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THE SEX OF PREVIOUS CHILDREN AND SUBSEQUENT FERTILITY INTENTION IN INDIA

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Résumé — Quoiqu'il y a une préférence considérable pour des garçons parmi les couples indiens, la plupart des études précédentes, basés sur des données de la période 1961-1970, indiquent que le sexe de l'enfant n'a qu'une influence minime sur la fécondité actuelle ou sur les intentions futures. Sur la base d'échantillons ruraux et urbains de la période 1979-80, nous trouvons que le sexe des enfants déjà nés influe sur les intentions de fécondité, à chaque parité. Puisque la préférence pour des garçons augmente, les interventions politiques aideraient à réduire la fécondité s'ils cherchaient à influencer les facteurs socio-culturels et économiques qui portent à cette préférence.

Abstract — Despite a clear preference for sons among Indian couples, most of the earlier studies based on the 1961-1970 data indicate the gender of the child has a small effect on actual or intended fertility. However, the research reported herein, using rural and urban samples of women interviewed during 1979-80, shows that the sex of women's previous children at each parity has an effect on women's subsequent fertility intentions. This increasing effect of son preference urgently calls for some political interventions influencing the socio-cultural and economic reasons for preferring a son as a means of fertility control.

Key Words — **sex preference, functions of children, fertility intentions, actual fertility**

Fertility in developing countries is a complex phenomenon resulting from an interplay of various social and cultural patterns related to marriage, child birth, child rearing and familial or kinship affiliation. The central importance of familial or kinship affiliation coupled with high mortality, as in the case of India (particularly in rural India) is one of the causative factors responsible for large family size. A desire for a large family is deeply embedded in the perceived values and roles that children perform in their families. Some of the purposes for which children are valued by parents are universal, while others are specific to social groups or individuals. In traditional Indian society, children are a means to perpetuate tradition and the ancestral line; provide economic and old age support for parents; act as agents of change in life styles; customs and goals; and perform the psychic role of providing love and affection as well as strengthening the marital bond (Baus *et al.*, 1979; Jairath, 1975; Mahadevan, 1979; Mamdani, 1970).

While many children are desired generally among Indian couples, sons are desired more than daughters. This differentiation arises out of the fact that Indian society is patrilinineal in nature, and the type and number of roles expected of daughters are more limited in scope than those expected of sons. Supporting household work is the common role performed by daughters across all caste and class groups (Mahadevan, 1979:64). Apart from other common roles and values associated with having a daughter (give and take of love and affection, source of income to the family for some time before marriage), a belief among some Indian couples that "kanyadan" (giving away of the bride) helps in attaining immortality is an important psychic role performed by daughters (Lahiri, 1975). However, the desire for a son is still most vehemently expressed by Indian couples, since the son is the source of economic support, insurance for old age and the one who will perpetuate the family lineage (Operations Research Group, 1972).

Several studies dating from the late 60s and early 70s refer to the strong preference for sons among Indian couples (Freedman and Coombs, 1974; Indian Institute of Public Opinion, 1967; Lahiri, 1974; Sarma and Jain, 1974). A recent all India survey collected by the Operations Research Group (ORG) in Baroda also reveals that the most frequently preferred combination of children is two sons and one daughter (Khan and Prasad, 1983).

Despite these findings, there has been sparce evidence in recent years regarding the impact of the sex of children already born on couples' intentions for further births. This paper poses to study such a relationship

in order to understand its impact on actual fertility. Prior to this examination, a review of relevant, existing studies is discussed in the following section.

Previous Studies

The influence of sex preference on number of children has often been considered (Clare *et al.*, 1951; Freedman *et al.*, 1960; Westoff *et al.*, 1963). Several studies of preferences for children of a given sex indicate that the combination of sexes among the offspring already present may influence ultimate (or completed) family size by affecting the decision of couples to limit their reproduction (Sloane and Lee, 1983; Waller, 1976). However, most studies have been based on the data of developed countries like the United States, and are concerned with effects which might result if the couples were able to predetermine the gender of their children. There are two common approaches which have been used to assess the likely effects of sex predetermination on fertility. One approach asks people about their preferences for children of each sex; depending on the responses, the likely impact of sex predetermination on fertility is assessed. A review of such studies is provided by Cutright, Belt and Scanzoni (1974). The second approach classifies couples according to their parity at interview and the sex of any children already born. When the dependent variable is Parity Progression Ratio (PPR), the difference in PPRs between couples whose children are of the same or of different sex is taken to measure the effect of sex preference on fertility. A large number of studies compute intended family size as an alternative dependent variable and compare the mean number of children intended, or the percentage of couples who say they intend to have more children, across the sex of child classification. The differences reveal the likely effects of sex preference on family size (Bumpass and Westoff, 1970; Cutright *et al.*, 1974:244; Freedman and Coombs, 1974:20-32; Freedman *et al.*, 1960). These methods, however, suffer from certain logical problems stemming from the heterogeneity of sex preferences in the population and the riskiness of fertility decisions; these problems are discussed later in this paper. Recently a new research method has been proposed to overcome the limitations of these earlier methods (McClelland, 1979). This new method is a combination of psychological measures of sex preference and behavioural intentions. It is claimed, while demonstrating the study on 172 college students, that the measure proposed by Mc-

Clelland is a useful and practical method of measuring sex preference (Widmer, McClelland and Nickerson, 1981). But this remains a laboratory study.

There are very few empirical works on this subject in India. The first serious effort in this direction was made by Robert Repetto (1972). After examining the data from North India and other less developed countries, he concluded that son preference and number of living sons are not factors that influence actual fertility. On the other hand, Freedman and Coombs (1974:20-32) observe, after analysing the attitudinal variables for which comparative data for a number of developed and developing countries were available, that in countries such as India, Korea and Taiwan, the presence of one or two sons in the family greatly increases the probability that the woman will consider her family complete and will want no more children. The relationship of the present number of sons to additional children wanted is quite systematic. The differences are particularly marked after there are three children in the family. However, the evidence of son preference is not as strong for India as for Korea and Taiwan. The main data used for examining the Indian pattern were taken from the All Indian family Planning Survey undertaken by ORG (Baroda) in 1970. Making use of the same data, Sarma and Jain (1974:89-97) also observe that the evidence is not very strong that the number of living sons influences fertility behaviour (parity progression ratio, use of contraception) or the attitude towards having additional children. Mukerji (1977), using the same ORG data and the 1961 National Sample Survey (NSS) reports, also found no meaningful relationship between the sex composition of children after a certain parity anad the proportion of couples deciding to have another birth. However, Lahiri (1975) notes from the same NSS data that in urban India the desire for an additional child falls quite rapidly as the number of sons increases. The desire for an attitudinal child is twice as strong or more among persons with three or more daughters than among those with the same number of sons. In most of these studies, the characteristics of the sample that might affect birth intention or actual fertility are not put under statistical control to study the relationship. Nevertheless, the evidence from these studies, using varied methods and sources of data, points to a small effect of gender of child on actual or intended fertility. The data analysed by these studies come mainly from the period 1961-70 when there was no clear evidence of rationalization among Indian couples available. Contraception was imprecise. Not all those couples who wanted no more children were found to be using contraception; a majori-

ty of them were having large families, and this might have weakened the effects of sex preference on fertility behaviour. With reproduction increasingly under voluntary control, attitudes and preferences may play an important role in determining actual fertility. With modernization, the preference for larger families will reduce. If this occurs without a corresponding decrease in the preference for sons, son preference would influence fertility decision more strongly. Therefore, at issue is the question of whether sex preference can make a difference in fertility when family size norms and use of contraception are changing favourably over a period of time. In this context we offer some rural and urban data of western India from a recent survey. The next section describes the data and method employed; it is followed by a presentation of the results and discussion.

The Data and Methods

A probability sample of rural and urban wives aged 15-49 currently living with their husbands in South Gujarat (India) was drawn and interviewed by the trained staff of the Population Research Centre, Baroda, during 1979-80. There were 2,922 and 3,220 currently married females from rural South Gujarat and Baroda city respectively (see Gandotra, Das and Dey, 1982 for details regarding these samples). The analysis involved only women who had previously given birth to between two and four children, and had not experienced any infant or child death at the time the interviews were conducted. Women who had more than four children were excluded because of small number, and because preliminary analyses revealed a lack of variation in their intentions for attitional children. The women who experienced any infant or child death were excluded to remove its effects on the relationship under study.

To assess the probable impact of sex preference on fertility intention, the mean number of additional children intended among couples with a given number and sex of living children was employed as the attitudinal measure. At various attained parities, the impact of having children of the same sex or of different sexes on the subsequent fertility intention of women is seen here. If sex preference exists, it should be reflected in the respondents' attitudes about future child bearing which, in turn, is likely to affect fertility behaviour. However, such measures of sex preferences are based on statistical aggregation of single behaviours or attitudes of

many couples. Their accuracy depends on the validity of the assumptions that sex preferences within a population under study are relatively homogeneous and that sex preference acts only to increase the desire to have more children, not to decrease it (McClelland, 1979). Because of these assumptions, the measures used on the present data may underestimate the effects of sex preference and cannot be used to make inferences about the effects of sex preferences on individual fertility decisions; instead, they help to establish the aggregate, or net, effect of sex preferences on fertility decisions.

Results and Discussion

Mothers of two to four children are considered in the present analysis. Table 1 presents the mean number of additional children intended by these mothers, by the sex of their previous child in the rural and urban area. The data in Table 1 reveal a strong preference for sons, especially in the rural area. For example, even among second parity mothers with two living children, the mean number of additional children intended is much lower for those with two sons or with one son and one daughter than for those with two daughters only. In the rural area two child families with no sons wanted an average of 1.04 more children than did those who had two sons. The corresponding figure is 0.51 in the case of urban women. A similar pattern of relationship between number of living sons and attitude towards future child bearing is also apparent at other parities. The sex of the child effects are relatively greater at the third or higher parity. The maximum percentage variation in the mean number of additional children wanted is observed in third-parity women. At the fourth parity, the percentage difference in the mean additional children wanted between the two extreme categories is also quite large compared to that at the second parity, although the mean is relatively small in all categories. Nevertheless, the results indicate a very clear preference for sons at various attained parities. The mean number of additional children intended decreases with the number of living sons. At third and fourth parities there appears to be a slight increase in the desire for additional children when all living children are sons, indicating that the desire for sons is not to the exclusion of daughters. The drive to have at least one daughter is, however, much weaker than the drive to have at least one son. The maximum difference is from the 'All daughters' to 'One son' category at each parity. At the second parity, the

TABLE 1. MEAN NUMBER OF ADDITIONAL CHILDREN WANTED BY SEX OF PREVIOUS CHILDREN AMONG MOTHERS WHO ARE AT SECOND OR HIGHER PARITY AT THE TIME OF SURVEY*

Parity	Sex of Previous Children	Urban Baroda City		Rural South Gujarat	
		No. of Cases	Mean	No. of Cases	Mean
Two		780	.350	365	.627
	Two sons	231	.238	118	.331
	One son & one daughter	392	.255	168	.488
	Two daughters	157	.752	79	1.367
Three		583	.105	442	.204
	Three sons	66	.015	52	.058
	Two sons & one daughter	250	.016	211	.043
	One son & two daughters	220	.141	147	.272
	Three daughters	47	.532	32	1.188
Four		296	.061	246	.089
	Four sons	19	.053	17	.176
	Three sons & one daughter	55	.036	62	.016
	Two sons & two daughters	126	.024	96	.042
	One son & three daughters	78	.077	60	.117
	Four daughters	18	.333	11	.636

* The women who experienced any infant or child death are not included.

most content group appears to be those couples who had two sons since the additional number of children intended by them was relatively small. Similarly, at the third parity the most content group appears to be those couples who had at least two sons out of their three living children. At the fourth parity, the pattern is slightly different for the rural and urban samples. The most satisfied group in the rural area had three sons and one daughter out of their four living children, while it is the group with

two sons and two daughters that is most satisfied among the urban sample.

If there is no sex preference among couples, we might assume that everyone at a given attained parity would desire the same number of additional children as those of that parity who are currently most satisfied with the sex composition of their families. If the couples practice contraception to control their fertility in accordance with the stated desire for additional children, that means that the total number of additional children at the second parity would drop by 47 per cent in rural areas and 32 per cent in urban areas. Such a reduction at the third parity would be much higher; it is of the order of 79 to 86 percent. Among fourth parity mothers, the reduction in the mean number of additional children intended is also large; it is approximately 61 per cent in the urban area and 82 per cent in the rural area. One question which arises is how much would overall fertility be affected as a result of that reduction? If the stated desire for additional children by couples at various attained parities is a true reflection of their future fertility behaviour, the impact on total fertility of the disappearance of sex preferences would not be large, since a relatively small (though not insignificant) proportion of the population at each attained parity is being affected by undesirable sex composition.

In drawing conclusions from the above analysis, three other factors should be borne in mind. The first has already been mentioned – a reasonable level of contraceptive use must exist before conclusions about the impact of sex preference on fertility can be made on the basis of attitudinal indicators. In this regard, it is important to know for the population under study whether the couples with a given number of living children practice contraception to control their fertility in accordance with their stated desire for additional children. If this is so, the expressed preferences or desires will be reflected in their fertility behaviour. It is interesting to note for the present data that the proportion of second or higher parity mothers currently practicing contraception is about 62 and 71 per cent in the rural and urban areas respectively. In two child families, the practice of contraception among those who want no more children is about 70-72 per cent in rural and urban areas. Similarly, in three and four child families, the corresponding figures are 81-83 and 85-87 per cent respectively. The practice of contraception among rural women is at least ten times lower for those who want more children than for those who want no more children. The corresponding gap is, however, much lower (two to three times) among urban women because

many urban women who want children are using spacing methods. Nevertheless, the couples' use of contraception is very consistent with their expressed desire for additional children.

A second important factor is that in India, infant and child mortality is still very high. Women may desire another child to replace the one who died rather than because they want to satisfy a sex preference. This may obscure the relationship under study. As mentioned earlier, in order to remove the effects of this, the mothers who had experienced any infant or child mortality at the time the interview was conducted were excluded from the present analysis. The attrition in size of the sample due to the exclusion of these women is about 15 and 30 per cent in the urban and rural areas respectively.

Finally, the subsequent birth intention among women at a given parity also depends on their age, education and other socio-economic conditions. These characteristics of the women were not controlled in the present analysis. This and the two earlier issues could, to some extent, obscure the relationship under study. Nevertheless, in order to minimize these problems, the third parity mothers are selected specifically for sophisticated analysis. As can be seen from the analysis presented in the following section, controlling for the various factors mentioned above did not change the relationship of number of sons to the number of additional children wanted.

Women With Three Children

The parties or family size level at which the preference and attitudes may make an appreciable difference in behaviour vary with the culture. In populations where ideal family size is relatively large, sex preference may not affect behaviour until later in the family cycle, perhaps at third or fourth parity (Freedman and Coombs, 1974:12). Considering the actual parity transition in India, the critical parity may be the third. The rural and urban data presented here also emphasize the importance of this group. Although the mean number of additional children wanted at third parity is relatively small compared to that at second parity, the per cent variation across the sex of the children a woman already has is much greater at the third parity. Moreover, as was noted in the discussion prior to the analysis, the present norm is for three children; this makes the sex of the children for the three child family all the more critical. Further

analysis, as mentioned earlier, is therefore confined to those women who were at third parity at the time the interview was conducted.

With number of additional children intended among third parity mothers as the dependent variable, and the sex of first three children as the main independent variable, Multiple Classification Analysis (MCA), a form of multiple regression analysis using dummy variables, was employed to assess the net effect of the gender of child among third parity mothers (Andrews *et al.*, 1967). The characteristics of the sample that might affect birth intention were put under statistical control. They were wife's age, wife's education and socio-economic status (SES) of the family. In constructing the SES scale, the following were the nine items on which information was collected on the rural SES scale: education, occupation, caste, social participation, landholding, type of house, farm power, household material possession, and type of family including family size and its distinctive features. On the other hand, the items on which information was collected on the urban SES scale were education, occupation, monthly income, type of house, material possessions, amount spent in a month on magazines, books, etc., purchase of newspaper, concept of social prestige, and belief in caste system. The items on the scale relate mainly to the head of the family (for details regarding the construction of the SES scale, see Gandotra, Das and Dey, 1982:50-51). The total score obtained indicated the overall socio-economic status of the family.

In order to remove the effects of infant and child mortality, the third parity mothers who had experienced any infant or child mortality at the time the interview was conducted were excluded from the multiple classification analysis (MCA). Finally, two MCA runs based on the data of rural South Gujarat and Baroda city were given to assess the differences in the strength of effects of gender of children on intentions for additional births among third parity mothers between rural and urban areas.

Tables 2 and 3 present the results of MCA runs for the rural and urban samples. It is evident from Table 2 that mean intended family size for rural and urban wives at the third parity in the present sample was 3.20 and 3.11 respectively. Roughly 20-40 per cent of the variation in the subsequent fertility intentions (third parity onwards) is explained by the factors included in the MCA runs. Among the four selected characteristics that might affect subsequent fertlity intentions, the sex of previous children is the most important factor, followed by socio-economic status and wife's age at interview, as evident from the value of

TABLE 2. THE VALUE OF BETA SQUARE FOR THE SELECTED VARIABLES IN MCA RUNS WITH ADDITIONAL NUMBER OF CHILDREN DESIRED BY THIRD PARITY MOTHERS AS THE DEPENDENT VARIABLE

Variable	Beta-square* (in percentage) derived from MCA runs	
	Rural South Gujarat	Urban (Baroda city)
Sex composition of the children at third parity	40.618	16.331
Mother's age	.528	1.140
Mother's education	.327	.210
Socio-economic status	1.091	3.972
Mean additional number of children desired	.204	.105
Standard deviation	.471	.353
No. of cases	442	583
Value of R^2	41.300	22.100
Value of adjusted R^2	39.516	20.308

* Indicates the relative importance of each of the selected variables on the dependent variable after controlling the influence of other variables.

beta coefficient or its square in MCA runs. In fact, a major part of the increase in the additional births desired at parity three is due to the influence of sex of the previous children, while the relative importance of

TABLE 3. UNADJUSTED AND ADJUSTED NUMBER OF ADDITIONAL CHILDREN DESIRED BY SEX COMPOSITION OF THE EARLIER CHILDREN AMONG MOTHERS WHO ARE AT THIRD PARITY AND HAVE NOT EXPERIENCED ANY CHILD MORTALITY AT THE TIME OF SURVEY

Sex composition of the children at parity three	No. of cases	Unadjusted mean	Adjusted* mean	
Rural South Gujarat	442	.204	.204	
Three sons	52	.058	.046	Value of Eta coeff = .626
Two sons and one daughter	211	.043	.043	Value of Beta coeff = .637
One sons and two daughters	147	.272	.272	
Three daughters	32	1.188	1.207	
Urban (Baroda City)	583	.105	.105	
Three sons	66	.015	.024	Value of Eta coeff = .396
Two sons and one daughter	250	.016	.046	
One son and two daughters	220	.141	.152	Value of Beta coeff = .404
Three daughters	47	.532	.528	

* Adjusted for mother's age, education and socio-economic status by Multiple Classification Analysis.

the wife's age and socio-economic condition is minimal. This is true for both rural and urban areas. In both the MCA runs (rural and urban), the effect of the sex of child is noted to be statistically significant.

Table 3 shows the unadjusted and adjusted mean by various categories of the sex of child predictor. For this variable, the pattern of net effects is quite similar to the pattern shown by gross means. Couples with no sons want more additional children than those who already have one or more sons. In fact, mean additional number of children intended decreases consistently with the increase in the number of sons except when all living children are sons. In this category there appears to be a slight increase in the desire for additional children in rural areas, although such an increase may not be significant.

In general, the pattern of net effects of the sex of previous children in the urban area is quite similar to the pattern shown by the rural sample. However, the rural wives displayed the effect of sex of the children on mean intended family size more distinctly than did the urban wives. Among the third parity rural wives with three sons, the adjusted mean number of additional children intended was only 0.05; the adjusted mean for wives with three daughters was as high as 1.21, indicating a difference of more than one child on average. In the urban area, the corresponding difference between the two extreme categories is of the order of 0.50 child. The rural- urban difference in the strength of effects of gender of children on intention for additional births is also apparent at other parities. Such a difference may be related to family size norm, even though sex preferences in the rural and urban areas are not different. As modernization proceeds, it is probably the urban area that will first reduce size preference. As family size norms decline, the pressure for few children may dominate any preference for sex of child. Increasingly, couples may avoid taking risky fertility decisions to satisfy their sex preference. Under such circumstances, measures used here might underestimate the effect of sex preference in the urban area.

Summary and Conclusions

The foregoing analysis has shown that among the rural and urban women considered, an effect of the sex of their previous children on their intentions for additional births was present at every parity, although the rural women displayed the sex of the child effect more distinctly than did the urban women. At each parity the mean number of additional children intended decreased with the number of living sons. At higher parities there appeared to be a slight increase in the desire for additional children when all living children were sons. In other words, at higher

parities, women with children of only one sex are more likely to desire an additional child than women with children of both sexes. However, the drive to have at least one daughter is much weaker than the drive to have at least one son. The sex of the previous child thus strongly influences a couple's decision regarding additional births in all steps of family building, especially when bearing a fourth child. The relatively greater uncertainty about stopping at three children among women who are at a disadvantage with the sex composition of their families suggests that the effect of sex of previous children is related to the dynamic process of altering fertility expectations. The present three-child family norm among Indian couples makes the sex of the child effects all the more critical, because factors which affect the decision to increase the family size from three to four children appear to be most important.

In this context, a detailed analysis of third parity mothers, through multiple classification analysis (which controlled the various socio-economic and demographic characteristics that might affect birth intentions), revealed that the pattern of net effects is quite similar to the pattern shown by gross means. In other words, the results as far as inferences of son preferences are concerned, differed little, with or without statistical controls for the various factors that might affect birth intention. Both urban and rural data did reveal a significant impact of the sex of child on the subsequent fertility intention. Further, it is interesting to note that the use of contraception among rural and urban women is consistent with their expressed attitudes toward having additional children, not only at third parity but also at second and fourth parities. It may be noted, however, that the impact of the disappearance of sex preference on total fertility would not be large although it would not be insignificant either.

The effect of sex preference on intended fertility is not only evident from the present data but is also apparent from the results of other studies. The recent All India Survey data collected by ORG, Baroda (Khan & Prasad, 1983:24-6) also reveal that the sex of the previous children has an effect on the mean number of additional children intended by the couples at each parity (Das, 1984). While such an effect is evident from recent data, the same is not the case for the 1961-70 data used by previous investigators (Freedman and Coombs, 1974; Sarma and Jain, 1974). A possible explanation for the increasing effect of sex preference over time lies in the changes in family size norms. The expected family size during earlier periods remained fairly high and much above three (ORG, 1972). Since the majority of the couples were having

large families, the probability of satisfying a preference for a particular sex was much greater with more children. However, with a moderate number of children desired, the preference for a particular sex is reflected increasingly in fertility behaviour.

The increasing effect of the sex of women's previous children on their subsequent fertility intentions argues strongly for its inclusion as an independent variable in developing fertility models in India. Further, the findings seem to imply that future fertility might be reduced if gender preference could be realized. Many methods of controlling sex of offspring are being discussed currently (Largey, 1972). The impact of such innovations is still to be seen in developing countries. Such bioloogical means may not be effective for mass use. In the mean time, certain political interventions have to be formulated as a means of fertility control. While the immediate interventions should recognize parents' perceived and actual economic benefits of children, others should aim, as a long term strategy, to modify the socio-cultural pattern, whereby the values for more children, particularly sons, are reduced.

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