide their daughters with inferior care in terms of food, prevention of diseases and accidents, and treatment of sick children (Fauveau, Koenig, & Wojtyniak, 1991; Muhuri & Preston, 1991; Nag, 1991; Pebley & Amin, 1991).

Secondly, apart from the demographic nature of son preference, this issue also has an impact on the sex-ratio. Over the past few decades, India has been faced with an unbalanced sex ratio that has become one of the biggest challenges faced by the country.

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There are many more boys than girls in India and this has become increasingly apparent with the release of the sex ratio numbers at regular intervals. As per the Indian census that is conducted every ten years, the number of girls per 1000 boys aged 0-6 years was 962 in 1981. This number was lowered to 945 in 1991 and even more to 927 in 2001 (Jha et al., 2006). In 2011 there was slight increase in the number of girls to 933 which perhaps denoted a hopeful upward swing for the future (Census of India, 2011). According to the most recent census, the sex ratio is lower in the urban areas than the rural areas (105 boys per 100 girls and 111 boys per 100 girls respectively). However these numbers vary from state to state with Kerala reporting a favorable 94 boys per 100 girls and Haryana checking in at 116 boys per 100 girls (Census of India, 2011). These two extremes can be attributed to the different frameworks in these societies with Kerala being highly matrilineal and Haryana being highly patrilineal.

India has demonstrated a cultural preference for boys and the most likely explanation for the unbalanced sex ratio is the abortion or female infanticide following a pre-natal sex determination or the birth of a baby girl. Though sex determination has been illegal in India since 1994, due to the easy access of ultrasound technology, the law is not often followed (Jha et al., 2006). Such actions are clearly translating an intention for sons into a definite fertility behavior with consequences for future generations. A balanced sex ratio is necessary for the stability of the entire marriage and family system, and a skewed sex ratio upsets this balance. Additionally, a biased sex ratio also further perpetuates the low status of women thus adding to gender inequality.

THEORIES OF SON PREFERENCE

To situate this phenomenon within a specific theory is difficult as the present literature does not contain any "grand theories" of son preference. However, past and current research does provide some explanations for its existence and this section of the dissertation will attempt to bring them together in a cohesive manner.

Eklund (2011) conceptualizes son preference in China as a social institution by using Turner's (1997) definition of an institution and Giddens' (1984) explanation of the structuration theory. According to Turner (1997), an institution is "a complex of positions, roles, norms, and values lodged in particular types of social structures and organizing relatively stable patterns of human activity with respect to fundamental problems in producing life-sustaining resources" (p.6). Giddens (1984) argues that structural factors such as norms, laws, institutions and so on influence human beings. However, human beings are also constantly challenging, renegotiating and resisting structural factors which lead them to alter social structures. This leads to social change which indicates that these structural factors are not always constant. Drawing together Turner's definition and Giddens' structuration theory, Eklund (2011) views son preference as an institution i.e. the desire for sons is based on values and norms that interact with political, social, economic, and cultural factors and this complex interaction moves beyond attitudes and shows itself through behaviors that favor boys over girls.

Patrilineality and patrilocality are features that develop from the above mentioned social systems and structures. These features influence the desire for sons by placing importance on the family as a patrilineal unit. In a culture that follows this line of thought, women are unable to substitute or supplement men. As a foundation of son

preference, patrilineality indicates various practices and rituals that need to be followed by the son of the family (Bossen, 2011; Greenhalgh, 1985). A study by Ebrey (1990) on the Chinese family has shown that the use of patrilineal surnames, the belief in the need for a male heir, and the worship of patrilineal ancestors are common features of patrilineality. Though not being unique to China, ancestor worship by the first born son is a strong religious belief and hence it is essential to have at least one son (Greenhalgh, 1985; Miller, 1987). In Vietnam for example, Belanger (2002) showed that if a wife was unable to conceive a male heir, adoption, a second wife or passing on the responsibilities to a nephew are acceptable alternatives. Another study in contemporary Vietnam found that the idea of patrilinearity means that boys are given a special place in the family and in the community (Rydstrom, 2002). However, patrilineality is not a concept that can only be found in Asia. Worshipping one's ancestors is not found uniquely in religion practices. For many years, noble and royal families practiced ancestor worship as a way to preserve their strength and power and used it as a political resource (Keightley, 1990). The transfer of last names from one generation to another is commonly practiced in most parts of the world (Ebrey, 1990). Overall, being a part of a patrilineal family unit means that boys are awarded more importance than girls and in some cases are seen superior to girls.

Patrilocality is a subset of patrilineality and is a concept that describes a system where married couples live with or near the husband's family. It is also a sense of the daughter belonging to her new family and thus providing little emotional and practical support to her own family. For example, studies in a rural Chinese village showed that many of the informants felt similarly about their married daughters (Eklund, 2011; Zhang

& Li, 2005). Such an attitude can be found in India as well where dowry is expected by the groom's family. This leads parents to view raising daughters as a loss to the family as they are expected to bring them up and then use household resources for their marriage. Thus, research has shown that due to the above mentioned reasons, parents do not think of raising daughters to be as rewarding as raising sons (Bossler, 2000; Judd, 1992; Watson, 1982). Additionally, at times when women get married, their status in that family depends on producing a male heir to carry on the lineage. This is especially important for those women who have moved in with their husband's family (Rydstrom, 2002). It must be noted though that the concept of patrilocality does not necessarily mean that the daughters are mistreated. In many parts of Eurasia, daughters are given access to their own family's resources via dowry while in some parts of China, daughters stayed in their natal home even after marriage and usually until the first child is born (Siu, 1993). Adhering to the patrilocal traditions simply means that the married couple is expected to live near the husband's family. Both patrilineality and patrilocality place an emphasis on sons by making women unable to substitute for men and by having traditions that are exclusive to sons.

This explanation of son preference as an institution is incomplete without addressing the gendered origins of this phenomenon. Societies in general have gender systems that value men over women. It is interesting therefore that only some of them undertake specific behaviors that influence reproductive outcomes. As mentioned in an earlier section of this dissertation, abortion and female infanticide are definite fertility behaviors that directly translate the preference for a son into an action. Why is this heavily prevalent in a society such as India or China but not in North America? What are

the features that are present in India or China that place an emphasis on sons? The inherent value of a son versus a daughter is perhaps the single most important aspect that pushes the balance in favor of the sons. This value depends on the contribution the son and the daughter make to the family. Performing household tasks and caring for family members are contributions of the daughters while labor that generates income and family status are those of the sons (Croll, 2000). In India specifically, sons are valued because of their various life functions. For example, higher economic utility of the sons stems from his future income, his future support for his parents in old age and his current/future assistance in agricultural production (Arnold, Choe, & Roy, 1998; Bardhan, 1988; Basu, 1989; Mamdani, 1973; Miller, 1981). Higher social utility is awarded by the kinship system as status and strength is given to families with sons and dowry payments are expected for his future marriage (Caldwell, Reddy, & Caldwell, 1989; Dyson & Moore, 1983; Kapadia, 1966; Karve, 1965). And finally, higher religious utility is given to sons as religious functions in Hindu culture require their participation for issues deemed important to the religion (Arnold, Choe, & Roy, 1998). Daughters on the other hand, are seen to be a liability because of dowry, costs of the wedding, search for a marriage partner at an early age, careful supervision due to the importance of chastity and transference of her family membership to her husband's family after marriage (Arnold, Choe, & Roy, 1998; Kishor, 1995). Overall, son preference is situated within the concept of a social institution that has features such as patrilineality and patrilocality and also within the greater utility of a son versus a daughter.

Though son preference is viewed as an institution and a cultural tradition, it needs to be examined at an individual level as the intentions and behaviors behind the desire for

sons occur on an individual level. As a social institution, sons might be encouraged by Indian tradition, but it is each individual or couple that decides the number of sons in their family unit. The desire to want more sons or the decision to abort the female fetus or to start using contraception after the birth of a son is made by the individual(s) concerned. Individual characteristics are associated with these decisions. For example, household structure may be of importance when it comes to the desire for sons. Women living in non-nuclear families often see their autonomy and their children controlled by the older women in the family (Barua & Kurz, 2001). Son preference might be higher in these traditional families as the younger women have diminished roles and opportunities. Woman's employment can also decrease son preference by making women economically valuable and by making them aware about their contributions to the household income thus leading them to value their daughters (Basu & Basu, 1991; Kishor, 1993). Household structure, employment and other characteristics such as education are individual level factors that have been seen to influence son preference. Though the desire for sons is described as a social institution, it is the individual characteristic that is analyzed and that is where a large portion of research is concentrated.

THE PLACE OF SON PREFERENCE WITHIN THE DEMOGRAPHIC TRANSITION

The discussion above has so far been on why son preference is important, what its consequences are and why it exists. While keeping in mind the importance of these explanations, it is important to remember that intentions are not behaviors. It is one thing for a family or a couple to feel that sons provide a higher utility than daughters but it is yet another for the same family or couple to undertake a behavior that ensures that they have the desired number of sons. Indian society has long favored sons due to the

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patriarchal family system and the increased utility of sons. However, the survival of sons at the expense of daughters is a significant desire that has translated into a specific behavior. Thus the question arises, what is driving this specific behavior? The answer may lie in the demographic transition (DT) theory. The DT theory has been a central theory regarding population change during the past few decades. The demographic transition is a "set of changes in reproductive behavior that are experienced as a society is transformed from a traditional pre-industrial state to a highly developed, modernized structure" (Coale, 1984, p.531). The occurrence of these changes are said to form the basic principles of the transition. This theory puts forward some basic stages that any country would go though while moving from a pre-industrial to a post-industrial state (Szreter, 1993). To explain briefly, societies shift from high fertility and high mortality to low fertility and low mortality by the end of the transition. Developed countries have already completed the DT, while developing and under developed countries are still at various stages of the transition (Chesnais, 1990; Szreter, 1993).

Regarding this issue of son preference, this desire for sons can differ for societies that are at different stages of the demographic transition. For example, in societies with high fertility, families may desire sons but this preference might not matter as contraceptive use is low and couples continue to have children irrespective of the number of sons and daughters they already have. Even if couples do limit their number of births, then the existing composition of children might not be relevant as they are likely to have a mix of boys and girls based on biological chance alone (Arnold, Choe & Roy, 1998). Since sons and daughters are already being born due to low contraceptive usage and consistently high fertility, there is no need for a couple to take special measures to ensure

the birth of a son. In societies with low fertility, couples would at most produce one or two children if any at all; even if they do not achieve the desired sex composition of their offspring (Arnold, Choe & Roy, 1998). However, in transitional countries such as India the effect of son preference on fertility becomes evident. In such a society, the desire for sons is present and at this stage of the transition, fertility is on the decline. However, parents may surpass their desire for ideal family size if they do not have the desired number of sons and daughters, thus increasing their fertility. In such situations, a larger family size denotes more competition for resources that are not only health related, but food and education related as well (Arnold, Choe & Roy, 1998). Research has also shown that where both son preference and such competition exists, the daughters that already exist are not the priority (Faveau, Koenig, and Wojtyniak, 1991; Muhuri & Preston, 1991; Nag, 1991; Pebley & Amin, 1991). If increasing family size is not feasible because of the manner in which the DT is progressing, families engage in specific behaviors such as abortion and female infanticide to ensure that they have their ideal family size and certain number of sons. Therefore, situating son preference within the demographic transition theory provides a better understanding of this cultural phenomenon and how desires are being translated into behaviors with serious consequences.

MALE EDUCATION AND SON PREFERENCE

The relationship between education and son preference has been largely explored in the context of female education. Research has generally shown that higher female education depresses son preference though at times a positive link has been shown (Arnold & Zhaoxiang, 1986; Chung & Das Gupta, 2007; Das Gupta, 1987; Pande & Astone, 2007; Rosenzweig & Schultz, 1982). Theories on female education and son

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preference conclude that female education depresses son preference due to increased

female autonomy, paths to employment and higher socioeconomic status (Dyson &

Moore, 1983; Lin, 2009). For instance, in their analysis of the Indian National Family and

Health Survey 1992-93, Pande & Astone (2007) concluded that women's education

especially at the secondary and higher levels is linked with weaker son preference

irrespective of desired family size. The authors postulate that there is something present

at the level of higher education that weakens son preference net of other factors such as

access to media and increased socioeconomic status. Women who are more educated

might be given more freedom and autonomy thus resulting in them viewing the utility of

sons and daughters in ways that are different than the traditional norms (Pande & Astone,

2007). These women might then demonstrate a weaker preference for sons as the value of

daughters in their eyes has increased. They might also make decisions on family size

based on the total number of children instead of only focusing on the total number of

sons. Other work has suggested that education gives women employment opportunities

and higher occupational positions which lead to economic independence from men.

Furthermore, employment also empowers and enlightens women (Lin, 2009). This

weakens their understanding of traditional gender roles and their belief in equal gender

role strengthens. Finally, education also improves socio-economic status that leads to

women challenging the domination of men in all social aspects of life (Lin, 2009).

Consequently, women leave behind the traditional view of sons being non-replaceable

and start seeing sons as an option rather than a necessity.

I postulate that these arguments are not as relevant to men as they are to women

since all men have status and autonomy relative to women. India is a patriarchal society

and men gather dividends such as autonomy in day to day matters, increased educational and employment opportunities, and a better socio-economic status. Whereas education helps women *attain* a certain level in these matters, men *are already* at that level and education propels them further in a direction they are already in. However, having autonomy, increased employment opportunities, and status does not make men question their role in society as it is part of the dividends they already have. Male education does not depress son preference because men have autonomy, increased employment opportunities and socio-economic status. Instead, this dissertation puts forward the notion that education changes men's attitudes towards son preference by encouraging them to reevaluate traditional gender roles.

The association between education and fertility has been well documented in the literature. Schooling can lead to the spread of western values that to an extent encourage small families (Caldwell, 1982; Caldwell, Reddy, & Caldwell, 1985) and it can also decrease the interaction with family members thus weakening family traditions (Thornton & Lin, 1994; Waite, Goldscheider, & Witsberger, 1986). Education spreads knowledge about various ways to limit fertility and encourages the use of contraceptive methods (Cochrane, Khan, & Osheba, 1990; Hermalin, 1983). Education is also thought to be a preparation for modern life and seen to influence fertility as attitudes, values and behaviors that are learned in school act together with life experiences to lower fertility (Fawcett & Bornstein, 1973). Finally, Notestein (1953) and Michael (1975) suggest that education can make a person more receptive to new ideas or increase the willingness to reevaluate previously held ideas.

Some of the above mentioned theories suggest that education changes the attitudes and values that individuals have about children. I argue that education also changes how men think about gender roles. I hypothesize that educating men encourages them to rethink gender roles which makes them receptive towards gender equality. When a man is educated, he is more likely to view sons and daughter equally and this will reflect in his fertility intentions and behaviors. There is something in the process and content of education that teaches men the value of women. According to Li and Lavely (2003), a learned husband is more likely to agree with egalitarian gender role orientations and would thus value sons and daughters equally, when compared to an illiterate husband.

Education can also influence son preference indirectly by being associated with higher income and more resources. Schooling can influence on other aspects of an individual's life such as income (Fields, 1980). Increases in wealth indicate increases in resources available, which may reduce gender bias through less competition of resources (Gaudin, 2011). There is conflicting evidence regarding the effect of income on son preference in India. Analysis using data from the first wave of the National Family and Health Survey (NFHS) in India has shown that wealth and economic development do not decrease son preference (Pande & Malhotra, 2006). Another analysis on the first and second waves of the NFHS has found weak support for an increase in wealth leading to decrease on son preference (Bhat & Zavier, 2003). As per this framework, men with more wealth are likely to demonstrate less of a preference for sons since they have enough resources to support all their children regardless of their sex. I theorize that an educated man will have enough wealth to support his daughters as well as his sons and

will be less likely to demonstrate a skewed gender preference. This gender neutral attitude will be seen in both his intentions and his behaviors since I expect a wealthy man to know that he has enough resources to take care of his current and future children. This is the mechanism through which I expect income to mediate the relationship between male education and son preference.

The focus on men is a central part of this dissertation. This approach is different from a large section of research that has focused on females and their reproductive behaviors. Demographers mainly concentrate on women because of puberty, menopause, duration of pregnancy, and a narrower range of reproductive years. Women are also easier to interview, are considered to give more accurate data, and are directly involved in reproductive events (Hertrich, 1998; Keyfitz, 1977; Shryock & Siegel, 1976). It is also not easy methodologically to combine husband's and wife's reproductive behavior variables in a single quantitative model (Wood, 1994) so research tends to focus on women only. From a sociological perspective, fertility is seen largely as a woman's domain (Greene & Biddlecom, 2000) due to the traditional understanding of the role of men. Women are believed to be closely tied to childbirth and nurturing thus leading to overlooking the role of men. Realizing that childbearing involves communication and cooperation between the husband and the wife, scholars have studied fertility from the perspective of couples.

Evidence from fertility studies suggests that couples may take fertility decisions together. For instance, Bankole (1995) finds that among the Yoruba of Nigeria, the fertility desires of both marriage partners are important for predicting the fertility of the couple. There has also been some work done by Bankole and Singh (1998) involving

married men and their wives in 18 different countries. Their study focuses on husband and wives, and their attitudes about fertility and contraception, and finds that husbands in Sub-Saharan Africa are likely to want larger families than their wives. On the most part though, couples tend to agree on whether they want more children or not. Regarding son preference specifically, research has been done on the preferences of husbands and wives being analyzed at the level of a couple. For example, Repetto's analysis (1972) used couple level characteristics and indicated that fertility decisions made by couples were influenced by economic costs and benefits that were related to children, rather than preference for one sex over the other. In their study of son preference in South Korea, Chung and Das Gupta (2007) include both the husband's and wife's education in their models and conclude that high levels of wife's and husband's education are associated with lower son preference.

Fertility studies have not studied men extensively and men have been referred to as the "neglected minority" (Coleman, 2000, p.31). Limited work suggests that husband's education can be as important as wife's education, especially when the contraceptive methods used are male oriented (E.g. vasectomy). Here the husband's education may be more important than his wife's education as he is directly responsible for contraception (Axinn & Barber, 2001). Furthermore, research done in Latin America, the Caribbean and the Arab world has shown that highly educated men tend to have a greater degree of fertility control in the area of contraception and this leads to lower marital fertility (Cleland & Rodriguez, 1988). The study of male characteristics exclusively as defining factors for son preference in India has been relatively untouched and I argue that studying men by themselves is of immense importance. There is information to be gathered from

studying men that is not present when we study women and there are two main reasons for this line of reasoning.

Firstly, in matters of fertility preferences, men can have desires that are different from their wives. For instance, research on prospective fertility desires of husband and wives has shown that fertility intentions are different for each of them. Mott and Mott (1985) interviewed couples in a Nigerian village and reported that husbands and wives responded differently to questions on fertility intentions. The authors concluded that fertility desires operate on an individual instead of a family level and that is why the responses of husbands and wives were not similar. Becker (1999) studied the unmet need of husbands and wives in Bangladesh, Zambia and the Dominican Republic and also observed similar differences. These fertility intentions of men cannot be captured by observing their wives only and so it is necessary to examine them separately with an analysis that focuses only on men.

Secondly, men's intentions might be more closely tied to fertility outcomes than women's preferences. Some scholars argue that gender inequality exists due to patriarchy and that patriarchal norms and institutions establish rules and patterns for the allocation of rights, goods, opportunities, and obligations between men and women (Baltiwala, 1994; Cain, 1993; Malhotra & Schuler, 2005). In a patriarchal society such as India, men are valued more than women thus leading to gender inequality. The allocation of power and resources in the family often favors men (Mason & Taj, 1987) as men are given a greater autonomy in decision-making. Though there are increased gender egalitarian values, men still have authority in the family when compared to women and are in a position to translate their intentions into behaviors. For instance, in other male-dominated

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and patriarchal societies such as Kenya, Ghana, Nigeria, Zambia, and Sudan, men have played an important role in reducing fertility rates. Other research has found that family planning choices and family size are frequently decided by men (DeRose & Ezeh, 2005; Dodoo, 1998; Isiugo-Abanihe, 1994; Khalifa, 1988; Lamptey, Nicholas, Ofosu-Amaah, & Lourie, 1978; Mbizvo & Adamchak, 1991). Haughton and Haughton (1995) also theorize that if households are patriarchal and if men prefer sons, then these households might demonstrate a higher level of son preference. Thus, I focus on the characteristics of Indian men in this dissertation as they are given authority under the patriarchal family system which allows them to influence fertility independent of women.

In summary, I expect education to have a direct effect on son preference by helping men re-evaluate traditional gender roles. This thinking though, might be mediated by income as increased resources reduce the need for favoring sons over daughters. I focus on men as there is information to be gathered from studying men that is not present when we study women. The following analytic chapters use these two frameworks to analyze the effect of male education on son preference via fertility intentions and behaviors. These analyses also demonstrate a life course perspective taken by this dissertation. They look at men at different stages of their reproductive career: before they have any children, their desire for more children after they have children, and their desire to stop childbearing after they have children. Examining the desire for sons from the start of the reproductive career to its end, will provide us with a better understanding of how this preference plays out in a family unit over time. The results from each stage offer valuable insight into the next stage, which in turn help us understand how fertility intentions and behaviors are linked to each other. For instance,

the first two stages are indicative of fertility intentions and demonstrate the thoughts of a man regarding future children. Men who do not have any children and men who have children are asked about future births. Their answers to these questions have an association with education. Educated men are expected to be unbiased in their desire for future children. This attitude is then expected to carry into the last stage of their reproductive career i.e. undertaking contraceptive behaviors that limit their fertility.

HOW IS SON PREFERENCE MEASURED?

The measurement of son preference has been a challenging task as it has been seen as a sensitive topic in many societies. Since the desire for sons is a cultural concept, researchers have used several different indirect and direct methods and they have been well documented for the past few decades (Bardhan, 1982; Das Gupta & Bhat, 1997; Haughton & Haughton, 1995; Leone, Matthews, & Zuanna, 2003). Research has shown that some countries in Asia and the Middle East have demonstrated varying degrees of preferring sons over daughters (Burgess & Zhuang, 2000; Filmer, 2005; Pande, 2003). In fertility matters for example, Haughton and Haughton (1995) state that son preference may be assumed if for any given number of sons and daughters, the family prefers an additional son to an additional daughter. Furthermore, if a family continues to have children until it reaches a desired number of sons and thereby raise their fertility, then that family can be seen to exhibit a form of son preference (Leone, Matthews, & Zuanna, 2003). Other work that has used the Demographic and Health Surveys has utilitized the ideal number of boys and girls as one of ways to show a preference for sons. If the ideal number of sons is greater than the ideal number of daughters, then the individual is said to exhibit son preference (Fuse, 2010; Obermyer, 1996; Pande & Astone, 2007). Another

direct measure of preferring sons over daughters is seen when there are cases of sex-selected abortions or female infanticide (Bardhan, 1982; Das Gupta & Bhat, 1997). Pre-birth discrimination is also seen with families undergoing illegal ultrasounds in order to make decisions for termination of the fetus (Burgess & Zhuang, 2000).

Research has also been done on indication of son preference in non-fertility matters. In a study on households in China, Burgess and Zhuang (2000) indicate that poor households exhibit a gender bias in matters of health and education with the disadvantage being towards the females. When compared to boys, girls in India are seen to have lower nutrition and lower immunization rates (Pande, 2003). Many North African, South Asian and Middle Eastern countries have seen lower school enrollment for girls as compared to boys (Filmer, 2005). Excess mortality among girls in numerous Asian countries also points towards preference for boys in these societies (Das Gupta, 1987; Muhiri & Preston, 1991; Yi et al., 1993). Hence, the literature documents many fertility as well as non-fertility matters that have been used to show that a desire for sons exists in that particular setting.

In this dissertation, I measure son preference via fertility intentions and behavior. I use the ideal number of boys and girls and the desire for additional children as measures of fertility intentions. Fertility behavior is determined by current contraceptive usage.

DATA

The data for this dissertation comes from the third National Family Health Survey (NFHS-III) conducted in 2005-2006 by the International Institute for Population Sciences (IIPS) in Mumbai. This national survey is undertaken every few years under the supervision of the Demographic and Health Surveys (DHS) which are an excellent source

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of data for many developing countries. The DHS cover a wide range of topics such as demographic information, indicators of socio-economic status, information on pregnancy and children, family planning, fertility issues, knowledge about HIV/AIDS, and sexual behaviors. The data provided by these surveys include household records as well as individual questionnaires for both men and women.

The NFHS-III has covered all 29 states in India that comprise of more than 99 percent of India's population. All women aged 15-49 and all men aged 15-54 were interviewed by a number of research organizations with the IIPS being designated as the nodal agency. A uniform sample design, along with questionnaires, field procedures, and procedures for biomarker measurements were used to ensure comparability and data quality. Information was collected from a nationally representative sample of 109,041 households, 124,385 women and 74,369 men. The fieldwork was carried out in two phases from November 2005 to August 2006. The main goals of the NFHS-III were to monitor health and family welfare programs, and policies that were being put into operation by the government, and to provide information on emerging health and family welfare issues. Three types of questionnaires were being used. The household questionnaire listed all usual residents in each sample household along with visitors who had stayed the night before. Demographic information was collected on each person of the household as well as information such as source of drinking water, toilet facilities, cooking fuel, ownership of livestock, health issues and so on. The women's questionnaire interviewed all women between of the ages of 15 and 49 who were usual residents of the sample household along with visitors who had stayed the night before. This questionnaire covered topics such as demographic characteristics, reproductive behavior and intentions,

marriage and cohabitation, general health, child health care practices, sexual life, HIV/AIDS and so on. The men's questionnaire interviewed all men between of the ages of 15 and 54 who were usual residents of the sample household along with visitors who had stayed the night before. This questionnaire was a subset of the women's questionnaire and also had some questions that were only asked to men such as male involvement in health care and attitude towards gender roles (International Institute for Population Sciences & Macro International, 2007). Based on these questionnaires, the NFHS-III has provided datasets for couples, households, women, men and HIV/AIDS. The couple's dataset was generated by linking the spouses from the male dataset and those from the female dataset. For my analyses, the men's dataset of 74,369 men and the couple's dataset of 39,257 couples will be used.

The education and wealth variables are the main focus of this dissertation. These variables were measured at the same time in both the men's and couple's dataset. In this dissertation, I assume that education is casually prior to wealth as education signifies earning potential which then leads to creation of assets.

Chapter 2

MALE EDUCATION, SON PREFERENCE, AND FERTILITY INTENTIONS OF

CHILDLESS MEN

As explained in the introductory chapter, I expect men's education to be

negatively associated with son preference because education encourages men to

reevaluate traditional gender roles. I expect that educated men think about boys and girls

being of equal value when compared to uneducated men. Furthermore, educated men are

also likely to have increased wealth which could mean that they do not view their

children as being in competition with each other for assets and thoughts about their future

children are not biased towards sons. For this analysis, I hypothesize that more educated

men will be more likely to desire an equal number of sons and daughters compared to

men with less education, who will desire more sons than daughters. I also hypothesize

that this relationship will be mediated by wealth.

OPERATIONALIZING FERTILITY PREFERENCES

A number of studies have examined gender preference for children, especially son

preference in countries such as India, China and South Korea. Most of these studies use

fertility behavioral measures such as imbalances in the sex-ratio, sex-selective abortions,

sex-differentials in infant and child mortality, sex-differentials in health matters,

differential contraceptive use depending on current sex composition, and birth interval

(Arnold, Choe & Roy, 1998; Clark, 2000; Repetto, 1972; Chowdhury & Bairagi, 1990;

Bandyopadhyay, 2003). However, in order to fully understand fertility behaviors with

regards to son preference, I suggest an initial analysis of fertility preferences and that is

the aim of this chapter. I examine fertility preferences by looking at the ideal gender

composition of future children. I assume that men have some idea of how many children they wish to have and what gender they prefer them to be. It is probable that this attitude might translate to prenatal or post natal gender specific behavior in the future; hence it is important to analyze current male preferences. Fertility preferences for this analysis are indicated by the use of two variables – ideal number of girls and ideal number of boys.

DATA AND METHOD

The data for this analysis comes from the National Family and Health Survey–III (NFHS-III) that was conducted in 2005-2006 in India under the supervision of the Demographic and Health surveys (DHS). For this analysis, I only include childless men. Fertility preferences among these men reflect pure ideals and are not influenced by characteristics of or experiences with existing children. I use the male dataset provided by the NFHS-III and my initial sample consists of 74,369 men. I exclude the men who have more than 0 children and thus left with a sample of 32,440 men. In order to test my hypotheses, dependent and independent variables were constructed as follows.

Primary Dependent Variable

The dependent variable for this analysis is a measure of son preference that is indicated by a man desiring more sons than daughters. This measure has been successfully used in articles that discuss preference using the DHS (Arnold, 1997; Fuse, 2010). In order to construct this variable, the two variables containing the ideal number of boys and girls were used. The values for ideal number of boys ranged from 0 to 12 and the values for ideal number of girls ranged from 0 to 9. There were 639 cases with missing values (around 2%) for these variables and their removal resulted in a sample of 31,801 men. I then proceeded to create a variable for son preference. If the ideal number

of boys is greater than the ideal number of girls, the man is assigned a 1. If the ideal number of boys is less than or equal to the ideal number of girls, then man is assigned a 0. This results in a dichotomous measure of son preference. Either the man desires more sons than daughters (1) or he does not (0).

Primary Independent Variables

Men's education and wealth index are the main independent variables for my hypotheses. As described earlier, I expect men's education and wealth to be associated with son preference. The original measure for men's education consisted of four categories i.e. no education, primary education, secondary education and higher education. These categories were kept as is and the missing values were removed resulting in a sample of 31,786 men. For the measurement of wealth, I used the wealth index operationalized by the NFHS-III. This index was created using a technique to assess the resources of the household without directly obtaining income and expenditure information from the respondents (Bingenheimer, 2007). In order to create the wealth index, the NFHS-III uses data from the household questionnaire. Information is collected on household assets such as consumer items (television, bicycle, and car), type of household construction, water access and sanitation facilities. Since this information is collected from each household, the wealth index represents facilities used by each household. Regardless of a man's age or marital status, this index represents the wealth of the household in which he resides. Principal components analysis is used to analyze these assets and households are then assigned a score. This score is also classified into five wealth quintiles i.e. poorest, poorer, middle, richer, and richest. The lowest quintile corresponds to the poorest 20% while the highest quintile signifies the richest 20%. Thus

the NFHS-III contains a continuous (score) and a categorical (quintiles) measure of the wealth index. I ran models taking both these classifications into account. I first tested models with the wealth index as a score in its linear and quadratic form and then with five categories of the wealth index. The latter demonstrated a better model fit when compared to the linear and quadratic models. However the coefficients of the model with the five categories were not showing much variation between the richest and richer categories, and the poorest and poor categories. Hence, I combined these categories and ran models with three categories of the wealth index i.e. rich, middle, and poor. There were no missing values for this variable and the sample remained at 31,786 men.

Control Variables

Fertility preferences as indicated by the ideal number of children can be influenced by a number of other factors as well. For example, it is more beneficial to have a son when the family resides in a rural area as sons can provide labor for agricultural tasks (Arnold & Zhaoxiang, 1986). Thus, if the man stays in a rural area and is thinking about future children, he might be inclined to specifically think about the number of sons he wants to have. The data provided by the NFHS-III provided direct information on whether the respondent's current place of residence was an urban or rural area and I retained this measure as is. Marital status is another predictor of fertility attitudes as being married can be seen to be a prerequisite for having children in a country such as India (Bloom & Reddy, 1986). Never married and married men may have similar attitudes regarding their future children as both groups are childless. Though not very common, widowed and divorced men may also have prospects of childbearing in the future and are included in the sample. The original categories of the marital status

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variable provided by the NFHS-III were kept as is. Though India is a predominantly Hindu country, there are also large sections of Muslims and Christians that have beliefs native to their religion. The Hindu religion emphasizes religious reasons for sons thus giving more weight to the birth of a boy than of a girl (Vlassoff, 1990). Giving dowry to the groom's family is common in Hindu marriages while Muslims practice the tradition of bride price (Bhat & Zavier, 2003). Christians are not seen to have such practices thus the desire for sons may be stronger amongst Hindus than Muslims. When thinking about the number and gender of his unborn children, a Hindu man is probably conscious of the religious responsibilities and dowry benefits of a son as he is a son himself while a Muslim man is assumedly aware of the tradition of bride price and the economic benefits of daughters. The original measure for religious affiliation consisted of ten different categories with Hindu, Muslim and Christian dominating the sample. The remaining seven categories of Sikh, Buddhist, Jain, Jewish, No Religion, Donyi Polo, and Other collectively make up 4.7% of the sample. Since religion is added as a control variable, my interest is in the major three religions of India. I collapsed the above mentioned seven categories into a category named "Other". I am thus left with 31,783 men and four categories of Hindu, Muslim, Christian and Other for analysis. The age of the man has also been included as a control as I intend to capture the cohort effects on the preference of sons i.e. are there any differences between older and young men in their thoughts about the ideal number of children? Older men who are childless could be under more societal pressure to produce sons as compared to younger men and thus might think about the gender of their future children differently. The original variable for age provided by

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the NFHS-III has age coded in five year groups from the ages of 15-54. These have been retained for the analysis.

Research has shown that the degree of son preference is stronger in the north, north central and western regions of India (Lahiri, 1974; Bhatia, 1978; Das Gupta, 1987; Mutharayappa et al., 1997) and this is because of lower female autonomy in these regions. Northern India especially has deep-seated patriarchal traditions. Men growing up in northern India are likely to have grown up with these traditions and are likely to have accrued the dividends that have been discussed early in the dissertation. Consciously or unconsciously they might lean towards sons as one, sons are a societal expectation, and two, they wish to pass on their dividends to their male heirs. The NFHS-III provides information on the state of residence for each man. Since past literature has discussed differences in son preference by overall geographic area, I assembled the information given by the NFHS-III into the region of the country to which each state belongs to using guidelines from the most recent NFHS-III report (IIPS and Macro International, 2007) i.e. north, central, east, northeast, west, and south.

Living in a nuclear family is seen to decrease the strong desire for a son as this type of family unit is not under constant influence of other family members as compared to a non-nuclear family (Pande & Astone, 2007). Thus a man living in a non-nuclear family may be surrounded by family members who encourage sons and that may have some bearing on his attitude towards his ideal number of boys and girls. The data provided by the NFHS-III puts men into the categories of nuclear and non-nuclear families and I keep this measure as is.

Finally, access to media such as a radio and television can not only provide information about the modern way of life (Pande & Astone, 2007), but can also expose men to the female-child friendly advertisements running on these mediums. The combination of such information provided by these media outlets could affect the man's mindset regarding the value of each sex and this may result in an absence of son preference. The categories provided by the NFHS-III for these variables were kept as it and after removal of the missing cases the sample was reduced to 31,778 men. Logistic regression models were fitted in SAS to analyze the dependent variable i.e. exhibiting son preference by means of the ideal number of boys being greater than the ideal number of girls.

RESULTS

Bivariate Associations

Overall, 14% of men in the analytic sample report son preference. Table 1 presents general characteristics of men including those that exhibit son preference. The first column provides some basic descriptive statistics regarding the variables. The largest groups of men (64.5%) have a secondary school education, with higher education being the next largest category (16.9%). Because the wealth categories are defined as quintiles, the full sample by construction included 40% of men in the "rich" category (the top two quintiles). Restricting the analytic sample to men without children produces a wealthier sample; 61% of the analytic sample belongs to the rich category. A little over half the men live in urban areas. Hinduism is the dominant religion with 72.2% of the men identifying themselves as being Hindu. Muslims and Christians together make up 20% of the sample. Around 85% of men report themselves as never being married while 14% of

them are currently married. Since fertility in India is primarily marital, removing

childless men also removed a large proportion of married men. A large section of the

sample is between the ages of 15-29. Belonging to south India is true for one-fourth of

the men with central (19.7%) and north-east (18.4%) following behind. Men are almost

equally divided between living in a nuclear or a non-nuclear family. Watching television

almost every day is popular with around 63% of the men while listening to the radio

everyday cuts this percentage in half.

The second column of Table 1 provides information demonstrating the

relationship between the variables and son preference. On the whole, men with higher

education report lower levels of son preference. The can be seen in a comparison between

men with no education and men with higher education. 23.4% of men with no education

exhibit son preference while men with higher education show a much lower percentage

(9.1%). This trend also continues while examining the wealth index. Around 21% of men

in the "poor" category exhibit son preference while the men in the "rich" category exhibit

half of that number. The percentage for exhibiting son preference was also higher among

the individuals living in rural areas. Men who have never been married and men who are

married show are almost at the same level regarding their desire for sons. With regards to

religion, roughly one-fourth of Christians were found to demonstrate son preference

while Hindus show to have less than half that number. Older men exhibit greater son

preference than younger men while almost a quarter of men living in the north-east desire

more sons than daughters. Men living in nuclear and non-nuclear families demonstrate

similar percentages regarding the desire for sons.

Table 1

Characteristics of men who exhibit son preference, N=31,778

Characteristic		Percentage	Percent exhibiting son preference
Education			
	None	7.4	23.4
	Primary	11.2	20.2
	Secondary	64.5	13.6
	Higher	16.9	9.1
Wealth Index			
	Poor	18.8	21.2
	Middle	19.6	15.6
	Rich	61.6	11.7
Residence			
	Rural	43.9	17.2
	Urban	56.1	11.9
Marital Status			
	Never Married	85.2	14.1
	Married	14.0	15.0
	Widowed	0.2	20.2
	Divorced	0.2	20.2
	Not living together	0.4	22.6
Religion			
	Hindu	72.2	11.9
	Muslim	13.8	19.4
	Christian	9.3	25.4
	Other	4.7	12.8
Age			
	15-19	38.9	16.0
	20-24	32.3	13.6
	25-29	17.4	11.6
	30-34	6.4	12.7
	35-39	2.7	14.1
	40-44	1.4	16.5
	45-49	0.9	18.0
	50-54	0.5	17.1

Table 1 Continued

Characteristics of men who exhibit son preference, N=31,778

Characteristic	Percentage	Percent exhibiting son preference
Region		
North	11.3	12.2
Central	19.7	17.5
East	8.1	14.6
North-East	18.4	24.2
West	16.3	9.2
South	26.0	8.7
Family Structure		
Non-nuclear	51.4	14.6
Nuclear	48.6	13.9
Frequency of watching television		
Not at all	7.8	21.3
Less than once a week	12.7	19.9
At least once a week	16.4	17.8
Almost everyday	63.1	11.4
Frequency of listening to radio		
Not at all	27.0	14.0
Less than once a week	22.3	15.4
At least once a week	20.5	14.8
Almost everyday	30.2	13.2

Men who watch television everyday report lower levels of son preference (11.4%) while men who do not watch television at all report higher levels of son preference (21.3%). Finally, listening to the radio yields similar numbers across all categories.

Thus, the patterns described above highlight some important factors that are associated with son preference. Most importantly, this brief description shows the differences in son preference by the level of education.

Multivariate Analysis

Results of three logistic regression models that predict son preference are presented in Table 2. The baseline model tests the effects of education on the ideal number of boys and girls only, with the control variables added in model 2. In the final model, the wealth index is included. The results of these models were originally calculated as log-odds with the exponentiated odds ratio being displayed in all three models. An odds ratio greater than one indicates a positive association with son preference relative to the reference category and an odds ratio less than one indicates a negative association. Confidence intervals are shown inside parentheses.

Table 2 presents the results of three models that deal with my hypotheses. My first hypothesis predicts that more educated men will be more likely to desire an equal number of sons and daughters compared to men with no education, who will desire more sons than daughters. Model 1 demonstrates that when compared to men with no education, men with primary, secondary and higher education are less likely to desire more boys than girls. To be more specific, men with primary education have 17% lower odds (1-0.83=0.17) of showing a desire for sons when compared to men with no education. Men with secondary education have 49% lower odds (1-0.51=0.49) and men with higher education have 68% lower odds (1-0.32=0.68) of exhibiting son preference when compared to men with no education. These results suggest that having at least some education is associated with how men think about their ideal number of boys and girls i.e. the results from model 1 lend support to my first hypothesis.

Table 2

Logistic regression predicting desire for more boys than girls by odds ratios with confidence intervals, N=31,778

Characteristic	Model 1	C.I.	Model 2	C.I.	Model 3	C.I.
Intercept	0.30		0.28		0.30	
Education						
None(ref)						
Primary	0.83**	(0.73,0.94)	0.88*	(0.77,1.00)	0.90	(0.79,1.03)
Secondary	0.51***	(0.46,0.57)	0.65***	(0.58,0.73)	0.71***	(0.63,0.79)
Higher	0.32***	(0.28,0.37)	0.51***	(0.44,0.60)	0.57***	(0.49,0.66)
Residence						
Rural(ref)						
Urban			0.82***	(0.76,0.88)	0.89**	(0.83,0.97)
Religion						
Hindu(ref)						
Muslim			1.64***	(1.50,1.79)	1.69***	(1.54,1.84)
Christian			1.56***	(1.39,1.74)	1.60***	(1.42,1.79)
Other			0.97	(0.82,1.14)	0.98	(0.84,1.16)
Marital Status						
Never married(ref)						
Married			1.13**	(1.02,1.25)	1.11*	(1.00,1.23)
Widow			1.23	(0.68,2.21)	1.20	(0.67,2.17)
Divorce			1.49	(0.81,2.76)	1.46	(0.79,2.70)
Not living together			1.54	(0.97,2.45)	1.48	(0.93,2.34)

Notes. *- p<.05; **- p<.01; ***- p<.001; C.I. - Confidence Intervals

Table 2 Continued

Logistic regression predicting desire for more boys than girls by odds ratios with confidence intervals, N=31,778

Characteristic	Model 1	C.I.	Model 2	C.I.	Model 3	C.I.
Age						
15-19(ref)						
20-24			0.88***	(0.81,0.96)	0.89**	(0.83,0.97)
25-29			0.74***	(0.66,0.82)	0.75***	(0.68,0.84)
30-34			0.79***	(0.68,0.92)	0.81**	(0.69,0.94)
35-39			0.75**	(0.60,0.93)	0.78*	(0.62,0.96)
40-44			0.87	(0.66,1.15)	0.91	(0.69,1.20)
45-49			1.00	(0.71,1.40)	1.04	(0.74,1.46)
50-54			0.86	(0.57,1.31)	0.90	(0.59,1.37)
Region						
North(ref)						
Central			1.42***	(1.26,1.61)	1.35***	(1.19,1.53)
East			1.16*	(1.00,1.35)	1.10	(0.94,1.28)
North-East			1.98***	(1.74,2.25)	1.93***	(1.70,2.20)
West			0.83**	(0.72,0.96)	0.81**	(0.70, 0.93)
South			0.74***	(0.65,0.84)	0.71***	(0.62,0.81)
Family Structure						
Non-nuclear(ref)						
Nuclear			0.97	(0.91,1.04)	0.96	(0.90,1.03)

Notes. *- p<.05; **- p<.01; ***- p<.001; C.I. - Confidence Intervals

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Table 2 Continued

Logistic regression predicting desire for more boys than girls by odds ratios with confidence intervals, N=31,778

Characteristic	Model 1	C.I.	Model 2	C.I.	Model 3	C.I.
Frequency of watching Television						
Not at all(ref)						
Less than once a week			0.95	(0.83,1.08)	0.97	(0.85,1.11)
At least once a week			0.89	(0.78,1.01)	0.94	(0.83,1.07)
Almost everyday			0.72***	(0.64,0.81)	0.80**	(0.70,0.90)
Frequency of listening to radio						
Not at all(ref)						
Less than once a week			0.97	(0.88,1.06)	0.96	(0.87,1.06)
At least once a week			0.96	(0.87,1.06)	0.96	(0.87,1.05)
Almost everyday			0.96	(0.88,1.05)	0.96	(0.88,1.05)
Wealth Index						
Poor(ref)						
Middle					0.76***	(0.69,0.85)
Rich					0.72***	(0.65,0.80)
AIC	25715.0		24708.2		24672.7	
SC	25748.5		24967.6		24948.8	
-2 Log L	25707.0		24646.2		24606.7	

Notes. *- p<.05; **- p<.01; ***- p<.001; C.I. - Confidence Intervals

My assumption for this hypothesis was that education helps men reevaluate traditional gender roles and become open to new ideas. In the context of son preference, I expected men with some education to rethink the importance of sons and old traditions and thus be less likely to prefer sons over daughters.

Model 2 adds the control variables to the previous model. Controlling for all other independent variables, men with primary, secondary and higher education are less likely to prefer boys over girls as compared to men with no education. The control variables in Model 2 show interesting results as well. Individuals living in an urban area have 18% lower odds of exhibiting son preference compared to men in rural areas. Muslims and Christians have higher odds of exhibiting son preference (64% and 56% respectively) when compared to Hindus. Married men are seen to be more likely to desire sons over daughters and compared to adolescent men (15-19 years), men between the ages of 20-39 are less likely to exhibit son preference via fertility preferences. Other variables such as region of India and frequency of watching television have also yielded significant results. Compared to North India, men from central India and north-east India have 42% and 98% higher odds of desiring more sons than daughters and men from southern India have 26% lower odds of exhibiting son preference. Finally, watching television everyday does decrease the likelihood of preferring sons over daughters.

I now turn to my second hypothesis that predicts that the relationship between education and the ideal number of boys and girls will be mediated by wealth. Model 3 adds the wealth index to the previous model which may help remove any spurious relationship between education and son preference. The significance levels and the size of the secondary education and higher education coefficients remain largely the same.

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However, the coefficient for primary education has lost its significance suggesting that wealth may be functioning as a mediator. Regarding the categories of the wealth index, I find that men belonging to the middle category have 24% lower odds and men belonging to the rich category have 28% lower odds of demonstrating a desire for more boys than girls when compared to men in the poor category. Controlling for education, wealth is seen to be associated with son preference suggesting that increases in wealth could mean an increase in available resources which in turn may reduce the negative bias towards daughters as there will be less competition between resources, and assets will be available to provide for both sons and daughters. This model partially supports my second hypothesis as the coefficient for primary education did lose its significant and the coefficients for secondary and higher education did slightly increase in size and they remained significant. Thus the relationship between education and ideal number of boys and girls could be mediated by wealth. Educated men have enough resources to provide for all their children whatever their sex may be.

DISCUSSION

The literature on education and son preference has overall determined that education depresses son preference. This study analyzed childless men and the relationship between men's education and son preference via the ideal number of boys and girls. It was found that men with at least some education were less likely to desire more boys than girls. It is likely that there is something in the content of what men are being taught in school and this enables them to challenge traditional gender roles and be accepting of the ideas of gender equality. Son preference is a strong tradition in India and any discussion on fertility intentions will include this tradition. Educating men may be the first step towards challenging this institution as educated men are more likely to question the older ways and see the value of daughters. Furthermore, wealth may be a mediating factor in this relationship between education and ideal number of boys and girls indicating that when there are enough resources, competition for assets decreases and the chances of sons and daughters being equally provided for increase.

I examined childless men in this sample as I wanted an unbiased view of fertility intentions. Men who already have children might base their future fertility intentions based on their current composition of children which would not allow me to capture unaffected ideals. In India, childless men are mostly unmarried men, thus a large proportion of married men are not part of the final sample. Studies on women's education and son preference often control for husband's education but since I have a majority of unmarried men, I am unable to control for wife's education. Chapter 3 and Chapter 4 will be exploring this factor in greater detail.

The results of this study also show that associations between some control variables (such as area of residence, state of residence and watching television) and son preference are largely in line with the literature. The results on religion were not as expected as there is an increased likelihood of Muslims and Christians to desire sons when compared to Hindus. This can be explained in part by their status as minority groups (see Goldscheider, 1971). Muslims and Christians may see increased fertility and increased desire for sons as a means to establish their identity. Mimicking the majority group (Hindus) in the matter of sons, may give them a sense of security and acceptance.

In summary, this analysis has concluded that men's education is related to fertility preferences as measured by ideal number of children. Educated men are less likely to exhibit son preference and this association is only weakly mediated by the availability of more resources. Since wealth was not found to be a strong mediator of son preference, female autonomy could be an alternative mediator that can be looked at in future analyses. Other aspects of men's education can also be looked at such as the content of what they are being taught, schooling in co-educational schools or being taught by female teachers.

Chapter 3

MALE EDUCATION, SON PREFERENCE, AND INTENTIONS TO STOP

CHILDBEARING AMONG MEN WITH CHILDREN

The introductory chapter has discussed how I expect men's education to be negatively associated with son preference. Educated men are expected to think about their sons and daughters as being of equal value when compared to uneducated men and this relationship is expected to be mediated by wealth. This chapter analyses another aspect of fertility intentions by looking at the desire for more children as a measure of son preference. The composition of existing children is used to identify son preference in this analysis which is why I limit the sample to men who have at least one child.

Son preference in men indicates that men want more sons than daughters. Given the same number of total children, this means that men with fewer sons are likely to want more children. These men may be willing to accept a larger family size in order to attain the desired number of sons (Stash, 1996). It is likely that men who have enough sons do not want any more children. Regarding the role of education, men with no formal schooling tend to subscribe to traditional gender roles where sons are more valued than daughters and I accordingly expect them to want more children if they do not have enough sons. Based on this discussion, I hypothesize that men with greater number of girls are more likely to want more children and this association is stronger for men with no education than for men with at least some education. I also hypothesize that this relationship will be mediated by wealth.

OPERATIONALIZING FERTILITY INTENTIONS

As mentioned above, I use desire for more children as a measure of fertility intentions. I use the current composition of children (number of living sons and number of living daughters) to assess son preference.

DATA AND METHOD

The data for this analysis comes from the National Family and Health Survey–III (NFHS-III) that has been conducted in 2005-2006 in India under the supervision of the Demographic and Health surveys (DHS). I use the couple's dataset provided by the DHS and my initial sample consists of 39,257 men (as part of 39,257 couples). Since I am viewing son preference in the context of currently living children, I remove men that do not have any children and this leaves an analytic sample of 35,550 men. In order to test my hypotheses, I create variables from questions asked to the husband. Dependent and independent variables were constructed as follows.

Primary Dependent Variable

The dependent variable for this analysis is a measure of son preference that is indicated by a man desiring more children. The NFHS-III provides the original variable of wanting more children with the categories of wants within two years, wants after two plus years, wants but unsure about timing, wants no more, undecided, infecund, sterilized, and missing. Since I am analyzing the desire for more children, I remove infecund, sterilized, and missing men. I also remove the men who are undecided as they do not change the models in any manner. Removal of these men resulted in a sample of 27,003 men. I create a binary variable where a man want no more children (0) or he does (wants within two years, wants after two plus years, wants but unsure about timing =1).

Primary Independent Variables

Composition of existing children is used to link the desire for more children to son preference. The NFHS-III has variables for the number of sons at home and the number of sons elsewhere. I combine these two variables for the total number of living sons. Similarly, I combine the number of daughters at home and the number of daughters elsewhere for the total number of living daughters. I then proceed to create the current composition of children with three categories. Either the man has more boys than girls (0), or he has more girls than boys (1) or he has an equal number of girls and boys (2). These three categories are then converted to dummy variables and there are no missing cases. To assess the role of gender composition of children net of family size, all models also control for total parity.

Men's education and wealth index are the main independent variables for my hypotheses. The original measure for men's education consisted of four categories i.e. no education, primary education, secondary education, and higher education. These categories were kept as is and 7 missing cases were removed resulting in a sample of 26,996 men. For the measurement of wealth, I used the wealth index operationalized by the NFHS-III. The creation of this index by the NFHS-III is explained in Chapter 2. I ran models taking both the categorical and continuous classifications into account. I first tested models with the wealth index as a score in its linear and quadratic form and then with five categories of the wealth index. The latter demonstrated a better model fit when compared to the linear and quadratic models. However the coefficients of the model with the five categories were not showing much variation between the richest and richer categories and the poorest and poor categories. Hence, I combined these categories and

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ran models with three categories of the wealth index i.e. rich, middle and poor. There were no missing values for this variable and the sample remained at 26,996 men.

Control Variables

Fertility intentions as indicated by the desire for more children can be associated with a number of other factors as well. There is a possibility that wife's education is contributing to the desire for more children and controlling for it will let us see the effect of husband's education independent of wife's education. The categories for wife's education are similar to that of her husband's education. I include the age of the man as a control to capture the cohort effects on the preference of sons. The original variable for age provided by the NFHS-III has age coded in five year groups from the ages of 15-54. These have been retained for the analysis. In a rural area, it is more beneficial to have sons for agricultural labor (Arnold & Zhaoxiang, 1986), thus if a man feels that he does not have enough sons, he is likely to desire more children. The data provided by the NFHS-III provided direct information on whether the respondent's current place of residence was an urban or rural area and I retained this measure as is.

Religion is associated with the desire for children as well. The Hindu religion emphasizes the birth of sons and giving dowry to the groom's family is common in Hindu marriages (Vlassoff, 1990; Bhat & Zavier, 2003). Muslims practice the tradition of bride price (Bhat & Zavier, 2003) and Christians are not seen to have such practices. The original measure for religious affiliation consisted of ten different categories with Hindu, Muslim and Christian dominating the sample. The remaining seven categories of Sikh, Buddhist, Jain, Jewish, No Religion, Donyi Polo, and Other collectively make up 5.1% of the sample. Since religion is added as a control variable, my interest is in the major three

religions of India. I collapsed the above mentioned seven categories into a category named "Other" and removed the missing cases. I am thus left with 26,987 men and four categories of Hindu, Muslim, Christian and Other for analysis.

Research has shown that the degree of son preference is stronger in the north, north-central and western regions of India (Lahiri, 1974; Bhatia, 1978; Das Gupta, 1987; Mutharayappa et al, 1997) and this is because of lower female autonomy in these regions. Men growing up in northern India might lean towards sons as one and may desire more children if they feel that they do not have enough sons. The NFHS-III provides information on the state of residence for each man. Since past literature has discussed differences in son preference by overall geographic area, I assembled the information given by the NFHS-III into the region of the country to which each state belongs to using guidelines from the most recent NFHS-III report (IIPS and Macro International, 2007) i.e. north, central, east, northeast, west, and south.

Living in a nuclear family is seen to decrease the strong desire for a son as compared to a non-nuclear family (Pande & Astone, 2007). Thus a man living in a non-nuclear family may be surrounded by family members who encourage more children if there are not enough sons. The data provided by the NFHS-III puts men into the categories of nuclear and non-nuclear families and I keep this measure as is. Finally, access to media such as a radio and television can not only provide information about the modern way of life (Pande & Astone, 2007), but can also expose men to the female-child friendly advertisements running on these mediums that result in an absence of son preference. The categories provided by the NFHS-III for these variables were kept as it and after removal of the missing cases; the sample was reduced to 26,519 men. Logistic

regression models were fitted in SAS to analyze the dependent variable i.e. exhibiting son preference by means of the ideal number of boys being greater than the ideal number of girls.

RESULTS

Bivariate associations

Overall, 27.2% of men in the analytic sample report a desire for more children. Table 3 presents general characteristics of men including those that desire more children. The first column provides some basic descriptive statistics regarding the variables. Around 41% of men have more boys than girls and around 36% of men have more girls than boys. The largest subgroup of men has secondary school education (47.8%). Because the wealth categories are defined as quintiles, the full sample by construction included 40% of men in the "rich" category (the top two quintiles). Restricting the sample to men who have at least one child produces a wealthier sample; 53% of the analytic sample belongs to the rich category. Around 37% of the wives have no education and are followed by 38% of wives that have secondary education. Men under age 25 make up a very small portion of the sample. Roughly 52% live in rural areas. Hinduism is the dominant religion with 72.5% of the men identifying themselves as being Hindu. Muslims and Christians together make up around 20% of the sample. Belonging to south India is true for 22% of the men with central (21.7%) and north-east (19.6%) following behind. 57% of men live in nuclear families. Watching television almost every day is popular with around 50% of the men while listening to the radio everyday almost cuts this percentage in half.

The second column of Table 3 provides information demonstrating the relationship between the variables and the desire for more children. When looking at the current composition of children, we see that around 21% of men who have more boys than girls desire more children. This number is higher for men who have more girls than boys (32%). On the whole, similar proportions of men with no education and primary school desire more children. Men with secondary education and higher education show a higher percentage (23.4% and 23.6% respectively). This trend also continues while examining the education of the wife. Around 27% of wives with higher education desire more children while roughly 19% of wives with no education desire more children. This trend is likely to be compositional, as more educated men and women are currently having fewer children. Around 25% of men in the "poor" category report desiring more children while the men in the "rich" category exhibit a lower number (21.3%). Men living in rural and urban areas did not report very different percentages of the desire for more children while roughly 85% of adolescent men did. With regards to religion, roughly 31% of Christians and 25% of Muslims were found to desire more children while Hindus show a lower number. 16% of men living in north India want more children while men in north-east India show the highest number of 28%. Almost 30% of men living in non-nuclear families desire more children. Finally, an equal percent of men who watch TV everyday and listen to the radio report a desire for more children. Thus, the patterns described above highlight some important factors that are associated with a desire for more children in this sample of men. Most importantly, this brief description shows the differences in fertility behavior by the level of education and the desire for more children.

Table 3

Characteristics of men who desire more children, N=26,519

Characteristic	Percentage	Percent desiring more children
Current composition of children		
Boys>Girls	40.8	21.2
Girls>Boys	36.2	32.2
Girls=Boys	23.0	10.1
Husband's Education		
None	18.0	21.3
Primary	17.0	21.1
Secondary	47.8	23.4
Higher	15.2	23.6
Wealth Index		
Poor	27.1	25.0
Middle	19.7	23.0
Rich	53.2	21.3
Wife's Education		
None	37.4	19.4
Primary	15.0	20.5
Secondary	38.1	25.6
Higher	9.5	27.0
Age		
15-19	0.2	85.4
20-24	4.6	70.2
25-29	14.3	50.3
30-34	19.6	31.3
35-39	20.4	16.9
40-44	17.6	9.1
45-49	14.6	4.5
50-54	8.7	2.6
Residence		
Rural	52.3	23.2
Urban	47.7	22.0
Religion		
Hindu	72.5	21.2
Muslim	12.9	25.0
Christian	9.5	31.1
Other	5.1	21.0

Table 3 Continued

Characteristics of men who desire more children, N=26,519

Characteristic	Percentage	Percent desiring more children
Region		
North	12.3	16.2
Central	21.7	22.8
East	9.9	21.0
North-East	19.6	28.6
West	14.1	20.9
South	22.4	22.6
Family Structure		
Non-nuclear	42.7	29.5
Nuclear	57.3	17.6
Frequency of watching television		
Not at all	16.2	21.6
Less than once a week	18.2	23.8
At least once a week	16.0	24.2
Almost everyday	49.6	22.0
Frequency of listening to radio		
Not at all	29.4	22.2
Less than once a week	25.3	22.0
At least once a week	19.2	24.1
Almost everyday	26.1	22.6

Multivariate Analysis

Results of five logistic regression models that predict the desire for children are presented in Table 4. The baseline model estimates the joint association of current composition and the number of children with the desire for more children. Model 2 adds husband's education to the previous model and Model 3 includes interactions in order to test the basic hypothesis; that the strength of son preference varies with education. Model 4 then adds all the control variables. In the final model, the wealth index is included to test whether wealth mediates these associations. The results of these models were originally calculated as log-odds with the exponentiated odds ratio being displayed in all

models. An odds ratio greater than one indicates a positive association with current contraceptive usage relative to the reference category and an odds ratio less than one indicates a negative association. Confidence intervals are shown inside parentheses.

Results from Model 1 show that controlling for the number of children, men with more girls than boys have 156% higher odds (2.56-1.00=1.56) odds of desiring more children when compared to men with a greater number of boys. Men with more girls desire more children when compared to men with more boys and this result indicates son preference. Men with an equal number of children have 46% lower odds of desiring more children when compared to men with a greater number of boys. Addition of husband's education in Model 2 demonstrates that men with at least primary education are less likely to want more children when compared to men with no education. Also, each unit increase in the number of children decreases the odds of desiring more children by 71%.

Table 4 also presents results of Model 3 that deal with my first hypothesis. As mentioned in the earlier section of this chapter, my first hypothesis predicts that men with greater number of girls are more likely to want more children and this association is stronger for men with no education than for men with at least some education. Model 3 is primarily designed for the desire for children, and an interaction of composition and education is included in this model. This interaction is needed as I expect the gender composition to have a differential effect on fertility intentions across educational levels i.e. the relationship between the composition of children and fertility intentions depends on the educational level of the man. Hence, I need interaction terms to test for these differential effects and I first examine the main effects of current composition and education.

Table 4

Logistic regression predicting desire for more children by odds ratios with confidence intervals, N=26,519

Characteristic	Model 1	C.I.	Model 2	C.I.	Model 3	C.I.
Intercept	2.97		5.47		4.75	
Current composition of children						
Boys>Girls(ref)						
Girls>Boys	2.56***	(2.37,2.76)	2.61***	(2.42,2.81)	3.11***	(2.59,3.75)
Girls=Boys	0.54***	(0.48,0.59)	0.54***	(0.49,0.60)	0.75**	(0.59,0.94)
Number of children	0.31***	(0.29,0.32)	0.29***	(0.27,0.30)	0.29***	(0.28,0.30)
Husband's Education						
None(ref)						
Primary			0.70***	(0.62,0.79)	0.77**	(0.64,0.93)
Secondary			0.58***	(0.53,0.64)	0.67***	(0.58,0.78)
Higher			0.37***	(0.33,0.42)	0.49***	(0.41,0.59)
Current composition*Husband's Education						
Boys>Girls*No Education(ref)						
Girls>Boys*Primary					0.88	(0.68,1.14)
Girls>Boys*Secondary					0.82	(0.66,1.02)
Girls>Boys*Higher					0.69**	(0.53,0.89)
Girls=Boys*Primary					0.80	(0.58,1.12)
Girls=Boys*Secondary					0.72**	(0.55,0.95)
Girls=Boys*Higher					0.43***	(0.30,0.63)
AIC	21150.3		20881.7		20870.8	
SC	21183.1		20939.0		20977.2	
-2 Log L	21142.3		20867.7		20844.8	

Notes. *- p<.05; **- p<.01; ***- p<.001; C.I. - Confidence Interval

Table 4 Continued

Logistic regression predicting desire for more children by odds ratios with confidence intervals, N=26,519

Characteristic	Model 4	C.I.	Model 5	C.I.
Intercept	2.66		3.00	
Current composition of children				
Boys>Girls(ref)				
Girls>Boys	3.12***	(2.55,3.82)	3.11***	(2.54,3.18)
Girls=Boys	0.68**	(0.53,0.87)	0.68**	(0.53,0.88)
Number of children	0.32***	(0.30,0.33)	0.32***	(0.30,0.33)
Husband's Education				
None(ref)				
Primary	0.86	(0.70,1.06)	0.89	(0.72,1.09)
Secondary	0.86	(0.72,1.03)	0.92	(0.77,1.10)
Higher	0.92	(0.73,1.15)	1.00	(0.80,1.25)
Current composition*Husband's Education				
Boys>Girls*No Education(ref)				
Girls>Boys*Primary	0.92	(0.69,1.22)	0.92	(0.69,1.22)
Girls>Boys*Secondary	0.88	(0.69,1.10)	0.88	(0.70,1.11)
Girls>Boys*Higher	0.73*	(0.55,0.96)	0.73*	(0.55,0.96)
Girls=Boys*Primary	0.86	(0.60,1.23)	0.86	(0.60,1.23)
Girls=Boys*Secondary	0.77	(0.57,1.03)	0.76	(0.57,0.98)
Girls=Boys*Higher	0.49**	(0.33,0.73)	0.50**	(0.33,0.74)
Wife's Education				
None(ref)				
Primary	0.72***	(0.63,0.81)	0.75***	(0.66,0.85)
Secondary	0.72***	(0.64,0.80)	0.78***	(0.69,0.87)
Higher	0.81*	(0.68,0.97)	0.88	(0.74,1.05)

Notes. *- p<.05; **- p<.01; ***- p<.001; C.I. - Confidence Interval

Table 4 Continued

Logistic regression predicting desire for more children by odds ratios with confidence intervals, N=26,519

Characteristic		Model 4	C.I.	Model 5	C.I.
Age					
	35-39(ref)				
	15-19	7.18***	(3.00,17.18)	6.73***	(2.81,16.12)
	20-24	3.99***	(3.37,4.72)	3.86***	(3.27,4.57)
	25-29	2.82***	(2.52,3.16)	2.76***	(2.46,3.10)
	30-34	1.80***	(1.62,2.00)	1.78***	(1.60,1.99)
	40-44	0.58***	(0.51,0.67)	0.59***	(0.51,0.68)
	45-49	0.30***	(0.25,0.36)	0.30***	(0.25,0.36)
	50-54	0.15***	(0.11,0.20)	0.15***	(0.11,0.20)
Residence					
	Rural(ref)				
	Urban	0.92	(0.84,1.00)	1.00	(0.91,1.10)
Religion					
	Hindu(ref)				
	Muslim	2.09***	(1.86,2.35)	2.17***	(1.92,2.44)
	Christian	2.56***	(2.22,2.95)	2.59***	(2.25,2.99)
	Other	0.99	(0.83,1.19)	1.01	(0.84,1.20)
Region					
	North(ref)				
	Central	1.60***	(1.38,1.85)	1.51***	(1.31,1.75)
	East	1.14	(0.97,1.36)	1.06	(0.89,1.25)
	North-East	2.42***	(2.07,2.82)	2.30***	(1.97,2.68)
	West	1.28**	(1.10,1.50)	1.23**	(1.06,1.44)
	South	1.36***	(1.18,1.57)	1.29**	(1.11,1.49)
Family Structure					
	Non-nuclear(ref)				
	Nuclear	0.79***	(0.73,0.85)	0.77***	(0.71,0.83)
Frequency of watching Television					
	Not at all(ref)				
	Less than once a week	0.86*	(0.75,0.98)	0.88	(0.77,0.99)
	At least once a week	0.67***	(0.58,0.77)	0.71***	(0.62,0.82)
	Almost everyday	0.61***	(0.54,0.70)	0.68***	(0.59,0.78)

Notes. *- p<.05; **- p<.01; ***- p<.001; C.I. - Confidence Interval

Table 4 Continued

Logistic regression predicting desire for more children by odds ratios with confidence intervals, N=26,519

Characteristic	Model 4	C.I.	Model 5	C.I.
Frequency of listening to radio				
Not at all(ref)				
Less than once a week	0.98	(0.88,1.09)	0.97	(0.87,1.08)
At least once a week	1.10	(0.98,1.23)	1.09	(0.97,1.22)
Almost everyday	0.99	(0.90,1.10)	0.99	(0.90,1.10)
Wealth Index				
Poor(ref)				
Middle			0.77***	(0.68,0.87)
Rich			0.68***	(0.59,0.77)
AIC	17963.1		17933.0	
SC	18282.3		18268.6	
-2 Log L	17885.1		17851.0	

Notes. *- p<.05; **- p<.01; ***- p<.001; C.I. - Confidence Interval

I look at the coefficient for girls>boys in Model 3 i.e. 3.11. Since this coefficient is significant, I conclude that there is a significant difference in the desire for children between men who have more girls than boys and men who have more boys than girls among men with no education (the reference category). Among men with no education, men with a greater number of girls have 211% higher odds of desiring more children when compared to men with a greater number of boys. Also, among men with no education, men with an equal number of girls and boys have 25% lower odds of desiring more children when compared to men with a greater number of boys. These coefficients are slightly larger in magnitude than Model 2, indicating that the association for men with no education is slightly stronger than the average association in the sample. Thus on the whole, the main effect of gender composition on fertility intentions is seen through men

with no education. I also look at the coefficients for husband's education in model 3 i.e. 0.77, 0.67 and 0.49. Since these coefficients are significant, I conclude that fertility intentions vary significantly by education among men with more boys than girls (the reference category). Among men with greater number of boys, men with primary education have 23% lower odds of desiring more children when compared to men with no education. Men with secondary education have 33% lower odds and men with higher education have 51% lower odds.

One interaction between girls>boys and educational levels was significant. The effect of having more girls than boys on desiring more children differs between men with higher education and men with no education. This interaction is statistically significant and negative, indicating that the positive association of having more girls than boys and desiring another child weakens with increasing education. This result supports my first hypothesis. Also, the interaction between girls=boys and secondary education is statistically significant and negative, indicating that the negative association of having an equal number of boys and girls and desiring more children, strengthens with secondary education. For men with secondary education, the men having equal number of boys and girls have lower odds of 0.54 (0.75*0.72) of desiring more children than men with more boys than girls. Finally, the interaction between girls=boys and higher education is also statistically significant and negative, indicating that the negative association of having an equal number of boys and girls and desiring more children, strengthens with higher education. For men with higher education, the men having equal number of boys and girls have lower odds of 0.32 (0.75*0.43) of desiring more children than men with more boys than girls.

Model 4 adds the control variables to the previous model and represents main effects for the primary independent variables. Addition of the control variables in this model lead to husband's education being insignificant. Wives with primary or secondary or higher education are less likely to desire more children when compared to wives with no education. Each unit increase in the number of children decreases the odds of desiring more children by 68%. Compared to men in the 35-39 year age group, men between the ages of 15 and 34 have higher odds of wanting more children. Muslims and Christians are more likely to want more children when compared to Hindus. Finally, other variables such as region of India, family structure, and frequency of watching television have also yielded significant results. Compared to north India, men from most other parts of India have higher chances of desiring additional children. Men living in nuclear families have 21% lower odds of wanting more children when compared to men living in non-nuclear families. Watching some television does decrease the likelihood of desiring more children when compared to watching no television at all.

Table 4 also presents Model 5 that deals with my second hypothesis. As mentioned in the earlier section of this chapter, my second hypothesis predicts that the relationship between gender composition, male education and fertility intentions will be mediated by wealth. Model 5 adds the wealth index to the previous model which may help remove any spurious relationship between the variables. Regarding the categories of the wealth index, I find that men belonging to the middle category have 23% lower odds and men belonging to the rich category have 32% lower odds of desiring more children when compared to men in the poor category. However, this model does not support my second hypothesis as the coefficients for the gender composition and the education level

interactions did not change in significance or size from Model 4 to Model 5. Thus the relationship between gender composition, education and desire for more children is not mediated by wealth.

DISCUSSION

This study analyzed men with children and the relationship between men's education and son preference via the desire for more children. Fertility intentions vary significantly by education among men with more boys than girls. There is son preference present in this sample of men and it is weaker at higher levels of education. For instance, men who do not have formal schooling are displaying some son preference but are also perhaps interested in achieving a balanced gender composition. Men with higher education and who have a greater number of girls may be attempting to even out the composition of their children which signals that they do not see boys and girls as being equal. The results also unexpectedly showed that men with secondary or higher education and with an equal number of boys and girls are likely to be content with this composition and thus do not want any more children.

Interestingly enough, the relationship between gender composition, male education and desire for more children was not mediated by wealth. The differences in education are not mediated by wealth but they are reduced by controlling for other variables. The desire for sons is not mediated by the control variables.

Some other control factors are also looked at in this analysis and they are largely in line with the literature. The findings from Muslims and Christians are unique, suggesting that they may be trying to increase their fertility and fit into a country that is

dominated by Hindus. Some form of formal schooling of the wife is likely to see a decrease in the desire for more children and this is on par with previous research.

In summary, this analysis has concluded that men's education, children's gender composition and fertility intentions have a complicated relationship. Though the hypotheses were partially supported, there were nonetheless findings at some levels of education and in some categories of the composition of children. It is likely that what Indian men want most is a balanced gendered composition for their children. Future research will need to concentrate on the composition of children in a more detailed manner, perhaps by using specific numbers to rearrange the composition.

Chapter 4

MALE EDUCATION, SON PREFERENCE, AND CONTRACEPTIVE USE AMONG

MEN WHO WANT TO STOP CHILDBEARING

The association between education and fertility behavior has been well documented in the literature. Contraceptive methods in particular (whether traditional or modern) are an important aspect of fertility behavior as they represent a conscious choice by an individual to control his/her fertility. There are however some barriers to contraceptive use that are seen in couples. These barriers include a lack of agreement on contraceptive use, supposed undesirable side effects, financial costs of contraception, son preference, gaps in knowledge about contraceptive methods, misconceptions about specific methods, or poor quality of services in some areas (Kamau et al., 1996). Men who do not want any more children might still not be using contraception due to any number of the above mentioned reasons.

Previous chapters have looked at fertility intentions via the ideal number of children and the desire for more children. However, though fertility intentions can predict fertility behavior (Bumpass, 1987; Rindfuss, Morgan, & Swicegood, 1988; Thomson, 1997), they are not perfect predictors of behavior. In this dissertation, fertility intentions have informed us about what a man *intends* to do in the future but they do not give us any information about what behavior he *actually* undertakes. This chapter adds to this knowledge by looking at men's current use of contraceptives depending on the current composition of children. I limit the analytic sample to men who report that they want no more children. Thus, contraceptive use reflects men's ability or desire to carry out fertility intentions.

In general, education is positively associated with contraceptive use, although most previous research has focused on women's education (Al Riyami, Afifi, & Mabry, 2004; Fikree, Khan, Kadir, Sajan, & Rahbar, 2001; Jejeebhoy, 1995; Subbarao & Raney, 1995). Contraceptive use for men on the other hand, might or might not be operating though the same mechanisms as women. Educated men are more likely to know about and use modern contraceptive methods (Drennan, 1998).

Some previous research has shown that both men and women are more likely to use contraception after the desired number of sons has been reached. For instance, in their research on India, Arnold, Choe and Roy (1998) found that women with two sons were more likely to use contraception than women with two daughters. Men in Nepal who had at least two living sons were seen to have the highest probability of using permanent methods of contraception when compared to men who had only daughters (Dahal, Padmadas, & Hinde, 2008). Additionally, in their work on south-west Tanzania, Mwageni, Ankomah and Powell (2001) found that men with strong son preference are less likely to use contraception that men who do not. These studies suggest that men who have enough sons feel secure in their family size and composition, and see no reason to have more children. These men are likely to use contraception. Regarding the role of education, men with no formal schooling tend to prescribe to traditional gender roles where sons are more valued than daughters and I accordingly expect them to not use contraception if they do not have enough sons.

For this analysis, I hypothesize that men with greater number of girls will be less likely to use any form of contraception and this association will be stronger for men with

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no education than for men with at least some education. I also hypothesize that this relationship will be mediated by wealth.

OPERATIONALIZING FERTILITY BEHAVIOR

As mentioned above, I use current contraceptive usage as a measure of fertility behavior and I include both temporary and permanent methods to determine contraception. I use the current composition of children (number of living sons and number of living daughters) to assess son preference.

DATA AND METHOD

The data for this analysis comes from the National Family and Health Survey–III (NFHS-III) that was conducted in 2005-2006 in India under the supervision of the Demographic and Health surveys (DHS). I use the couple's dataset provided by the NFHS-III and my initial sample consists of 39,257 men (as part of 39,257 couples). Since I am studying current contraceptive usage, I only include men who do not want any more children as they have the greatest incentive to control their fertility. Excluding men who want more children, are undecided, or are infecund leaves an analytic sample of 21,488 men. In order to test my hypotheses, I create variables from questions asked to the husband. Dependent and independent variables were constructed as follows.

Primary dependent variable

The dependent variable for this analysis is a measure of son preference that is indicated by current contraceptive usage of the man and this information has been reported by the man. Men may underreport birth control methods that are used in secret by their wives; however, since I am interested in men's intentions and behaviors, this underreporting is not an issue. The NFHS-3 provides the original variable of

contraceptive usage with the categories of no method, pill, IUD, injections, implants, male condom, female condom, diaphragm, jelly, foam, abstinence, withdrawal, folkloric method, male sterilization, and female sterilization. Since I am analyzing contraceptive usage, I initially made the distinction between traditional methods of contraception and modern methods of contraception. I tested models with this distinction but found no difference between traditional methods and modern methods. I thus divided the original variable into three categories: no method, temporary method (consisting of pill, IUD, injections, implants, male condom, female condom, diaphragm, jelly, foam, abstinence, withdrawal and folkloric method) and permanent method (consisting of male and female sterilization).There were no missing values. I create a variable where a man does not use contraception (0), uses a temporary method (1) or uses a permanent method (2). The above mentioned categories will be henceforth mentioned as no method, temporary method (TM) and permanent method (PM) respectively. Creating such categories may provide a better understanding of fertility behavior as we may see differences by temporary and permanent methods. Sterilization is a popular method in India and is supported by various institutional structures. Due to this, sterilization is more accessible than other methods and thus may face as many barriers as other methods. Compared to other methods such as condoms, jelly, IUD and so on, sterilization is a permanent birth control method and may provide a different perspective on son preference.

Primary independent variables

Composition of existing children is used to link contraceptive usage to son preference. The NFHS-III has variables for the number of sons at home and the number of sons elsewhere. I combine these two variables for the total number of living sons.

Similarly, I combine the number of daughters at home and the number of daughters elsewhere for the total number of living daughters. I then proceed to create the current composition of children with three categories. Either the man has more boys than girls (0), or he has more girls than boys (1) or he has an equal number of girls and boys (2). These three categories are then converted to dummy variables and there are no missing cases.

Men's education and wealth index are also important independent variables for my hypotheses. The theoretical background mentions that I expect men's education and wealth to have an effect on son preference. The original measure for men's education consisted of four categories i.e. no education, primary education, secondary education and higher education. These categories were kept as is and 6 missing cases were removed resulting in a sample of 21,482 men. For the measurement of wealth, I used the wealth index operationalized by the NFHS-III. The creation of this index by the NFHS-III is explained in Chapter 2. I ran models taking both the categorical and continuous classifications into account. I first tested models with the wealth index as a score in its linear and quadratic form and then with five categories of the wealth index. The latter demonstrated a better model fit when compared to the linear and quadratic models. However the coefficients of the model with the five categories were not showing much variation between the richest and richer categories and the poorest and poor categories. Hence, I combined these categories and ran models with three categories of the wealth index i.e. rich, middle and poor. There were no missing values for this variable and the sample remained at 21,482 men.

Finally, I also added parity in the analysis as it is a measure of family size and it will enable us to see the independent effect of family size on contraceptive use.

Control Variables

Fertility behavior as indicated by contraceptive use can be influenced by wife's education as well. There is a possibility that wife's education is contributing to contraceptive usage and controlling for it will let us see the effect of husband's education independent of wife's education. The categories for wife's education are similar to that of her husband's education. I include the age of the man as a control to capture the cohort effects on the preference of sons. The original variable for age provided by the NFHS-III has age coded in five year groups from the ages of 15-54. The categories of 15-19 and 20-24 were combined into one so as to create enough cases for their analysis. The rest of the categories were retained as is. State of residence is also a control for this analysis. Contraceptives are more easily accessible in urban areas (Welsh, Stanback & Shelton, 2006), thus urban men may be likely to practice some form of birth control as compared to rural men. The data provided by the NFHS-III provided direct information on whether the respondent's current place of residence was an urban or rural area and I retained this measure as is.

Religion can be seen to be related to contraceptive usage as well. In India especially, Islam is seen as not sanctioning any form of birth control or abortion though scholars argue that various schools of thought do have difference of opinions regarding birth control (Subbamma, 1998; Obermyer, 1992). The Roman Catholic Church views procreation as the only objective of marriage and denounces contraception as it goes against the purpose of marriage. However, the church does accepts abstinence or the

rhythm method as a means of circumventing births and prohibits any other form of contraception (Jones & Nortman, 1968; Schenker, 2000). There is an absence of a clear directive relating to contraception in Hinduism. Contraceptive usage is considered a woman's private issue and religion officials are discouraged from passing judgment on this matter (Iyer, 2002). I thus do not expect Hindu men to be proactive in this matter. The original measure of religious affiliation consisted of ten different categories with Hindu, Muslim and Christian dominating the sample. The remaining seven categories of Sikh, Buddhist, Jain, Jewish, No Religion, Donyi Polo and Other collectively make up around 5% of the sample. Since religion is added as a control variable, my interest is in the major three religions of India. I collapsed the above mentioned seven categories into a category named "Other" and removed the missing cases. I am thus left with 21,474 men and four categories of Hindu, Muslim, Christian and Other for analysis.

Finally, the media can influence actions as well by pointing individuals towards resources that can help control fertility (Olenick, 2000). The information provided by television and radio can direct men to places where contraceptives are available. The categories provided by the NFHS-III for these variables were kept as it and after removal of the missing cases; the sample was reduced to 21,470 men. Multinomial logistic regression models were fitted in SAS to analyze the dependent variable i.e. exhibiting son preference by using temporary or permanent methods of contraception.

RESULTS

Bivariate associations

Overall, 25.1% of men in the analytic sample report the usage of temporary methods and 28.1% of men report the usage of permanent methods of contraception. This sample is restricted to men who do not want any more children and even then, almost half the sample is not using contraception. Table 5 presents general characteristics of men including those that use temporary and permanent methods of contraception. The first column provides us with some basic descriptive statistics regarding the variables. Around 41% of men have more boys than girls and around 31% of men have more girls than boys. A majority of men have secondary school education (47.2%) and roughly 54% of men are classified as being rich. Though the rich and richer category were originally made up 40% of the sample, removal of men who do not want any more children, are undecided, and are infecund skewed the sample towards the men who are well off. Around 40% of the wives have no education and are followed by 36% of wives that have secondary education. Men under the age of 25 make up a very small portion of the sample. Roughly 52% live in rural areas. Hinduism is the dominant religion with 74.2% of the men identifying themselves as being Hindu. Muslims and Christians together make up around 20% of the sample. Almost half of the sample watches television almost every day while 30% of men do not listen to the radio at all. The second and third columns of Table 5 provide information demonstrating the relationship between the variables and different methods of contraceptive usage. There is not much of a difference in the usage of temporary and permanent methods for men who have more girls.

Table 5

Characteristics of men who use contraception, N=21,470

Characteristic	Percentage	Percent using temporary methods	Percent using permanent methods
Current composition of children			
Boys>Girls	41.2	24.2	30.4
Girls>Boys	31.3	24.5	24.6
Girls=Boys	27.5	27.1	28.6
Husband's Education			
None	19.3	15.1	29.7
Primary	18.3	17.8	34.3
Secondary	47.2	26.6	27.5
Higher	15.2	41.9	20.2
Wealth Index			
Poor	26.3	17.2	27.3
Middle	19.7	21.2	30.0
Rich	54.0	30.3	27.7
Wife's Education			
None	40.0	18.4	30.1
Primary	15.3	19.4	33.7
Secondary	36.7	29.2	36.6
Higher	9.0	47.0	15.5
Age			
15-24	1.9	28.4	7.6
25-29	9.3	28.5	16.4
30-34	17.4	30.7	23.5
35-39	21.6	29.3	28.4
40-44	20.5	25.0	31.1
45-49	18.1	19.9	33.1
50-54	11.2	13.3	33.9
Residence			
Rural	52.3	21.2	29.2
Urban	47.7	29.4	26.8

Table 5 Continued

Characteristics of men who use contraception, N=21,470

Characteristic	Percentage	Percent using temporary methods	Percent using permanent methods
Religion			
Hindu	74.2	24.1	31.2
Muslim	12.4	31.4	15.7
Christian	8.3	20.6	18.1
Other	5.1	32.2	28.6
Frequency of watching television			
Not at all	16.5	16.1	25.7
Less than once a week	18.0	24.1	25.8
At least once a week	15.6	25.8	26.7
Almost everyday	49.9	28.2	30.1
Frequency of listening to radio			
Not at all	29.7	20.6	30.6
Less than once a week	25.3	26.5	27.2
At least once a week	18.6	26.8	26.3
Almost everyday	26.2	27.6	27.3

Similarly, men who have an equal number of boys and girls also do not see big differences between temporary and permanent usage. However, 30% of men who have more boys are using a permanent method while 24% of men who have more boys are using a temporary method. This indicates that men who have a greater number of boys favor a permanent method of birth control. Men who have no education or primary education lean more towards permanent methods while men who have higher education tend to favor temporary methods. This trend also continues while examining the education of the wife. Also, a higher percentage of men in the poor and middle category of wealth are using permanent methods.

A large portion of men under 40 years of age are investing in temporary methods while permanent methods become more popular as men grow older. Though all men in

this sample do not want any more children, older men are likely to be more certain about it which is why their use of permanent methods is higher. A larger portion of men in rural areas use permanent methods than temporary methods while the reverse is true in urban areas. With regards to religion, 31% of Hindus use permanent methods while 24% of Hindus use temporary methods. Muslims tend to favor temporary methods which are in line with the Islamic belief of procreation. Finally, men who do not watch any television or listen to the radio show higher percentages of permanent methods than temporary methods.

Thus, the patterns described above highlight some similarities and differences in the factors associated with temporary and permanent contraceptive usage of the sample of men. Most importantly, this brief description shows the differences in fertility behavior by the level of education and the current composition of children.

Multivariate results

Results of five multinomial logistic regression models that predict current contraceptive usage are presented in Table 6. The baseline model estimates the joint association of the current composition of children and number of children with temporary and permanent methods of contraceptive use. Model 2 adds husband's education. Model 3 includes an interaction of education and current composition of children so that the basic hypothesis may be tested; that the strength of son preference varies with education. Model 4 inserts control variables to the previous model and Model 5 adds the wealth index to test whether wealth mediates these associations. The results of these models are presented as coefficients in the tables and are then converted to odds in the discussion. Positive coefficients indicate a positive association with temporary and permanent

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contraceptive usage relative to the reference category (no contraceptive usage) and negative coefficients indicate a negative association. Standard errors are also reported.

Results from Model 1 show that controlling for the number of children, men with more girls than boys are less likely to use temporary methods of contraception when compared to men with a greater number of boys. There is no significant difference between men with an equal number of girls and boys, and men with more boys. Model 1 also shows that after controlling for the number of children, men with greater number of girls are not significantly different from men with greater number of boys in the usage of permanent contraception. Men with a greater number of children from either sex might not be fully committed to a permanent method. Instead, men with an equal number of girls and boys are more likely to use permanent methods when compared to men with a greater number of boys. This model also unexpectedly finds that each unit increase in the number of children decreases the chances of using permanent methods of contraception. This result is surprising but would make sense if it is the number of girls that is increasing.

Addition of husband's education in Model 2 demonstrates that men with primary or secondary school education are more likely to use temporary methods of contraception when compared to men with no education. Men with higher education and men with no education are not significantly different in their use of temporary methods. This model provides the similar information regarding permanent methods. Men with at least primary school education are more likely to use a permanent method of contraception when compared to men with no education.

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Table 6 also presents the results of Model 3 that deal with my first hypothesis. As mentioned in the earlier section of this chapter, my first hypothesis predicts that men with a greater number of girls will be less likely to use any form of contraception and this association will be stronger for men with no education than for men with at least some education. Model 3 is primarily designed for the current composition of children and an interaction of composition and education is included in this model. This interaction is needed as I expect the gender composition to have a differential effect on fertility behavior across educational levels i.e. the relationship between the composition of children and fertility behavior depends on the educational level of the man. Hence, I need interaction terms to test for these differential effects and I first examine the main effects of current composition and education. I look at the coefficient for girls>boys for temporary methods of contraception i.e. -0.35. Since this coefficient is significant, I conclude that there is a significant difference in contraceptive usage by temporary methods between men who have more girls than boys and men who have more boys than girls among men with no education (the reference category). Among men with no education, men with a greater number of girls have 26% lower odds ($e^{-0.35}$=0.74; 1-0.74=0.26) of using temporary methods of contraception when compared to men with a greater number of boys. On the other hand, men with equal number of boys and girls are not significantly different from men with more boys. Thus on the whole, the main effect of gender composition on fertility behavior via temporary methods is seen through men with no education. I also look at the coefficients for girls>boys and girls=boys for permanent methods of contraception i.e. -0.17 and 0.13. Since these coefficients are not

significant, men with greater number of girls and men with equal number of boys and girls are not significantly different from men with more boys.

Next, I look at the significant coefficient for husband's education under temporary methods i.e. 0.34. Since this coefficient is significant, I conclude that fertility behaviors via temporary contraceptive methods vary significantly by education among men with more boys than girls (the reference category). Among men with greater number of boys, men with primary education have 40% higher odds ($e^{0.34}=1.40$; 1.40-1= 0.40) of using temporary contraception when compared to men with no education. Thus, there is a significant primary education effect for men with more boys than girls. The coefficients for permanent methods demonstrate a similar story. Fertility behaviors via permanent contraceptive methods vary significantly by education among men with more boys than girls (the reference category). Among men with greater number of boys, men with primary education have 29% higher odds ($e^{0.26}=1.29$; 1.29-1= 0.29) of using permanent contraception when compared to men with no education. Men with secondary education have 109% higher odds ($e^{0.74}=2.09$; 2.09-1=1.09) of using permanent contraception and men with higher education have 309% higher odds ($e^{1.41}=4.09$; 4.09-1=3.09) of using permanent contraception when compared to men with no education. Thus, there is a significant education effect for men with more boys than girls. None of the interactions between girls>boys and educational levels are significant for temporary contraceptive methods. The effect of having more girls than boys on using temporary contraception (vs. no method) does not differ between men with primary education, secondary education, higher education, and men with no education.

Table 6

Multinomial logistic regression predicting contraceptive usage using coefficients with standard errors. N=21,470

Characteristic	Model 1				Model 2			
	T.M.	S.E.	P.M.	S.E.	T.M.	S.E.	P.M.	S.E.
Intercept	-0.37		-0.39		-0.46		-1.31	
Current composition of children								
Boys>Girls(ref)								
Girls>Boys	-0.32***	0.03	-0.06	0.04	-0.32***	0.03	-0.09**	0.04
Girls=Boys	-0.04	0.04	0.10**	0.04	-0.03	0.04	0.07	0.04
Number of children	-0.01	0.01	-0.07***	0.01	-0.01	0.01	0.01	0.01
Husband's Education								
None (ref)								
Primary					0.28***	0.05	0.31***	0.06
Secondary					0.09*	0.04	0.75***	0.05
Higher					-0.03	0.06	1.40***	0.06

Notes. *- p<.05; **- p<.01; ***- p<.001; T.M. – Temporary Method; P.M. – Permanent Method;
S.E. – Standard Error

Table 6 Continued

Multinomial logistic regression predicting contraceptive usage using coefficients with standard errors. N=21,470

| Characteristic | Model 3 | | | |
	T.M.	S.E.	P.M.	S.E.
Intercept	-0.49		-1.30	
Current composition of children				
Boys>Girls(ref)				
Girls>Boys	-0.35***	0.08	-0.17	0.10
Girls=Boys	0.12	0.08	0.13	0.11
Number of children	-0.01	0.01	0.01	0.01
Husband's Education				
None (ref)				
Primary	0.34***	0.07	0.26**	0.09
Secondary	0.11	0.06	0.74***	0.07
Higher	0.01	0.09	1.41***	0.09
Current composition *Husband's Education				
Boys>Girls*No Education(ref)				
Girls>Boys*Primary	-0.02	0.11	0.27	0.14
Girls>Boys*Secondary	0.07	0.10	0.06	0.11
Girls>Boys*Higher	0.01	0.14	-0.01	0.14
Girls=Boys*Primary	-0.24	0.12	-0.22	0.16
Girls=Boys*Secondary	-0.19	0.10	-0.04	0.12
Girls=Boys*Higher	-0.18	0.14	-0.04	0.14

Notes. *- p<.05; **- p<.01; ***- p<.001; T.M. – Temporary Method;
　　　P.M. – Permanent Method; S.E. – Standard Error

Table 6 Continued

Multinomial logistic regression predicting contraceptive usage using coefficients with standard errors. N=21,470

	Model 4				Model 5			
Characteristic	T.M.	S.E.	P.M.	S.E.	T.M.	S.E.	P.M.	S.E.
Intercept	-0.38		-2.10		-0.43		-2.17	
Current composition of children								
Boys>Girls(ref)								
Girls>Boys	-0.36***	0.08	-0.18	0.10	-0.36***	0.08	-0.18	0.10
Girls=Boys	0.15	0.09	0.15	0.11	0.15	0.09	0.15	0.11
Number of children	0.01	0.01	0.09***	0.01	0.01	0.01	0.10***	0.01
Husband's Education								
None (ref)								
Primary	0.23**	0.07	0.24**	0.10	0.21**	0.07	0.21*	0.10
Secondary	-0.02	0.07	0.58***	0.08	-0.08	0.07	0.50***	0.08
Higher	-0.10	0.10	1.03***	0.10	-0.17	0.10	0.93***	0.10
Current composition *Husband's Education								
Boys>Girls*No Education(ref)								
Girls>Boys*Primary	-0.04	0.12	0.25	0.14	-0.04	0.12	0.26	0.14
Girls>Boys*Secondary	0.05	0.10	0.07	0.12	0.04	0.10	0.06	0.12
Girls>Boys*Higher	0.01	0.14	-0.01	0.14	0.01	0.14	-0.01	0.14
Girls=Boys*Primary	-0.23	0.12	-0.25	0.16	-0.24	0.12	-0.26	0.16
Girls=Boys*Secondary	-0.20	0.10	-0.11	0.13	-0.20	0.10	-0.11	0.13
Girls=Boys*Higher	-0.22	0.14	-0.11	0.15	-0.22	0.14	-0.12	0.15

Notes. *- p<.05; **- p<.01; ***- p<.001; T.M. – Temporary Method; P.M. – Permanent Method;
S.E. – Standard Error

Table 6 Continued

Multinomial logistic regression predicting contraceptive usage using coefficients with standard errors. N=21,470

		Model 4				Model 5			
Characteristic		T.M.	S.E.	P.M.	S.E.	T.M.	S.E.	P.M.	S.E.
Wife's Education									
	None(ref)								
	Primary	0.12**	0.05	0.05	0.05	0.09	0.05	0.01	0.05
	Secondary	-0.07	0.04	0.33***	0.05	-0.12**	0.04	0.25***	0.05
	Higher	-0.58***	0.09	0.70***	0.08	-0.63***	0.09	0.62***	0.08
Age									
	40-44(ref)								
	15-24	-1.92***	0.19	-0.02	0.12	-1.90***	0.19	0.01	0.12
	25-29	-0.96***	0.07	0.02	0.06	-0.94***	0.07	0.06	0.06
	30-34	-0.36***	0.05	0.20***	0.05	-0.35***	0.05	0.23***	0.05
	35-39	-0.07	0.05	0.23***	0.05	-0.06	0.05	0.24***	0.05
	45-49	-0.02	0.05	-0.29***	0.05	-0.02	0.05	-0.30***	0.05
	50-54	-0.14**	0.05	-0.81***	0.07	-0.15**	0.05	-0.84***	0.07
Residence									
	Rural(ref)								
	Urban	-0.06	0.03	0.11**	0.03	-0.12**	0.04	0.01	0.04
Religion									
	Hindu(ref)								
	Muslim	-0.86***	0.06	0.25***	0.05	-0.89***	0.06	0.21***	0.05
	Christian	-0.89***	0.06	-0.57***	0.06	-0.91***	0.06	-0.58***	0.06
	Other	0.01	0.07	0.38***	0.07	-0.01	0.07	0.35***	0.07

Notes. *- p<.05; **- p<.01; ***- p<.001; T.M. – Temporary Method; P.M. – Permanent Method;
S.E. – Standard Error

Table 6 Continued

Multinomial logistic regression predicting contraceptive usage using coefficients with standard errors. N=21,470

Characteristic	Model 4				Model 5			
	T.M.	S.E.	P.M.	S.E.	T.M.	S.E.	P.M.	S.E.
Frequency of watching Television								
Not at all(ref)								
Less than once a week	0.23***	0.05	0.34***	0.06	0.22**	0.05	0.32***	0.06
At least once a week	0.41***	0.06	0.37***	0.06	0.35***	0.06	0.28***	0.06
Almost everyday	0.69***	0.05	0.33***	0.06	0.60***	0.05	0.20**	0.06
Frequency of listening to radio								
Not at all(ref)								
Less than once a week	-0.06	0.04	0.24***	0.04	-0.05	0.04	0.25***	0.04
At least once a week	-0.15**	0.05	0.20***	0.05	-0.14**	0.05	0.21***	0.05
Almost everyday	-0.13**	0.04	0.18**	0.04	-0.13**	0.04	0.19***	0.04
Wealth Index								
Poor(ref)								
Middle					0.19**	0.05	0.19**	0.05
Rich					0.29***	0.05	0.44***	0.06

Notes. *- p<.05; **- p<.01; ***- p<.001; T.M. – Temporary Method; P.M. – Permanent Method;

S.E. – Standard Error

None of the interactions between girls>boys and educational levels for permanent methods are significant either. The effect of having more girls than boys on using permanent contraception does not differ between men with primary education, secondary education, higher education, and men with no education. Thus, the relationships described above hold for men at all education levels. Similarly, associations between education and temporary/permanent contraceptive use do not differ significantly between men with more girls than boys, and men with more boys and girls. This result does not support my first hypothesis. Also, The interactions between girls=boys and education are not significant for temporary or permanent methods indicating that associations between education and temporary/permanent contraceptive use do not differ significantly between men with more an equal number of girls and boys, and men with more boys and girls.

Model 4 adds control variables to the previous model and represents main effects for the primary independent variables. Addition of these control variables does not change the significance of the composition and education coefficients under both temporary and permanent methods. They are also only slightly altered in size indicating that these control variables could be mediating the relationship between gender composition, education and both temporary and permanent contraceptive usage.

The control variables show independent effects on both temporary and permanent contraceptive usage. Wives with primary education are more likely to use temporary methods and wives with higher education are less likely to use temporary methods when compared to women with no education. Also, wives with secondary or higher education are more likely to use permanent methods when compared to wives with no education. A possible explanation may be that educated wives are likely to be

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employed and face a high cost of raising children leading them to seek permanent

methods of birth control. Regarding age, compared to men in the age group of 40-44,

men younger than 35 years of age have lower odds of using temporary methods while

men older than 45 years of age have lower odds of using permanent methods. Compared

to women in rural areas, women in urban areas are more likely to use permanent

contraceptive methods perhaps because the cost of raising children in urban areas is

higher than rural areas. With regards to religion, Christians are less likely than Hindus to

use any form of contraception. Muslims on the other hand are more likely than Hindus to

use permanent methods of contraception. Finally, watching at least some television

increases the odds of using temporary methods and permanent methods and listening to

the radio also increases the chances of using permanent methods.

Table 6 also presents Model 5 that deals with my second hypothesis. As

mentioned in the earlier section of this chapter, my second hypothesis predicts that the

relationship between gender composition, male education and fertility behavior will be

mediated by wealth. Model 5 adds the wealth index to the previous model which may

help remove any spurious relationship between the variables. Regarding the categories of

the wealth index, I find that men belonging to the middle category have 20% higher odds

($e^{0.19}$=1.20; 1.20-1=0.20) and men belonging to the rich category have 33% higher odds

($e^{0.29}$=1.33; 1.33-1=0.33) of using temporary methods when compared to men in the poor

category. Additionally, men belonging to the middle category have 20% higher odds

($e^{0.19}$=1.20; 1.20-1=0.20) and men belonging to the rich category have 55% higher odds

($e^{0.44}$=1.55; 1.55-1=0.55) of using permanent methods when compared to men in the poor

category. However, this model does not support my second hypothesis as the coefficients

for the gender composition and the education levels interactions for both temporary and permanent methods did not change in significance or size from model 4 to model 5. Thus the relationship between gender composition, education and contraceptive usage is not mediated by wealth.

DISCUSSION

The literature on education and contraceptive usage has overall determined that education contributes to increased contraceptive usage. This study analyzed married men who did not want any more children and the relationship between men's education and son preference via fertility behavior. This behavior allows us to see how men implement son preference via both temporary and permanent methods. Undergoing sterilization as a means of birth control is a permanent method of stopping childbearing and modeling this outcome separate from temporary methods provides a deeper understanding of son preference. Firstly, the interactions in this analysis allow me to examine results for two specific groups. One, men have higher chances of using temporary contraception if they have more boys. However, they do not lean towards permanent contraception perhaps because they are not entirely sure of their intentions. Men with more boys could at the time be confident about their family composition and not want more children, but could also back away from permanent methods in case they feel that their minds might change in the future. Two, men with some education have higher chances of using permanent contraception when compared to men with no education and these are strong main effects of education. Secondly, the interactions also showed that my first hypothesis was not supported. The effect of having more girls than boys on using either temporary or permanent contraception does not differ between men with primary education, secondary

education, higher education and men with no education. For instance, men with no education and greater number of girls are not different from men with higher education and greater number of girls regarding any contraceptive usage. Perhaps the effect of education is concentrated on fertility intentions and once we account for the desire to stop childbearing, education does not matter more for implementing preferences. There are however strong main effects for education. My second hypothesis stated that the relationship between gender composition, male education and contraceptive usage will be mediated by wealth and this hypothesis was also not supported as my models did not change in significance or size.

Some other control factors are also looked at in this analysis and they are largely in line with the literature. Wife's education continues to be significant which is expected as literature has largely found that female education encourages contraceptive use. In summary, this analysis has concluded that men's education, children's gender composition and fertility behavior have a complicated relationship. Though the hypotheses were not supported, there were nonetheless findings at some levels of education and in some categories of the composition of children. Future research will need to concentrate on the composition of children in a more detailed manner, perhaps by using specific numbers to rearrange the composition.

Chapter 5

CONCLUSION

The study of son preference in India has been the focus of research for a few decades; though it has not been restricted to India only. Son preference is regarded as an institution with aspects such as patrilineality, patrilocality and the increased utility of sons over daughters. The desire for sons leads to unfavorable consequences for daughters such as unequal access to resources, abortion, and female infanticide. Education is associated with son preference and a large portion of research has focused on female education. Theories on female education and son preference conclude that female education depresses son preference due to increased female autonomy, paths to employment and higher socioeconomic status. However, work on male education and son preference is relatively scarce and this dissertation contributes to existing literature by exploring this relationship from a life course perspective. I have argued that education changes men's attitudes towards son preference by encouraging them to reevaluate traditional gender roles and I have found support for some of my hypotheses.

In order to fully understand fertility behaviors with regards to son preference, I first analyzed fertility intentions as it is probable that this attitude might translate to prenatal or post natal gender specific behavior in the future. First of the papers on men's education and fertility preferences examines childless men using the ideal number of boys and girls. Since these men do not yet have children, they reflect pure ideals and are not influenced by characteristics of or experiences with existing children.

The results of this study showed that men with at least some education had lesser chances of desiring more boys than girls. Educating men may be the first step towards

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challenging this son preference as educated men are more likely to question the older ways and see the value of daughters. Wealth may also be an important factor in this relationship as ideas about future children are likely to be accompanied by thoughts about means of support. If the man has enough resources, he assumes that he can provide for all his children and there will not be any competition between them. He then views sons and daughters are being equal. This study thus examined men at the start of their reproductive career, when they have no children and they are thinking about how many sons and daughters they would like to have.

The findings from the first paper set the first phase of a man's reproductive career. The second paper in Chapter 3 looks at the second phase of son preference i.e. future childbearing intentions when sons and/or daughters have already been born. There is son preference present in this sample of men and it is weaker at higher levels of education. Men with a greater number of girls have higher chances of wanting more children if they are not educated. They might be thinking of these additional children as boys, since they do not view the current number of sons as enough. Similarly, men who have a greater number of girls want more children if they have at least a secondary school education. These men might be attempting to even out the composition of children, which by itself suggests that they do not view boys and girls as being equal. On the other hand, men who have an equal number of boys and girls do not want more children if they have at least a secondary school education. This finding provides strong evidence that men with a level of formal schooling are likely to be content with their current composition (if it contains an equal number of sons and daughters) and thus do not want any more children.

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Having increased resources does not mediate this relationship in any manner indicating that once children are born, thoughts about resources might lose their importance. The findings about wealth from this chapter are different from Chapter 2. Wealth may mediate the relationship between education and son preference in the Chapter 2, but it did not mediate that relationship in this chapter. However, wealth by itself is a strong predictor of the desire for more children. To an extent, this is supportive of my argument that education works through challenging ideas. If education is not working through having increased resources, it is most likely to be working through a re-examination of ideals.

Son preference is still very much present in both chapters. Before men had any children, they are seen to have some indications of son preference. After the children are born, there is still some clear son preference and there is also an emphasis towards achieving a balance gendered composition (which again, shows that boys and girls are not considered as being equal).

Chapter 4 explores the final stage in a man's reproductive career i.e. fertility behaviors that are designed to stop childbearing after the birth of children. Both temporary and permanent contraceptive methods have been used to demonstrate fertility behavior. Men have higher chances of using temporary contraception if they have more boys than if they have more girls. They are not leaning towards permanent contraception perhaps because they are not entirely sure of their intentions. Men with more boys could at the time be confident about their family composition and not want more children, but could also back away from permanent methods in case they feel that their minds might change in the future. Education is positively associated with permanent contraceptive use

among all men. Men with some education have higher chances of using this method of contraception. However, evidence for having a greater number of girls indicates that men with no education and men with at least primary education are not different in their use of temporary or permanent contraception. It is likely that the effect of education is concentrated on fertility intentions and once we account for the desire to stop childbearing, education ceases to matter for implementing preferences. None of the above mentioned relationships were mediated by wealth which is similar to the findings of Chapter 3. However, wealth by itself is a strong predictor of both temporary and permanent contraceptive use. The findings from this chapter indicate that once men decide to stop having children, having boys does still matter.

The presence of sons in a family has been an important issue in all the three stages of a man's reproductive career. The findings from the above mentioned three studies walk through the different phases of reproduction for the Indian man and offer a new perspective on son preference in India. They show that son preference manifests itself at the beginning, is strongly present after the birth of children, and then shows itself again at the end when the man wishes to stop childbearing. Being educated leads to the preference of sons being weaker and this is perhaps due to traditional gender roles being challenged. My dissertation was not able to directly test for different measures for gender ideology which is a limitation of this study. Some aspects of gender ideology could perhaps be used as mediators, such as a measure for how a husband treats his wife. The dataset does contain variables on domestic violence and some others on how much autonomy the wife has in the household. A man who has a wife, who actively takes part in decision making, is likely to be more egalitarian in his viewing of gender roles and this might translate into

his fertility intentions and behaviors. Also, an educated man is more likely to discuss fertility related matters with his wife and future research can perhaps include the role of the wife in a larger capacity.

Selectivity in education is a likely scenario in this analysis. For instance, there are certain areas in India where there are no schools. Men who grew up in these areas are different from men who grew up near schools. The latter have higher chances of receiving an education. Perhaps an alternate method to look at son preference is by examining such factors that are in the background, but can contribute to an even better understanding of the desire for sons. Another issue that can contribute to the selectivity in education is the presence of gender specific schools and colleges. These institutions are popular in India and being taught in an all-boys school or college that has a majority of male teachers provides a different experience than been taught in a co-educational school or college that has teachers of both sexes. Though both groups are going to school and are exposed to the knowledge their education has to offer, the former might not experience different forms of egalitarian gender roles at their own educational institutions thus impacting their own view on gender roles.

Despite some limitations in the paper and having some hypotheses not supported, the findings of this dissertation contribute to the limited literature on men and son preference in India. My results also suggest new perspectives of studying this issue; examining the content of education, specifically using gender ideology as a mediator, and using different ways to measure the current composition of children.

Studying men and their education by itself has not received much attention in current research. Given that India is in the third stage of the demographic transition and has not yet achieved replacement level fertility, factors that can decrease son preference must be given adequate attention.

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