Son Preference in India

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Abstract

An abundant literature has documented son preferences in large parts of Korea, China, India, and the Near East. This literature has suggested an equally abundant array of theories about family, economic, and political causes that may sustain son preferences. This paper provides a first reasonably comprehensive test of explanations of son preference using household-level data. Using the India Human Development Survey, 2005, it investigates six distinct measures of son preference and 18 measures of seven main causes suggested in the literature. We find strong empirical support for most hypothesized relationships when looking at explicit *attitudes* indicating son preference. However, the relationships are weaker and less pervasive when looking at *behaviors* motivated by son preference. Behavioral expressions of son preferences are subject to more situational contingencies often unrelated to the underlying bias against girls. It is useful, therefore, to maintain the distinction between attitudinal *prejudice* and behavioral *discrimination* in evaluating causal theories of son preference.

Son Preference in India

Asia's "missing women" (Sen 1990) have long been a focus of gender research. India's unbalanced sex ratios, in particular, and the female infanticides implied by that demography were a concern to nineteenth century British colonialists (Miller 1981). While we now understand differential child mortality to be more dependent on the sex composition of prior births and, more generally, gender inequalities to be more multidimensional, there is nevertheless something primal about differential child mortality rates that commands our attention. Evidence that girls are less wanted than boys suggests an underlying gender bias that must infect all social relations.

An abundant literature has documented the empirical evidence for son preferences in large parts of Korea, China, India, and the Near East (Coale 1991, Arnold 1997).[1] This literature has suggested an equally abundant array of theories about family, economic, and political causes that may sustain son preferences. Women's lack of economic power, male dominance within the family, dependence on sons for old age support, high dowries, patrilineal clans, and marital exogamy have been the principal suggested forces compelling parents, both mothers and fathers, to favor sons over daughters.

Despite the long history of research, only some of these ideas have been amenable to systematic testing. As late as 2003, P.N. Mari Bhat, a leading researcher in the area, complained that "rigorous, quantitative analyses of factors that influence sex preference have been surprisingly scanty" (Bhat and Zavier 2003: 644). While the situation is better

[1] Filmer, Friedman, and Schady (2009) extend the area of son preference to Central Asia based on the strength of fertility stopping across five DHS surveys there; Meslé, Vallin, and Badurashvili (2007) find evidence of sex selective abortions in three Caucasus countries.

today (see, for instance Pande and Astone 2007, Echávarri and Ezcurra 2010), the data demands for a full test of these causal theories are imposing. An appropriate data base would include all of the following:

- A sample from an area with a wide range of son preferences,
- Measures of each of the proposed causes,
- Data on the multiple indicators of son preference,
- A large sample to test the often small gender differences in sex ratios.

Many data sources include some but not all of these requirements. The India Human Development Survey (IHDS), 2005, provides an unusual opportunity to investigate causal theories of son preference. India has long been a favored location to study son preference because of the great variation in gender regimes across the county. The IHDS survey includes a wide range of questions about families, marriages, gender relations, and economic situation that can be used for causal tests (Desai et al. 2010). Measures can be constructed both for the leading causal hypotheses and for several dimensions of son preference including attitudes, fertility consequences, sex ratios at birth or at 5 years, and gender differences in child mortality. The sample size of 31,018 mothers, while smaller than ideal for studies of sex ratios, is adequate for an overview comparing possible causes on each of several son preference measures.

This paper provides a first reasonably comprehensive test of explanations of son preference using household-level data. We find strong empirical support for most hypothesized relationships when looking at explicit *attitudes* indicating son preference. However, the relationships are weaker and less pervasive when looking at *behaviors*

motivated by son preference. Behavioral expressions of son preferences are subject to more situational contingencies often unrelated to the underlying bias against girls. Sex selective abortions, for instance, require access to the requisite medical technology as well as a deliberate and sometimes protracted sequence of steps to achieve the desired outcome. Differential child mortality, while perhaps less deliberate and requiring no special resources (in fact, lack of resources is a more likely conditioning situation), also affects only a minority of families even in a relatively high child mortality region such as India (xx% of under five mortality in the 2001 census). The actual discrimination against girls that results in unbalanced sex ratios, therefore, is determined by many complicating factors beyond son preferences. It is useful, therefore, to maintain the distinction between attitudinal *prejudice* and behavioral *discrimination* in evaluating causal theories of son preference.

As a result, each manifestation of son preference exhibits a somewhat different set of correlates in the IHDS data. Together, they show support for each of the often-cited causal explanations, but the irregularity of the results reminds us of the slippages between underlying cultural patterns and specific household outcomes. This picture is fully consistent with the growing consensus in Asia that (attitudinal) son preferences are diminishing even while (behavioral) sex ratios are worsening (DasGupta, 20xx, Guilmoto 2009).

CAUSES OF SON PREFERENCE

The influential review by Tim Dyson and Mick Moore (1983) summarized the demographic geography of India as two gender "regimes" consisting of related family and

social practices. The "Northern" system included most of the characteristics cited as support for the strong son preference found from Rajasthan and Punjab in the West through much of U.P. in the East. In fact, this dichotomous picture oversimplifies Indian spatial variation – Himachal Pradesh in the north, for instance, has a quite egalitarian gender regime – and there is persistent evidence of the diffusion of the northern pattern in some areas of the South (see for example, Basu 1999 on convergence in gender differentials in survival; Bose 2001 and Agnihotri 2003 on juvenile sex ratios; Rahman and Rao 2003 on exogamy and dowries). An awareness of this greater geographic complexity is consistent with the recognition of the multiple causal factors that have been found to sustain son preferences.

Exogamy

A central tenet of the North Indian kinship system is that brides are brought into the extended family from outside the family and from outside the local area. This means that parents often have little motivation for long-term investment in their daughters. Once married, they become a part of someone else's extended household, often at some distance from their natal village so that continued social relations can become quite infrequent. The South can be quite different: it is not only acceptable for daughters to marry within the village, cross-cousin or uncle-niece marriages are often preferred. Consequently, parents can expect as strong lifelong relationships with their daughters as they do with their sons. But in the North Indian pattern, exogamy means that parents can maintain that close relation only with sons. Kishor (1993) found empirical support for these arguments by showing that districts where village exogamy is the norm are the districts where girls suffer higher child mortality than boys.

Early arranged marriages

Because brides are brought into the family from outside, they are seen as potential disrupters of family harmony. They must be quickly put under the authority of mothers-in-law or senior sisters-in-law and their wishes subordinated to the needs of their new extended family. The ability to integrate the new brides is easier if they are young and if they have had no role in choosing their husbands. Thus, 80-90% of brides in North India first meet their husbands only on their wedding day (Desai et al., 2010). This pattern reinforces, but also reflects, the subordinate status of women in the family and symbolizes the primacy of the parent-son relationship. Son preferences become natural under these circumstances.

Generational over conjugal ties

In patrilineal extended families, it is the tie between father and son, not husband and wife, that is the key social relationship. Thus, the kind of companionate marriages that develop in a system of nuclear families is largely missing or weak in much of India. Instead, the conjugal tie can be seen as a potential cause of the division of family lands and joint households. In this system, women are a threat to family stability while sons are the guarantor of prosperity and local influence.

Support in old age

The patrilineal and patrilocal character of the North Indian kinship system dictates that sons are responsible for maintaining their aged parents. Couples with only daughters face a potential future of deprivation and loneliness. Preferences for sons, therefore, are closely tied to security for one's old age. Widows are especially vulnerable in old age so the need for sons is felt as much by mothers as fathers.

Patrilineality

Kinship in North India is organized by strong patrilineal gotras that control local village life and family relations. Land ownership and political power are organized into these competing patrilineal groups. Marriages become a means for reinforcing a clan's political ties and sons are necessary for the protection and expansion of the patrilineal line. Monica Das Gupta and colleagues (Das Gupta et al. 2003, Das Gupta 2010) have shown that similar emphases on patrilineal descent account for the equally virulent son preferences in Korea and China. In these areas, the patrilineal descent group is more than just a means for passing property on to the next generation. They are organized social groups carefully integrated into the larger political system providing the political stability that connects thousands of villages to central state authorities. Because patrilineal clans are institutionalized social actors with an interest in the production of sons, individual families are not free to disregard the prevailing son preferences. The cultural pressure is backed up by a political imperative that maintains the patrilineal descent group and routinely reinforces male dominance.

Dowry and wedding expenses

In much of India, marrying off daughters can become a huge family expense. There are costs for sons' weddings as well, but the dowries and gifts that come with the new bride mostly end up with the sons' families. So, on balance, more sons can eventually mean more resources while more daughters can be a drain on household wealth. As dowries have grown larger with economic development and as they have spread beyond their traditional North Indian region, they have been widely cited as a cause of discrimination against girls. Ineffectual laws have even been enacted prohibiting dowries and guaranteeing daughters

equal inheritance rights with sons. However, some skeptics have also argued that parents' anxieties over dowries are at most a secondary concern and it is the social, not the economic advantages of sons that better explains son preference (Das Gupta, 20xx).

Empowerment

A common thread to many of these considerations is the lack of women's ability to control their own lives. Dyson and Moore singled out what they called women's autonomy, "the capacity to control one's personal environment" as the defining difference between north and south Indian kinship systems that underlay the sex differences in child mortality. Women's autonomy and empowerment have been variously measured as decision-making power, freedom of movement, the absence of restrictions on women's appearance especially regarding norms of purdah, the ability to own or inherit property in their own names, and the ability to control their own sexuality and marital choices. The argument about the importance of women's empowerment for weaker son preferences is not that women have inherently lower son preferences – a key to the stability of the patrilineal regime is that it co-opts senior women by tying their substantial familial authority to the presence of sons (Das Gupta 1995). Rather, the point is that where women are devalued to the extent that they cannot control important parts of their own lives, then daughters will be similarly devalued and sons will be preferred.

Labor force participation

At least since Engels (1872), women's autonomy within the economic arena has attracted special attention as central to gender relations in general (xx). Where women are employed or are independent producers, they can establish their potential economic independence from male domination. This economic autonomy reverberates through

marital, kinship, sexual, and political aspects of gender relations as well. If only sons are seen as potential contributors to the economic prosperity of the family, then they will be preferred and daughters will be seen as an economic burden. Testing this reasoning, Kishor (1993) found that in addition to village endogamy, women's labor force participation rates were a powerful predictor of gender differentials in child mortality across India's districts.

INDICATORS OF SON PREFERENCE

There have been almost as many indicators of son preference as there have been causal theories of its origins and social supports (see Arnold 1992 and xx for surveys including a wide variety of indicators). The indicators of son preference have sometimes been at least implicitly treated as more or less interchangeable. However, as sex-selective abortions have become a growing avenue of parents' ability to realize son preferences, the differences between preferences and behaviors have become more obvious (Guilmoto 2009). The differential availability and efficacy of the new technology appears to have increased the actual imbalances in childhood sex ratios, even as the underlying attitudinal preferences for sons may have been moderating (Das Gupta and Bhat 1997). So it is now more widely recognized that the various indicators of son preference may have quite different relationships with social forces and temporal trends so that inferences based on one indicator should not be generalized to others. That realization is reinforced by the results of this research.

Indicators of son preferences have almost universally shown their dependence on the sex composition of living children. It is not girls in general who are at higher mortality

risk but girls born into a family of one or more daughters. It is parents with *no* sons and some daughters who are most likely to continue childbearing or to undergo sex selective abortions. The IHDS includes several measures of son preference; we will analyze six in this paper.

Attitudes

Personal attitudes towards son preference are often assessed by asking people the sex composition of their ideal family: when they respond by favoring more sons than daughters, we can conclude there is an acknowledged son preference (e.g., Bhat and Zavier 2003). Rarely does a preference for more sons than daughters imply that girls are totally unwanted. Most families want at least one daughter. But families with a distinct son preference will prefer two or more sons beyond the one daughter.

Claims about an ideal family composition may miss an actual son preference for several reasons. An "ideal" family is never a completely hypothetical construct; it is always influenced by the actual composition of a respondent's current family. Responses are also conditioned by a person's awareness of what would be a socially desirable response, especially in the eyes of the well-educated interviewer asking the question. Many respondents feel obliged to report explicitly that they have no sex preference for their ideal family. Moreover, the growing consensus for a two-child family constrains the possibilities for expressing a son preference to advocating a family with two sons and no daughters – an outcome most families find unappealing as well. Thus, responses to son preference attitude questions are constrained by non-gender attitudes such as family size preferences in much the same way – although not as dramatically – as son preference behaviors are constrained by situational factors unrelated to gender structures.

We interpret the ideal family composition question as only one indicator of attitudes towards son preference. Other methods would reveal different levels of son preference and, more importantly for our purposes, different relationships with underlying causes (the two are not the same and it is important to realize that measured *levels* of son preference may differ without differences in *relationships* to hypothesized causes – and vice-versa).

Fertility Preferences

A second, quite different, approach to measuring son preference attitudes is to compare desires for an additional child between families with all girls versus families who already have a son (e.g., Arnold 1992, 1997)[2]. In societies with a marked son preference, it is more common for families with two girls and no boys to express a wish for a third child than do families with a boy and a girl (or with two boys). The size of this desired fertility difference reflects the strength of the son preference; groups or areas that have larger differences have stronger son preferences. Testing differences in fertility preferences between families with and without sons is a more indirect method of assessing son preference and may reveal attitudes that respondents may be less able to articulate or more anxious about expressing to an educated but unknown interviewer.

The logic of this comparison assumes there are no pre-existing differences between couples with no sons and those with one or more sons. In high son-preference populations with either large gender differentials in child mortality or sex-selective abortions, that

[2] Arnold (1997) also reviews several other innovative methods for detecting attitudes towards son preference. For example, in the 1992 Indian National Family Health Survey, the proportion of current pregnancies that women report as unwanted increases with the number of previous sons and is virtually zero for women with no living sons.

assumption is invalid. The sample of parents with sons is biased towards those who have used sex-selective abortion or who have more readily tolerated female child mortality in the past. That is, the parents with living sons are likely to have stronger son preferences (or at least better access to the means for realizing that son preference) than would parents whose children's sex was determined randomly. This will bias downwards the differences in son preference between parents without sons and those with one or more sons. Most researchers ignore this bias; unless sex selective abortions or differential child mortality results in many lost girls, the bias is unlikely to be large.

Fertility Behaviors

Just as desires for a third child may reveal couples' implicit but unarticulated son preferences, so does their actual fertility behavior. Son preferences are revealed when couples with two daughters more often have a third child than do couples with a son and a daughter or with two sons. The logic and problems of this measure are similar to those of the desired fertility measure, but it has the distinction of reflecting actual behavior rather than a quick and perhaps unconsidered response to a stranger's question. Behaviors differ from attitudes in many ways, of course. Translating desires into outcomes depends on resources, can be influenced by situational constraints and is facilitated by many social factors beyond the strength of the desire. Chance plays a role also. So, investigating two similar measures of son preferences, one attitudinal and one behavioral, is useful, not because one is necessarily better than the other, but simply because they are *different*, reflecting different sets of social determinants and different facets of son preferences.

Of course, the differences in either desired or realized fertility between the parents of all daughters and parents with some sons does not by itself affect actual sex ratios in any

way. The additional child of parents of two daughters is as likely to be a daughter as were the first two. Its usefulness as a measure of son preference does not translate into a direct explanation of Asia's "missing women". For that, we need to investigate sex-selective abortions and sex differences in mortality.

Sex-selective abortions

The growing availability of sonograms has broadened the capacity of many parents to realize their latent son preferences. The often dramatic recent rises in sex ratios at birth have been largely attributed to these new technologies (Johansson and Nygren 1991; Goodkind 1996; Miller 2001; Arnold, Kishor, and Roy 2002; Guilmoto 2009). They also seem to have spread the area of "missing women" to regions such as the Caucasus that had not previously witnessed unbalanced sex ratios (Meslé, Vallin, and Badurashvili 2007).

The technology is, however, not equally available to all parents. Access is socially and economically structured so that outcomes reflect more than just son preferences. In India, for instance, the sudden rise in sex ratios at birth is largely confined to the wealthier states of the west and northwest. That rise reflects both the strong son preferences in these areas but also the relative prosperity there that enables providers to develop sufficient markets to make investments in the technology worthwhile. Other areas could presumably have as equally strong son preferences but not support the technology as well because of more widespread poverty and technological backwardness.

The economic requirements for sex-selective abortions do not necessarily imply a simple linear relationship between wealth and sex ratios at birth. High-income couples also tend to be more educated and cosmopolitan for whom explicit son preference

attitudes would be more stigmatized. The two forces often work at cross-purposes. In some places the economic relationship is more curvilinear where middle income couples have both adequate means to access the technology and stronger son preferences to motivate its use; lower income couples lack the means and higher income couples, the desire for sons. Similarly, over time, sex ratios can rise at the same time that preferential attitudes are actually declining. Cultures can change more slowly than technology, but presumably the cultural change will eventually be decisive and the problem of "missing women" will abate.

It has also been well established that the gender composition of the existing children has a decisive effect on parents' decision for sex selective abortions (cites xx). Families without any girls rarely abort a female fetus because of its sex unless they want a one-child family. Sex ratios at birth for families with no girls are usually quite normal. But the sex ratios at birth get increasingly worse with more daughters already in the family. This pattern reflects the survey responses to the ideal family question which rarely elicits an ideal family with no daughters.

Differential child mortality

Until the development of readily useable technology to determine the sex of a fetus, the principal reason for high male child sex ratios was differential mortality by sex. At its most deliberate that could be achieved by female infanticide. But child sex ratios can be skewed also by less conscious biases that affect the readiness to engage medical solutions to childhood illnesses or by differences in nutrition that leave girls less resilient to disease. Whatever the reasons, gender differences in child mortality have been an important

indicator in the study of son preferences (e.g., Kishor 19xx). As with sex ratios at birth, the mortality risk for girls increases substantially for girls with more sisters.

Childhood sex ratios

The male sex ratios that characterize much of Asia arise primarily from sex selective abortions and differential mortality. As sex determination technology has spread, sex selective abortions have accounted for an increasing share of skewed sex ratios. There is even some speculation that increases in sex selective abortions might reduce sex differentials in child mortality as families with the strongest son preferences simply avoid having unwanted daughters. This seems unlikely however since, as we shall see, the two paths to skewed childhood sex ratios have quite different correlates.

The *measures* of childhood sex ratios are also a consequence of survey and census errors, primarily undercounts of girls and age misreporting. There have been some attempts to attribute *all* of the missing women or girls to these data collection errors, but beginning with the classic study of Pravin Visaria (19xx) for India, it has been clear that these reporting errors cannot fully account for the skewed sex ratios. Nevertheless, reporting problems do create problems for analysis (Guilot 20xx) and should not be discounted in interpreting associations with hypothesized causes.

Other indicators

The proximate causes, the *mechanisms*, of higher female mortality have been a frequent research topic for areas with high male sex ratios. Sex differences in access to medical care seem especially important (Hill and Upchurch 1995). Differential nutrition and general health, as measured for example by breastfeeding duration or morbidity rates,

or by rates of stunting, wasting, and underweight, while frequently suspected as culprits in differential mortality, have received less empirical support. Both types of childhood gender inequalities deserve further study, but we have focused here on "life and death" measures (Bardhan 1974) rather than on differential investments in children. We know from studies of gender differences in parents' investments in children's schooling, that these patterns are often quite different, both geographically and economically, from gender differences in mortality (Sundaram and Vanneman, 20xx).

Similarly, several studies have analyzed parents' lower contraception rates in families of all daughters; a few others at reduced birth intervals in such families. These issues have been less studied recently than in the 1990s, perhaps because of reduced concern with high fertility and better recognition of the minor role that son preferences play in overall fertility rates. We exclude them here in favor of measures of actual fertility, focusing as above on the outcomes themselves rather than on the mechanisms that lead to those outcomes.

Dimensions of son preference

Our six measures of unequal outcomes, although omitting unequal investments, nevertheless incorporate several important differences. Two are attitudinal and thus less constrained by situational determinants than the four behavioral outcomes. Two are measures of enhanced fertility while three are measures of mortality; the fertility-mortality difference reflects a distinction between son preference and daughter avoidance that is often glossed in the literature. The sex-selective abortions are the most private of the actions; as Guilmoto points out, only demographers' analyses of sex ratios at birth can identify that there is even a gender issue involved. In contrast, births and deaths are public

to the community and most susceptible to normative sanctions; even attitudinal responses on a survey require disclosure to an educated stranger. Finally sex-selective abortions and, to a lesser extent, additional fertility require more active, deliberate decision-making by parents while child mortality is a more passive consequence of unpredictable misfortunes; the more deliberate outcomes require from parents a more open acknowledgement of son preference – and more resources to execute than the passive outcomes.

METHODS AND DATA

Sample

The IHDS is an exceptional opportunity to investigate the causes of son preferences. The survey made a concerted attempt to measure several dimensions of gender inequality and family structure: there are multiple measures of marriage patterns, wedding costs, and gender empowerment. The sample is nationally representative including 31 states that capture the geographic diversity of gender relations in India. The IHDS sample is also large enough to analyze the small differences in sex ratios that differentiate social groups and geographic regions. It has both attitudinal questions about ideal family sizes and expected fertility as well as the detailed fertility histories needed to investigate sex ratios and to control for siblings' prior gender composition. [NSS comparison]. The three waves of the NFHS have proved valuable resources for studying several aspects of son preference, but it does not have the same range of gender, family, and wedding questions, as does IHDS for analyzing the causal factors supporting son preference.

The IHDS survey asked a knowledgeable informant, typically the male head of the household, about the socio-economic condition of the household, and the employment and

education of all household members. An interview with an ever-married woman, 15-49, asked about marital practices in the community, gender relations in the household, their marital and fertility history and lastly the quality of their conjugal relationship. These measures permit us to test the intervening linkages hypothesized above.

Indicators of Son Preferences

Ideal family composition. The women were asked a hypothetical question about how many children they would have had if they could go back and choose; they were then asked how many of them would be boys and how many girls. P. N. Mari Bhat and Fred Arnold have made extensive use of a similar question in the NFHS[3] and other DHS surveys, arguing that despite analysts' reservations that answers would be affected by women's actual birth histories, the response patterns showed meaningful relationships across regions and family characteristics. Table 1 reports the distribution of responses in the IHDS. By far the most popular response (50.6%) was to wish for two children with one son and one daughter. Two children is the widely promoted ideal throughout India and the split in genders is also more socially acceptable than two children with no daughters (1.8%) or no sons (0.3%). Nevertheless, over a quarter (25.8%) of all women express an explicit son preference in wishing for more sons than daughters. Most often (18.9%) the women frame this son preference as a desire for two sons and one daughter. Far more rarely (3.5%), sons but no

[3] The NFHS question differed in asking women not just how many sons and daughters they would want but also how many children where the sex did not matter. Not surprisingly, because of this explicit request, twice as many NFHS respondents (19.5%) claimed they had no sex preference compared to IHDS respondents (9.0%). Otherwise, the distributions of responses are quite similar in the two surveys.

daughters at all are desired, although this is still greater than the 1.0% of women who would have wanted daughters but no sons.

----- Table 1 about here -----

The quarter of women who explicitly state a son preference by preferring more sons than daughters does not exhaust the extent of son preference in India. We need not interpret this figure as some absolute level of son preference. The overwhelming popularity of the two-child norm makes it difficult to express a son preference without excluding daughters altogether. Perhaps if women had been asked what gender distribution they would have preferred if they had three children, the proportion stating a son preference would have been greatly enlarged. However, as Kaur (20xx) has pointed out, there are disadvantages for landed families in having two sons who might eventually marry and divide the family inheritance. So, a revised son preference question would not necessarily have enhanced the analysis of the relationships of son preference with exogamy, large dowries, lack of employment, seclusion and powerlessness. The 25.8% proportion provides a large sample of women with explicit son preferences and enables us to ask how these women differ from women who have not stated such a son preference. Indeed, if the sex distribution of children were to actually match the women's expressed preferences, India would have a sex ratio of 125.1, far higher than what has ever been experienced.

Because the actual sex composition of the woman's family probably influences what she frames as her ideal family, the analysis of responses to this ideal family question

include controls for the current number of sons and daughters she has at the time of the interview.

Relationship of desired fertility with current sex composition of the family. Women were also asked whether they wanted another child or not. A son preference is revealed more indirectly in these responses as the difference between women with no sons versus those with the same number of children but at least one son. For example among mothers of two children, only 7.9% with a son and a daughter express a desire for a third child, only 7.5% with two sons want a third child but 29.6% of mothers of two daughters say they want a third child. This difference for mothers with no sons is found at all family sizes (see Table 2). Among all mothers of two or more children, 29.6% of those with no sons want another child compared to only 4.9% of those with at least one son already.

----- Table 2 about here -----

To analyze whether this difference is larger among women who are less empowered (or more secluded, not employed, from outside the village, etc.), regression models on the desire for more children include a multiplicative interaction term. The coefficient of interest for son preference is not whether, for example, less empowered women are more likely to want another child, but whether among less empowered women the difference between those without sons and those with sons is larger than that difference among more empowered women.

Relationship of actual fertility with current sex composition of the family. Just as we can compare desired fertility for families with and without a son, we can also compare actual fertility for families with different sex compositions. As for desired fertility, the son

preference is implicit in this comparison, perhaps even unconscious. But this comparison moves beyond stated preferences to actual behavior and so is more conditioned by all the circumstances that impinge on translating preferences into reality. Everything from the mother's fecundity to her husband's preferences to pressures from her extended family can result in quite different patterns for comparisons of actual fertility rather than of desired fertility.

IHDS collected full birth histories for all the women interviewed. Thus for each birth, we know whether the woman had another child (or whether she is currently pregnant). A son preference is detected when mothers with no sons are more likely to have had another child than mothers with the same number of children but at least one of whom is a boy. We restrict the sample to births with one or more live children in the family that occurred more than two years before the interview and in which the child lived for at least two years. This leaves a sample of 53,140 births from 24,066 mothers. Thirty-nine percent of these births were the mothers' last birth. On average, these births occurred over 12 years before the interview so historical changes provide another difference between this measure of actual fertility and the mothers' expressed preferences for more children.

Table 3 shows the greater frequency of subsequent births at each family size for mothers with no sons. In families of one child, there is only a slight difference between mothers of a son and mothers of a daughter, so we have dropped those cases from the analysis. But 84% of mothers of two daughters and no sons went on to have a third birth compared to 67% of mothers of one son and one daughter. That difference remains similar at each family size. The results also show that mothers with one son are somewhat more likely to have a subsequent birth than mothers with two or more sons, demonstrating some

desire for at least one daughter, although that difference is smaller than for the comparison with mothers of no sons. For larger families, there is also further evidence of a desire for at least one daughter: 57% of mothers with four sons had a subsequent birth compared to 50% of mothers with three sons and a daughter.

----- Table 3 about here -----

The analysis of which groups of mothers revealed this type of son preference is similar to the analyses for desired fertility. A dummy variable is created first for families with no sons versus those with at least one son and this is multiplied by the variables of interest. For example, if families where brides are married young also reveal a son preference in their fertility patterns, then we should expect that among mothers married at a young age, the fertility difference between mothers of no sons and mothers of one or more sons should be greater than among mothers married at a later age.

Sex ratios at birth and sex-selective abortions. Sex ratios at birth can be inferred from the birth histories directly. A regression of the sex of the newborn on the characteristics of the family shows what types of families translate their son preferences into sex-selective abortions. As with all son preference manifestations, sex-selective abortions are conditioned by the sex composition of the current family. Table 4 reports sex ratios at birth for families of up to four children.

----- Table 4 about here -----

For sex-selective abortions, the most important family composition determinant is whether there is already a daughter in the family. Parents with one or more daughters have higher sex ratios at birth than parents with no daughters. Two points are important

to notice here. First, unlike fertility where the critical determinant is the number of sons, for sex selective abortions it is the number of daughters. This difference is consistent with the outcome: fertility adds to the family; abortions subtract possible family members. Since higher fertility reflects the hope of adding a son (at a risk of adding another daughter), the critical determinant is whether there is a son in the family already. Since sex-selective abortions do nothing to add sons, the critical determinant is whether the family already has what it considers a full complement of daughters. In much of India, that "full complement" appears to be one.

Second, the differences by family composition are very small – especially when compared to the differences in ideal family sex composition or even to the effects of family composition on continued fertility. Even the most extreme cell of Table 4, for families with one daughter and no sons, the sex ratio at birth is only 115.3 – well below some recent observations in East Asia and well below the desired sex ratio implied by ideal family preferences. While sex selective abortions have justifiably attracted much attention, it is important to realize how uncommon they are as yet in India. While many families prefer more sons and do not want more than one daughter, only a small minority acts on those preferences. One research implication of these small differences is that it will take very large samples to analyze what types of families are actually engaging in sex selective abortions.

Sex differences in child mortality. The higher Asian mortality rate for young girls than young boys is the original source of the concern over Asia's "missing women". While initial reports worried about deliberate infanticides, the more common interpretation today is relative neglect.

Causal factors supporting son preference.

Women's employment. IHDS collected labor force participation data based on its extensive income questions. Within each income section, IHDS asked who in the household participated in this activity and what was their level of participation. Interviewers were specifically trained to ask about the participation of women and children in these activities. The combination of information from the different activity streams provides a holistic picture of the types of economic activities undertaken by all individuals in the households in the preceding year. We include a single variable indicating if the woman does not work fulltime year round.

Empowerment. Women's empowerment is measured with three variables: if the woman has the most say in few household decisions, if she can go out alone, and if she practices veiling.

Exogamy. Indicators for exogamy include a variable that indicate if her community does not marry within the village, if the woman visits her natal family only on a few occasions and if the husband does not belong to the same village.

Old age support. Two variables are included to indicate old age support from daughters - if only husband's family supports widows and if widows would not get financial support from daughter.

Own marriage. The variables reflecting marriage practices include if the woman was married at a young age, whether she first met her husband at wedding and if she had no say in choice of husband.

Dowry and wedding. The dowry and wedding expenditures are measured using three variables - ratio of bride/ groom expenses, extent of wedding gifts and large dowries.

Conjugal and companionate marriages. Two variables indicate the intimacy enjoyed by the spouse - no family outings together and if they take their meals separately.

Control variables.

Household level: Family composition. As noted above, past research has shown that son preferences become activated only after the birth of daughters. While samples for behavioral outcomes will generally be limited to births in families with at least one daughter, the number of live daughters (and sons) also has an impact on outcomes.

Household level: Socio-economic status. For sex ratios at birth, wealth provides resources to access sex detection sonograms and private abortions. For differential mortality, poverty increases the baseline child mortality that enables gender discrimination to emerge. In both cases, higher economic standing is also correlated with more parental education that may reduce attitudinal prejudice while simultaneously increasing access to the means for discriminatory outcomes.

District level: gender. Perhaps as important as the household environment, the larger social context for the family has been shown to be important for both gender attitudes and outcomes. Among the specifically gendered characteristics included in the statistical models [will be] women's labor force participation rates, gender differentials in migration (as an index of exogamy), extended family prevalence, and age at marriage.

District level: socio-economic status. Poor families in wealthy districts have better access to sex-detection sonograms than wealthy families in poor districts. Acceptable

attitudes are conditioned by the education of your neighbors as well as by your own education. Measures for each are readily available from census data.

Urban context: The sampling design of the IHDS dictates separate urban and rural variables for all contextual measures. Thus, the urban – rural difference is also measured at the higher level.

RESULTS

Preliminary results are available from simple (non-hierarchical) logistic regressions of each of the six son preference measures on each of the eighteen hypothesized causes with all household controls (Table 7)[4].

The first, most obvious, result is the strong relationships of each of the hypothesized causes with *attitudes* about son preference. Women who say they want more sons than daughters are less likely to be employed, more disempowered, more likely to be in an exogamous marriage where they met their husband on the wedding day, and less likely to share meals or outings with their husbands. No other measure of son preference has such a broad pattern of relationships with the entire array of family and gender patterns that

[4] Son preference effects of the hypothesized causes (employment, exogamy, empowerment, etc.) are estimated directly for more sons in the mother's ideal family, and for the sex of the child at birth and at age 5. Effects on gender differences in child survival are estimated by the interaction of the hypothesized cause with the child's sex (e.g., does mother's employment reduce the effect of sex on child survival?). Effects on fertility and desired fertility are estimated by the interaction of the hypothesized cause with the sex composition of children already in the family (e.g., does the mother's employment reduce the effect of having only daughters on subsequent fertility).

have been suggested as causes of son preference. When the outcome is only hypothetical, there is support for each of the supposed causes of son preference.

The more son preference outcomes are constrained by the family's actual circumstances, the weaker the support for any of the supposed causes of son preference. Sex differentials in child mortality also show a broad pattern of relationships with family and gendered backgrounds, although not as uniform as for son preference attitudes. Eleven variables in six of the seven broad categories of causes are related to greater mortality for girls than boys. Systematic gender differences in mortality are more a passive result of neglect and can result without deliberate effort. Latent son preferences can be manifested in more frequent female deaths without parents taking specific steps to realize their preferences. Indeed, it is the lack of steps taken that may lead to differential mortality. Refraining from action may be more closely related to preferences than positive actions that require deliberate effort and the expenditure of resources.

At the opposite extreme, few of the causes are related to sex ratios at birth – an outcome that requires a sequence of deliberate steps – sonogram, decision-making, and a sex-selective abortion – that involves far more deliberate planning and execution than do sex differentials in child mortality. Only a mothers' full-time employment acts as a protection against sex selective abortions. The other supposed causes may lead to a preference for sons, but not its realization through sex selective abortions.

In between, are the expressions of son preferences through continued fertility – the greater desire and achieved fertility for mothers of two daughters than for mothers with at least one son. Dowry and wedding expenses appear to be especially important for the

progression to another birth; a family with one son already has the prospect of receiving dowry and need not bear the burden of more births while those with only daughters can hope for a son to help offset the cost of marrying off the daughters.

Reading the results by rows, across hypothesized causes of son preference, it is important to note that each causal variable has a statistically significant relationship with two or more measures of son preference. None are ruled out as irrelevant. Nor does any one hypothesized cause have significant relationships with all of the son preference measures. The results seem to confirm why so many alternative theories of son preference have co-existed for so long. Empirical support can be found for each, but none are so broadly relevant that their effects can be seen no matter how son preferences are manifested.

CONCLUSIONS

The possibility of investigating multiple indicators of son preference together with multiple measure of the family and gendered causes of son preferences provides a more comprehensive and more complex picture of the dynamics of gender discrimination. Each indicator of son preference reveals a somewhat different pattern of relationships. It is difficult therefore to generalize from results based on one measure of son preference to other, seemingly equivalent, measures.

Of particular importance is the difference between attitudinal expressions of a desire for more sons than daughters versus the actual realization of those preferences, especially through such practices as sex selective abortions. An expressed preference for sons appears to be related to most if not all of the reasons observers have suggested as

causes of son preference. But those causal factors do not necessarily lead to behaviors that lead to the preferred outcomes. There are significant costs to translating preferences into actual outcomes. The prospect of raising additional children, or losing existing children through death, or the complications of sex selective abortions – all inhibit families from actually achieving their desired son preferences. As a result, the causal factors are much weaker in predicting gendered outcomes than they are in predicting gendered preferences.

Table 1. Ideal family composition

	Number of desired sons				
Number of desired daughters	0	1	2	3+	
0	0.8%	1.3%	1.8%	0.4%	4.3%
1	0.7%	50.6%	18.9%	2.4%	72.5%
2	0.3%	1.8%	9.2%	0.9%	12.2%
3+	0.1%	0.2%	0.2%	0.5%	1.0%
	1.8%	53.9%	30.0%	4.1%	89.9%

Table 2. More children desired

Number of girls alive at interview	Number of boys alive at interview						
	0	1	2	3	4	5	Total
0	72.6%	51.0%	7.5%	4.3%	0.023	0.000	0.175
1	59.0%	7.9%	1.5%	0.7%	0.034	0.000	0.091
2	29.6%	4.9%	0.9%	0.6%	0.000	0.030	0.061
3	28.3%	4.2%	0.9%	2.3%	0.031	0.000	0.064
4	0.289	0.044	0.024	0.000	0.000	0.000	0.069
5	0.251	0.021	0.000	0.000	0.000	0.000	0.043
6	0.385	0.000	0.000	0.000	0.000	0.000	0.045
7	0.000	0.098	0.185	0.000	0.000	0.000	0.082
8	0.519	0.000	0.000	0.000	0.000	0.000	0.208
Total	0.389	0.104	0.025	0.017	0.018	0.010	0.089

Table 3.

Table 4.

Table 7. Logistic Regression Results

Outcome:	Ideal family		Want more		Not last child		Sex ratio @birth		Survival ratio		Sex ratio @ 5 years	
Measure:	more sons than daughters		compare mothers with no sons vs. 1+ sons		compare no boys in family vs. 1+ boys		sons / daughters		5 year survival: sons / daughters		sons / daughters	
Sample:	ever married women 15-40		women with 2+ children		children with one live older sibling		children ever born with 1 older sister		children ever born 5+ years ago with 1 older sister		children >= 5 with 1 older sister	
Women's employment												
does not work fulltime, year round	0.3770	***	-0.1387		-0.2556		0.1527	*	0.3244		0.1329	*
Empowerment												
practices purdah	0.3537	***	0.3182		0.1948	*	0.0561		0.5637	**	0.0695	*
has the most say in few decisions	0.0497	+	0.0123		0.0911	*	-0.0369	+	0.0264		-0.0216	
cannot go out alone	0.0640	**	0.1644	+	0.0152		-0.0259		0.1486	*	-0.0202	
Exogamy												
community will not marry within village	0.4964	***	0.0749		-0.0531		0.0489		0.4709	**	0.0594	
few visits to natal family	0.1635	***	0.2346	*	0.0603		0.0020		0.2183	*	0.0174	
husband is not from same village	0.3963	***	0.7440	**	0.1126		-0.0207		-0.0221		-0.0382	
Old age support												
widows support only by husband's family	0.3924	***	0.0188		-0.0354		0.0283		0.3382	+	0.0160	
would not get financial support from daughter	0.2649	***	-		-		0.0507		0.4120	+	0.0430	
Own marriage												
young age at marriage	0.0299	***	0.0100		0.0403	**	-0.0065		0.0333		0.0003	
first met husband at wedding	0.3163	***	0.3768	+	0.2096	*	0.0233		0.5404	*	-0.0047	
had no say in choice of husband	0.5779	***	0.3681	+	0.1105		-0.0404		0.5465	***	-0.0301	
Dowry & wedding												
ratio of bride/ groom expenses	0.1711	***	0.8096	***	0.2607	**	0.0282		-0.0607		0.0115	

extent of wedding gifts	0.3295	***		0.4532	+	0.3775	***		0.0945	+	-0.1612		0.0343
large dowries	0.2064	***		0.1216		0.2059	*		-0.0081		0.3890	+	0.0519
Conjugal/ companionate													
no family outings together	0.1361	**		-0.2235		0.1044			0.0487		0.3457	*	0.0372
take meals separately	0.5297	***		-0.2499		0.0792			-0.0090		0.3649	*	-0.0059