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The Sex of Firstborn Children and Intimate Partner Violence in India

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Abstract

This article investigates the effects of firstborn sex on intimate partner violence (IPV) in India, taking into account heterogeneity across state sex ratios and maternal education. In states with masculine sex ratios of first births, firstborn daughters are found to elevate the risk and severity of IPV. The effects of firstborn daughters on sexual IPV are particularly pronounced among uneducated women in these states. These findings suggest that amid son preference at low birth orders, the sex of firstborn children can contribute to violence against mothers, providing new insights into the household reproduction of gender discrimination and violence.

Keywords

intimate partner violence; son preference; India

A rich body of research documents the disadvantages that female children in South Asia face (Goodkind, 1996; Jayachandran & Pande, 2015; Sen, 2010), including unequal access to household resources, schooling, and health care (Chen, Huq, & D'Souza, 1981; Jayachandran & Pande, 2015; Pande, 2003). Previous scholarship has also shown that, cumulatively, parents' differential investments in children can result in higher rates of infant and child mortality among females than among males (Arnold, Choe, & Roy, 1998; Dyson, 2012), affecting both the gender composition of households and the secondary sex ratio of general populations (Dyson, 2012). Taken together, these literatures explain much of what we know about gender discrimination at home, particularly as it pertains to child well-being. Considerably less is known about how the sex of children affects maternal well-being in the context of son preference. This article investigates the effects of firstborn sex on intimate partner violence (IPV) in India, giving consideration to variation across both maternal education and state-level sex ratios of first births (SRFBs).

I situate this research in the Indian context for three key reasons. First, violence is one of the leading causes of early mortality among women in India (Anderson & Ray, 2010).

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Supplemental Material

Supplemental material for this article is available online.

Understanding how the sex of children contributes to IPV in this context is, thus, an important step toward reducing violence against women more broadly and in reducing associated, preventable mortalities. Second, an overrepresentation of male births has been observed in India for over a century (Mayer, 1999), as has excess female child mortality (P. C. Bhattacharya, 2006; Monica Das Gupta & Shuzhuo, 1999). These demographic patterns indicate a long-standing favoritism toward sons and are theorized to exacerbate sex ratios at low birth orders as fertility falls (Monica Das Gupta & Bhat, 1997). Finally, large structural disparities persist between women and men. For example, only 29% of women participate in the labor force in India, compared with 81% of men (The World Bank, 2012). These disparities, combined with cultural practices such as dowry (Lahiri & Self, 2007), may contribute to parents' preference for sons and thus their sex-differentiated responses to their kin.

To date, most studies investigating the effects of offspring sex in India have focused on women's fertility and birth spacing. However, a handful of studies suggest that firstborn sex has important implications for others dimensions of maternal well-being, including marital instability (Bose & South, 2003), postpartum depression (V. Patel, Rodrigues, & DeSouza, 2002), anemia (Sabarwal, Subramanian, McCormick, & Silverman, 2012), and early mortality (resulting from fertility, anemia, and/or severe IPV) (Milazzo, 2014). This study expands existing scholarship by focusing on an outcome that has substantial implications for women's physical, social, and economic well-being—IPV (Beydoun, Beydoun, Kaufman, Lo, & Zonderman, 2012; Crowne et al., 2011)—and assessing geographic and educational heterogeneity in this relationship. Determining whether IPV systematically differs with the sex of firstborn children is essential to developing public health protocols that better identify and protect against violence against women. From a theoretical perspective, examining differences in IPV by firstborn sex, and sources of heterogeneity in these effects, is critical to refining conceptual models of the reproduction of gender inequality and the intergenerational transmission of violence.

In the following pages, I outline the determinants and manifestations of son preference in South Asia and highlight the ways in which the birth of a firstborn daughter instead of a firstborn son may contribute to violence in mothers' lives. I further explain why the effects of daughters should be more pronounced in states with masculine SRFBs, and particularly among uneducated women in these states.[1] To test these hypotheses, I estimate a series of logistic and multinomial regression models, sequentially introducing two- and three-way interaction terms to assess heterogeneity in the effects of firstborn sex. I focus on firstborns in particular because doing so avoids conflating fertility and sex composition, which are interrelated (Angrist & Evans, 1998), especially in the context of son preference (Bongaarts, 2013; Yamaguchi, 1989). To investigate whether the effects of daughters are additive, I conduct a supplemental analysis considering the effects of the sex-mix composition of the first two children. As an additional supplement, I compare the moderating effect of the SRFB with alternative types of sex ratios.

[1]Education should proxy for women's autonomy in households where women have high socioeconomic status (SES) but were never allowed to attend school.

Background

Son Preference and Its Manifestations

Earlier scholarship has linked son preference to several underlying factors. One is gender stratification outside the home, which can reify the higher status of men and boys within the home (Blumberg, 1984). In the case of India, men's higher public status can be seen in their substantially higher employment rates and greater enrollment in universities (The World Bank, 2012), certain religious traditions that consign specific rituals to men and boys but not to women and girls (Borooah & Iyer, 2005; Dube, 1988), and a legacy of inheritance laws that favor male over female heirs (Deininger, Goyal, & Nagarajan, 2013). Further linking extra- and intrahousehold gender stratification are people's sex-based expectations of one another, which are conditioned by the gendered context in which they live (Ridgeway & Correll, 2004). In an environment where men are granted greater opportunities than women, parents may view sons as a more reliable investment (Koolwal, 2007; Qian, 2008), including as a way to help support them in old age. This may be especially true in the presence of patrilocal marriage practices (in which the bride moves in with the groom's family of origin). Gender-based costs associated with marriage, such as dowry and patrilineal inheritance systems, may also contribute to parents' long-term expectations of their children and ultimately place a greater premium on sons (Lahiri & Self, 2007; Srinivasan & Bedi, 2007). Beyond these rationales, fathers may simply feel closer to sons because they more easily identify with male rather than female children (Harris & Morgan, 1991). This identification with sons could manifest into a material disadvantage for daughters when fathers have the authority to direct the flow of household resources toward other male members (Blumberg, 1984; Thomas, 1990).

Son preference is usually manifested in one of three ways. Ultimately, which strategy parents pursue is contingent on their overall desired fertility, willingness to tradeoff fertility goals for compositional goals, economic and social capital, and geographic proximity to reproductive health services (Bongaarts & Potter, 1983; Goodkind, 1996; A. Patel, Badhoniya, Mamtani, & Kulkarni, 2013).

The first strategy is sex-selective abortion, which has been made possible in India with the advent of amniocentesis and other sex determination technologies starting in the 1970s (Arnold, Kishor, & Roy, 2002). As fertility levels decline, parents desiring at least one son who can access sex-selective abortion should become more likely to do so at low birth orders. This is known as an "intensification effect"—when changes in desired fertility transform parents' compositional goals (a desire for at least one son) into sequential goals (a desire for a son specifically at low birth orders) (Bongaarts & Potter, 1983; Monica Das Gupta & Bhat, 1997). For those parents who are unable to afford or access antenatal sex selection, a second strategy may be female infanticide or neglect, resulting in female child mortality. A third strategy is for parents to engage in "stopping rules" in which they continue to have children until their desired number of sons is achieved (Yamaguchi, 1989). However, socioeconomic status and geographic proximity to health care can influence the effectiveness of this strategy. Moreover, stopping rules do not guarantee sons at low birth orders.

Because, in the aggregate, parents' manifestations of son preference affect the ratio of male to female births, demographers often refer to sex ratios of all, last, and third births as indicators of son preference. These sex ratios reflect a combination of abortion, infanticide, contraceptive use, and sterilization and are determined by both diffuse preferences and the availability of reproductive health services. In contrast, the SRFB has received less attention (except in China) because it is often less skewed than other sex ratios and is only influenced by the two relatively rarer processes: abortion and infanticide. Nevertheless, the SRFB should still be indicative of son preference at low births orders. For instance, recent research suggests that most parents in India prefer and favor firstborn sons (Jayachandran & Pande, 2015), and masculine SRFBs have been observed among women who hold more patriarchal values in Delhi (Flores-Martinez, 2013).

Nine Indian states demonstrate what is considered to be an unusually high SRFB: at least 108 males per 100 females (Guilmoto, 2009). These include Andhra Pradesh, Arunachal Pradesh, Delhi, Goa, Meghalaya, Mizoram, Punjab, Rajasthan, and Sikkim (Figure 1). This is in contrast to the sex ratio of last births (SRLB), which is skewed in almost every state (Figure 1). If imbalanced SRLBs indicate that parents strongly desire at least one son, then their widespread prevalence suggests that son preference is common throughout India. Given that imbalanced SRFBs are less common, they reveal important variation in the intensification of son preference at low birth orders and/or a stronger desire for sons at every birth order, including at first birth. Indeed, in all but two states with imbalanced SRFBs (Meghalaya and Mizoram), the sex ratios of all, last, and desired births are also imbalanced (Figure 1).

Linking Firstborn Sex, Sex Ratios, and IPV

Existing research suggests that firstborn daughters may be associated with a higher risk of IPV than firstborn sons for several reasons. First, dowries and the lower earning potential of daughters can increase household stress and financial strain (Diamond-Smith, Luke, & McGarvey, 2008). This may increase conflict between parents, including conflict that becomes violent. Second, fathers may feel angry or disappointed after the birth of a firstborn daughter (Puri, Adams, Ivey, & Nachtigall, 2011; Raj et al., 2011) and, in turn, express their anger violently or chastise the mother of their children. Third, bearing a firstborn son may increase the status of a woman within her household, which has been found in both India and China (Kishore & Spears, 2014; Li & Wu, 2011). If so, then women who bear firstborn sons may be better able to negotiate for less violence than women who bear firstborn daughters. Each of these possibilities is contingent on men's attitudes toward violence and willingness to engage in violent behavior.

The relationship between firstborn sex and IPV is likely to depend on whether a mother resides in a state where the SRFB is balanced or imbalanced. The skewed sex ratio in imbalanced states suggests that at least some parents manifest a preference for sons at *first* birth, either because they have low fertility goals and a strong desire for at least one son or because they desire multiple sons, which increases the pressure to bear sons early on. In this context, the sex of *firstborn* children is likely to take on a particular importance and contribute to an increased risk of IPV when parents who want firstborn sons are unable to

achieve their preference. However, because some parents who strongly want firstborn sons will opt out of firstborn daughters, the effects of firstborn sex may be attenuated. Relatedly, because the ability to access sex-selective technology is often contingent on social and economic capital (A. Patel et al., 2013), firstborn daughters may disproportionately be born among women with lower social status in states with imbalanced SRFBs. If so, then the effects of firstborn sex should be more pronounced among uneducated women than among educated women (Milazzo, 2014), particularly in these states. The effects of firstborn sex may also be more pronounced among uneducated women in these states if their lack of resources exacerbates their vulnerability to violence and/or the perceived financial and social stresses associated with daughters.

Data and Method

Sample

This study utilizes a nationally representative cross section collected through the Indian National Family Health Survey (NFHS) in 2005 and 2006. The NFHS interviews all women in a household between the ages of 15 and 49 and comprises several different modules, including a module on IPV. For safety reasons, questions about IPV (including questions about psychological violence) are only asked to one random woman per household. I restrict the sample to women whose first child is 1 year or older at the time of the survey and whose first birth is marital (N=57,550).[2] This eliminates any potential bias introduced by selection into marriage after first birth and ensures a correct assessment of the temporal ordering of events.[3]

Predictors

The primary concern of this study is the relationship between firstborn sex and IPV. *Firstborn female* is defined (1) for a female first birth and (0) for a male first birth.[4] As a supplement, I also test the effects of the sex-mix composition of the first two children (see Supplemental Appendix D, which is available online). The results of this supplement are discussed after the main findings.

In the sample at large, females constitute 49% of all first births. However, in select states, females constitute less than 48% of first births (Figure 1). I therefore create a categorical indicator of imbalanced SRFB that is coded (0) for respondents residing in states with a balanced SRFB (>48.075% female) and (1) for respondents residing in states with an imbalanced SRFB (≤48.075% female).

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[2]·In all, 1.63% of respondents (n = 993) who complete the intimate partner violence (IPV) module are excluded because they have a nonmarital first birth; 3.66% of respondents (n = 2,041) are excluded because their first child is under the age of 1. When these respondents are included in the analysis, the results remain substantively unchanged.

[3]·IPV outcomes are measured with regard to the preceding year and therefore could not have taken place before first birth.

[4]·A recent study by Hamoudi and Nobles (2014) suggests that relationship conflict during pregnancy increases the probability of miscarriages of male fetuses. There is no way to directly test this using cross-sectional data. However, if females are disproportionately born to high conflict parents, then I should find a significant effect within the first year after birth (close to conception). I therefore reran my analysis of IPV, limiting the sample to women whose firstborn is <1 year, and found no significant relationship with any type of violence.

Outcomes

I test the effects of firstborn sex on psychological, physical, and sexual violence, separately. The NFHS includes three questions about psychological violence. These are "Does your husband ever say or do something to humiliate you in front of others?" "Threaten to hurt or harm you or someone close to you?" and "Insult you or make you feel bad about yourself?" When a respondent answers "yes" to any question, she is then asked whether this happened "sometimes," "often," or "not at all" in the last 12 months. Based on these questions, I create two measures of psychological violence. The first, *any psychological violence*, is defined (1) if a respondent says that her spouse humiliated, insulted, or threatened her in the past year and (0) otherwise. Approximately 11% of respondents report experiencing at least one form of psychological violence within the preceding year (Table 1). The second, *psychological violence frequency*, is coded (0) if no item occurred in the 12 months before the survey, (1) if any item occurred sometimes but none occurred often, and (2) if any item occurred often.

Beyond psychological violence, the NFHS-3 asks seven questions about physical violence. These questions are based on a simplified version of the Conflict Tactics Scale (CTS; Straus, Hamby, Boney-McCoy, & Sugarman, 1996) and include the following: "Does your husband ever slap you?" "Twist your arm or pull your hair?" "Push you, shake you, or throw something at you?" "Punch you with a fist or something that could hurt you?" Kick you, drag you, or beat you up?" "Try to choke you or burn you on purpose?" "Threaten or attack you with a knife, gun, or other weapon?" If a respondent answers "yes" to any question, she is again asked whether this occurred "sometimes," "often," or "not at all" in the last 12 months. Combining information from these questions, I devise measures of *any physical violence* and *physical violence frequency*, coded in the same way as *any psychological violence* and *psychological violence frequency.* About 20% of respondents report experiencing physical violence within the year before the survey (Table 1), and 19% of these women report experiencing at least one type of physical violence "often." I also create a measure of *physical violence severity*, based on the CTS (Straus et al., 1996) and coded (0) for no violence, (1) for "moderate" forms of violence, and (2) for "severe" forms in the last year. In all, 40% of women who report any physical violence in the last year report at least one severe form of violence. Table 1 provides severity classifications of individual physical violence forms.

Finally, the NFHS includes two questions about sexual violence. These include whether a respondent's spouse has "forced" her to have sex and whether he has forced her to "perform other sexual acts" in the past year. As with psychological and physical violence, respondents who answer "yes" to either question are asked whether this type of violence occurred "sometimes," "often," or "not at all" in the last 12 months. Based on information from these questions, I create measures of *any sexual violence* and *sexual violence frequency*, coded in the same way as the comparable psychological and physical violence measures. Sexual violence is the least common type of IPV. Approximately six percent of respondents report experiencing sexual violence in the last year (Table 1).

Controls

I control for whether respondents have *any education* and respondents' religion (Hindu, Muslim, Christian, Sikh, Buddhist, or other), caste (scheduled caste or tribe; other backward class; forward caste; or none, don't know, refused),[5] wealth quintile (based on an index of household infrastructure, assets, and durable goods), employment in the previous year (yes/no),[6] urban residence, age at first birth (in years), and marital duration before first birth (in months).

Estimation Strategy

The effects of firstborn sex on any psychological, physical, and sexual violence are separately estimated with logistic regression. The effects of firstborn sex on psychological, physical, and sexual violence frequency and on physical violence severity are estimated with multinomial logistic regression.[7] All models include the full set of controls and cluster standard errors by survey cluster to account for the clustered survey design.

I begin by estimating the average effects of firstborn daughters versus firstborn sons on IPV in India (Table 2). To do so, I estimate multivariate models of each outcome without including any interaction terms. Then, to assess heterogeneity in the effects of firstborn sex, I reestimate all models including interaction terms between firstborn sex and SRFB imbalanced and between firstborn sex and maternal education. Finally, to determine whether the moderating effects of imbalanced sex ratios are further conditioned by maternal education, I add a three-way interaction term between firstborn sex, SRFB imbalanced, and respondents' education and reestimate all models.[8] To aid in the interpretation of models containing interaction terms, I graphically present the results as marginal effects (Figures 2 and 3). Corresponding tables containing the original odds ratios are available in Supplemental Appendices A and B (available online).

Results

Descriptive Statistics

Table 2 presents weighted means and standard deviations for the variables used in this analysis, as well as weighted means and standard deviations for additional characteristics of interest. These statistics are presented separately for the balanced and imbalanced SRFB subsamples and are further bifurcated by the sex of firstborn children. Corresponding results of bivariate analyses comparing proportions and means across respondents with firstborn sons and respondents with firstborn daughters within each subsample are presented in the columns denoted "Sig." As hypothesized, these unadjusted statistics indicate that in

[5]·In total, 1,895 respondents (3%) said they had no caste. The majority of these (89%) were a religion other than Hindu; 533 respondents (<1%) refused to answer or did not know. The majority of these respondents (71%) were Hindu.

[6]·The coefficients on employment and wealth should be interpreted with caution given their potential endogeneity: Their estimated effects may be upwardly biased if an omitted variable influences them and IPV in the same direction, or downwardly biased if an omitted variable influences them and IPV in opposite directions. Furthermore, the relationships between employment/wealth and IPV may be reciprocal. As a sensitivity test, I omit these two controls from all models and find that the patterned effect of firstborn sex remains substantively unchanged (available upon request).

[7]·Ordered logistic regressions are not used because postestimation likelihood ratio tests indicate violations of the proportional odds assumption.

[8]·Models including the three-way interaction term also include all two-way combinations of the same three variables.

imbalanced states where male first births are overrepresented, physical IPV is significantly more prevalent and severe among mothers with firstborn daughters than among mothers with firstborn sons. Meanwhile, the prevalence of IPV does not differ by firstborn sex in states where the SRFB is balanced.

In both the imbalanced and balanced subsamples, mothers are more likely to be employed when they have firstborn daughters. One potential explanation for this is that the greater financial costs associated with daughters (Diamond-Smith et al., 2008) incentivize maternal employment. Mothers with firstborn daughters in both subsamples are also more likely to be toward the middle or bottom of the wealth distribution (relative to the top) and to reside in nonurban areas, where sex-selective technology and reproductive health care are less accessible (Sudha & Rajan, 1999). However, in the balanced subsample, this selection effect is too small to skew the overall ratio of male to female first births. In states with imbalanced (masculine) SRFBs, females are underrepresented among Sikhs and among forward caste women—groups that tend to have higher-than-average socioeconomic status (A. Thorat, 2010; S. Thorat & Neuman, 2012). These uneven distributions of daughters across religion and caste, however, fail to reach statistical significance at conventional levels.

Average Effects of Firstborn Sex and Controls on IPV

Table 3 presents the results of logistic and multinomial logistic regressions estimating the effects of firstborn sex and control variables on the odds of any psychological, physical, and sexual violence within the year before the survey and of the categorical frequency and severity of violence. Values greater than 1 indicate a positive effect; values less than 1 indicate the opposite.

As can be seen in this table, firstborn sex has no significant effect on any form of IPV, violence frequency, or violence severity for the average Indian mother. However, the odds that psychological violence occurs “often” are 22% lower among women who reside in states with imbalanced SRFBs than among women who reside in states with balanced SRFBs (Table 3, Models I and III). Nevertheless, women in states with imbalanced SRFBs have 17% higher odds of any physical violence; 23% higher odds of physical violence “sometimes” relative to not at all; and 20% and 13% higher odds, respectively, of moderate and severe violence relative to none (Table 3). Overall, this pattern of effects suggests that only the prevalence of physical IPV is higher in states with imbalanced, rather than balanced, SRFBs.

Consistent with existing research (Weitzman, 2014), the odds of all three forms of IPV (psychological, physical, and sexual) are higher among poorer women and women with no education than among wealthier and educated women (Table 3, Models I, III, and VI). Similar educational and wealth disparities are reflected in terms of violence frequency and severity (Table 3, Models II, IV, V, and VII). Also consistent with existing research (H. Bhattacharya, 2015),[9] women’s employment is associated with higher odds of all forms of violence except sexual violence that occurs “sometimes.”

[9]Notably, however, there is a debate about the relationship between women’s employment and IPV in India, with some scholars finding that women’s employment *reduces* the risk of violence (Bhattacharyya, Bedi, & Chhachhi, 2011; Chin, 2012).

The results in Table 3 also suggest that scheduled caste/tribe women have the highest odds of almost all types of violence with one exception—women who do not belong to or report their caste have higher odds of sexual violence than scheduled caste/tribe women (Models VI and VII). Given that scheduled caste/tribe women are socially disadvantaged, this pattern is consistent with the elevated odds of IPV found among uneducated women. Relative to Hindu women, Muslim women have higher odds, and Christian women have lower odds, of nearly all forms of violence.

Compared with rural residence, urban residence is associated with higher odds of all types of violence. Age at first birth is negatively associated with all forms of violence (Table 3).

Do the Effects of Firstborn Sex on IPV Vary With Imbalanced SRFBs and Maternal Education?

I next present the results of models containing two-way interaction terms between firstborn sex and imbalanced SRFB and between firstborn sex and women's education. These models are intended to uncover whether firstborn sex has a significant relationship with IPV within specific subgroups of women and whether this relationship differs across groups.

This analysis reveals that in states with balanced SRFBs, firstborn daughters are associated with a 0.7 and a 0.6 percentage point *lower* probability of physical violence "sometimes" and of severe physical violence, respectively, than firstborn sons. However, in states with imbalanced SRFBs, the opposite pattern emerges such that firstborn daughters are associated with a 1.9 percentage point higher probability of any physical violence, a 2.1 percentage point higher probability of physical violence "sometimes," and a 1 percentage point higher probability of severe physical violence than firstborn sons (Figure 2). These effects significantly differ from the effects found among women in states with balanced SRFBs.

No effects of firstborn sex are found on any psychological or sexual violence among women in states with imbalanced SRFBs, nor do these null effects significantly differ from the null effects among women in states with balanced SRFBs (Figure 2).

On average, in India, the effects of firstborn sex do not significantly differ between women with any and no education (see Supplemental Appendix A online).

To understand whether maternal education conditions the moderating effect of imbalanced SRFBs on firstborn sex and to illuminate the effects of firstborn sex within each permutation of SRFB and education, I next estimate models containing three-way interaction terms between firstborn sex, imbalanced SRFB, and maternal education. The results of these models are presented in Figure 3. Corresponding tables are available in Supplemental Appendix B (available online).

As Figure 3 reveals, among uneducated women in states with balanced SRFBs, firstborn daughters are associated with surprisingly lower probabilities of any and severe physical violence than firstborn sons. In contrast, in states with imbalanced SRFBs, firstborn daughters are associated with higher probabilities of any physical violence and physical violence "sometimes" of approximately 3.2 percentage points each among mothers with no education. They are also associated with a 2.1 percentage point higher probability of severe

violence among these same mothers (Figure 3). These effects of firstborn sex on physical IPV significantly differ between women with no education in balanced and imbalanced SRFB states, although they do not differ between women with any and no education in states with imbalanced SRFBs specifically.

As can also be seen in Figure 3, firstborn daughters are associated with a higher probability that sexual violence occurs “sometimes” of 1.2 percentage points among women with no education in states with imbalanced SRFBs. This effect of firstborn sex significantly differs from the null effect found among women with no education in balanced states and additionally differs from the null effect found among women with any education in imbalanced states.

In sum, large relationships between firstborn sex and physical and sexual IPV are found among uneducated mothers in states with imbalanced SRFBs, but they do not always differ from the (most often null) relationships found among educated mothers in these same states. The most notable exception is sexual violence, which is only elevated among uneducated women with firstborn daughters in states with imbalanced SRFBs.

Results of Supplementary Analyses

To test whether the effects of daughters are additive, I estimate the effects of the sex-mix composition of the first two children on the odds of psychological, physical, and sexual IPV (see Supplemental Appendix C online). The results of this supplement should be understood within the context of greater bias introduced by the selectivity of parents into second births. Moreover, research suggests that sex-selective abortion becomes more likely after first birth (Arnold et al., 2002), thereby affecting which women are more likely to have two female children at first *and* second birth. Given this bias, it is not surprising that the results of this supplement suggest that, for the most part, having two daughters does not significantly differ from having two sons. However, consistent with the primary results presented above, the direction and magnitude of odds ratios suggest a higher prevalence of any psychological and physical violence among women with one or two daughters, compared with two sons, in states with imbalanced SRFBs. Also in accordance with the primary findings, the moderating effects of state-level SRFB on the effects of two daughters (vs. two sons) on sexual violence are significantly greater for uneducated than educated mothers.

As an additional supplement, I compare heterogeneity in the effects of firstborn sex across an array of alternative sex ratios. These alternatives capture son preference as it pertains to later birth orders and thus are less likely to be robust indicators of when *firstborn* daughters are associated with IPV. As expected, I find that these other sex ratios rarely moderate the effects of firstborn sex on any outcome (see Supplemental Appendix D online). The one exception is that the sex ratio of third births (SRTB) moderates the effects of firstborn sex on psychological violence, demonstrating a pattern that conflicts with that of the SRFB. These findings confirm the unique salience of the SRFB as a context in which mothers’ vulnerability to IPV is linked to the sex of their firstborn children.

Discussion

This study expands current scholarship on household violence by suggesting that in the context of son preference and falling fertility, mothers' likelihood of IPV is related to the sex of their firstborn children. Through a rigorous comparison of mothers with firstborn daughters and mothers with firstborn sons, I found that women are more likely to report psychological, physical, and sexual IPV when their first child is female rather than male. However, the higher prevalence of violence associated with firstborn daughters is concentrated among mothers in states where male first births are overrepresented. The higher prevalence of sexual violence in particular is only found among mothers with no education in these states. Thus, this study's findings suggest that amid a pressure for firstborn sons, the sex of firstborn children has important implications for IPV and that these implications are somewhat more pronounced among women with presumably fewer resources to access sex-selective technology.

Taken together, this study's findings make two important contributions to the study of IPV and gender stratification. First, the results broaden our understanding of the determinants of gender-based violence at home. IPV may arise from increased levels of conflict or from spouse's disappointment, anger, or stress associated with female first births (Puri et al., 2011; Raj et al., 2011). Alternatively, it may signal that intra-household status is associated with firstborn sex (Kishore & Spears, 2014; Li & Wu, 2011) such that women are less able to negotiate for reduced violence in the presence of daughters than in the presence of sons. Either way, a heightened prevalence of IPV is important not only because it jeopardizes women's health and safety but also because it affects other types of maternal functioning, including a diminished capacity to engage in any sort of labor, increased anxiety and depression, and a heightened risk of physical disability (Beydoun et al., 2012; Crowne et al., 2011). Thus, the disadvantages introduced by daughters may spill over to affect women's functioning in other realms outside their family life.

Second, that daughters are associated with a higher risk of IPV, at least for some women, has important implications for theoretical models of the reproduction of gender inequality and violence. Specifically, son preference not only disadvantages daughters but can also disadvantage the mothers of daughters. Negative maternal outcomes associated with daughters may in turn incentivize some women to prefer sons and/or to pursue sex-selective abortion, thereby perpetuating son preference and the ongoing masculinization of sex ratios. At the same time, if IPV is more prevalent in the presence of firstborn daughters, then daughters should also be more likely than sons to witness violence as children, which may also contribute to gender disparities in children's cognitive and behavioral outcomes (Kitzmann, Gaylord, Holt, & Kenny, 2003). Such gender disparities may reaffirm gender stereotypes that conceptualize boys as stronger and more productive than girls, thereby contributing to greater investments in sons' health and human capital than in daughters' health and human capital.

In sum, this study raises new questions about how and under what conditions the sex of firstborn children is associated with IPV. This line of inquiry may be expanded in the future by considering a range of related health indicators such as anxiety and disability

and may additionally be expanded by investigating a variety of sources of individual-level heterogeneity. Acknowledging and better understanding the effects of firstborn sex on IPV is a crucial step toward linking household-level gender discrimination to broader demographic patterns in population health, mortality and morbidity, and sex ratios.

Conclusion

This article expands current scholarship on the reproduction of violence and gender stratification at home by demonstrating that where masculine SRFBs are observed in India, mothers are more likely to face IPV when they bear a firstborn daughter instead of a firstborn son. For some types of violence, namely sexual violence, the relationship between firstborn sex and the risk of IPV is limited to uneducated women in these states. These women are the least likely to be able to access sex-selective abortion and/or have the fewest resources to handle the social and economic costs associated with daughters. These findings indicate that son preference perpetuates disadvantages not only for female children but also for their mothers.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Author Biography

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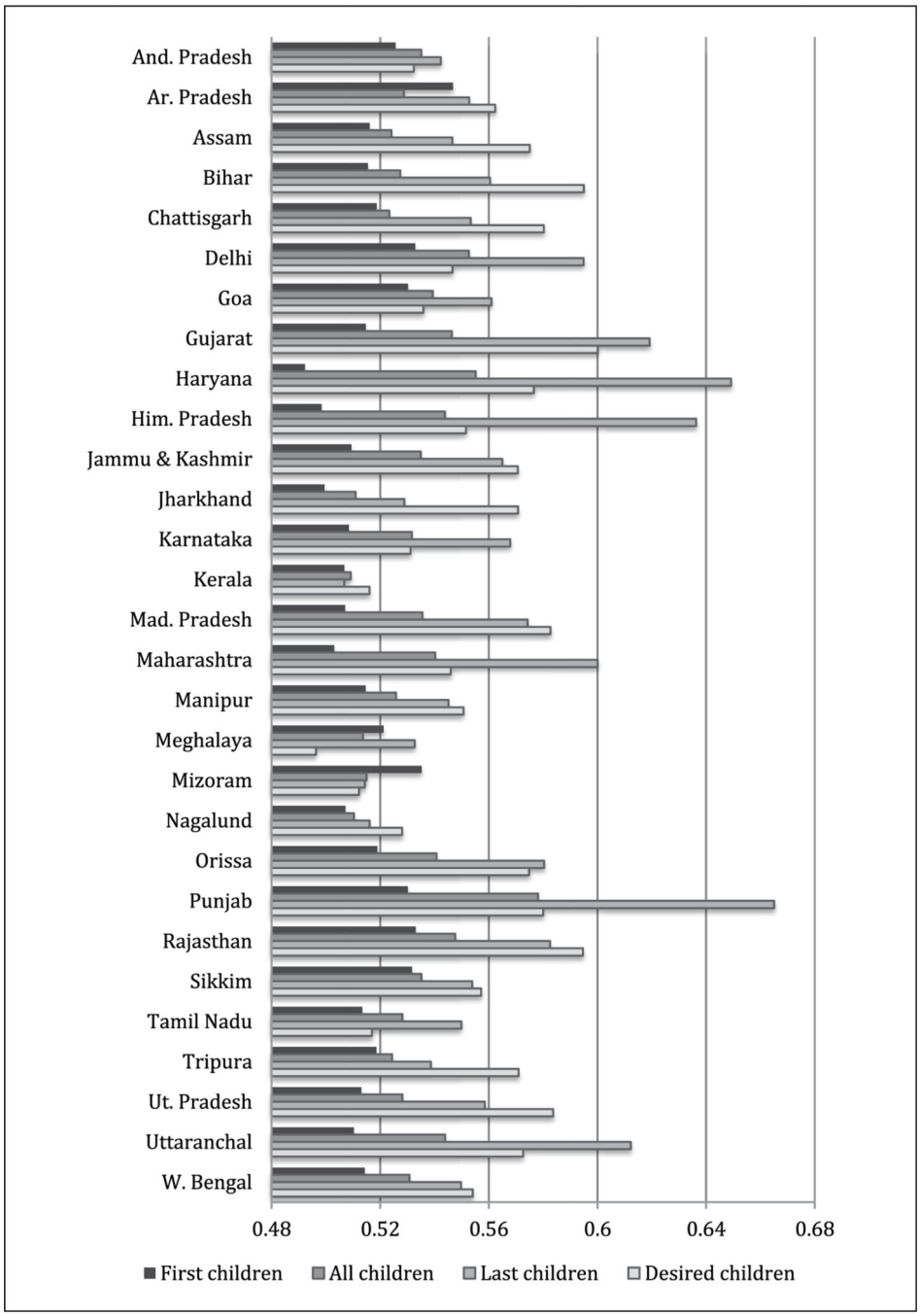

Figure 1.
Proportion male, by state. *Note*. Author's calculations based on the NFHS-3 data. NFHS = National Family Health Survey.

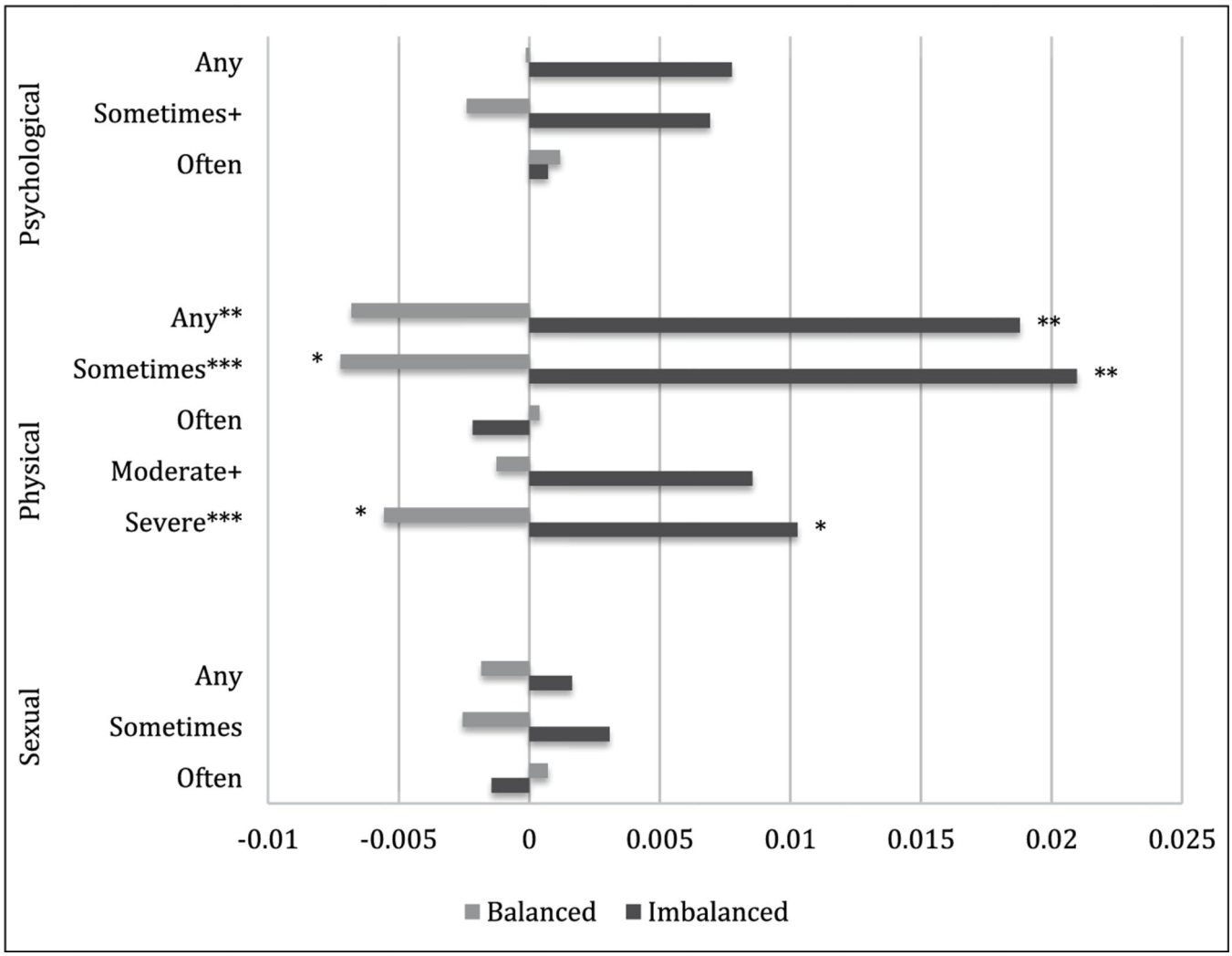

Figure 2.

Marginal effects of firstborn daughters (vs. firstborn sons) on the probability, frequency, and severity of intimate partner violence, by (im)balanced SRFB. *Note.* Marginal effects are calculated from the results of logistic regressions estimating *any violence* and from multinomial logistic regressions estimating *violence frequency* (sometimes or often, vs. none) and *violence severity* (moderate or severe, vs. none). These models include interaction terms between firstborn sex and imbalanced SRFB and between firstborn sex and no education. All models control for respondents' religion, caste, urban residence, age at first birth, and marital duration at first birth. Significant effects of firstborn sex within each subsample are denoted at the end of each graphed bar. Significant differences in the effects of firstborn sex between the imbalanced and balanced SRFB subsamples are denoted in the horizontal labels on the left-hand side. "Balanced" refers to states with an SRFB > 0.48075. "Imbalanced" refers to states with an SRFB ≤ 0.48075. SRFB = sex ratio of first birth. †$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed test).

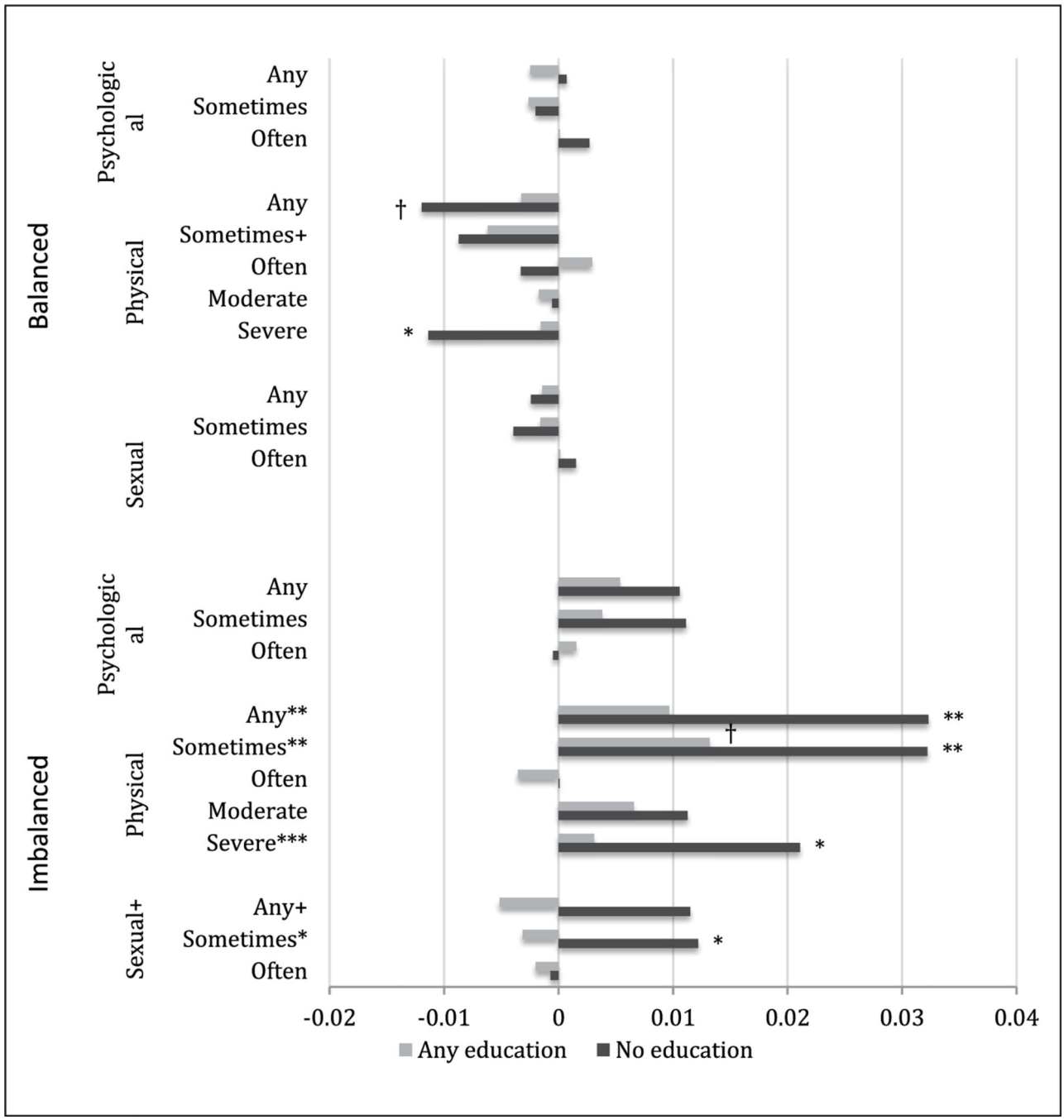

Figure 3.

Marginal effects of firstborn daughters (vs. firstborn sons) on the probability, frequency, and severity of intimate partner violence, by maternal education and (im)balanced SRFB. *Note.* Marginal effects are calculated from the results of logistic regressions estimating *any violence* and from multinomial logistic regressions estimating *violence frequency* (sometimes or often, vs. none) and *violence severity* (moderate or severe, vs. none). These models include a three-way interaction term between firstborn sex, imbalanced SRFB, and no education (and all two-way combinations). All models control for respondents' religion,

caste, urban residence, age at first birth, and marital duration at first birth. Significant effects of firstborn sex within each subsample are denoted at the end of each graphed bar. Significant differences in the effects of firstborn sex between the imbalanced and balanced SRFB subsamples are denoted in the horizontal labels on the left-hand side. Between-SRFB subsample differences in education-level differences in the effects of firstborn sex are denoted in the vertical labels on the left-hand side. “Balanced” refers to states with an SRFB > 0.48075. “Imbalanced” refers to states with an SRFB ≤ 0.48075. SRFB = sex ratio of first birth.

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$ (two-tailed test).

Table 1.

Intimate Partner Violence Items and Their Incidence and Frequency in the NFHS-3 (N = 58,038).

	Severity	Incidence	% of respondents experiencing any psychological/ physical/sexual violence	% of all respondents (n = 57,873)
Types of psychological violence				
Spouse has humiliated respondent		4,877	79.52	8.43
Spouse has insulted respondent		3,231	52.68	5.58
Spouse has threatened to harm respondent		1,999	32.59	3.45
Types of physical violence				
Spouse has pushed, shook, or thrown something at respondent	Moderate	4,399	38.34	7.60
Spouse has slapped respondent	Moderate	10,744	93.63	18.56
Spouse has twisted respondent's arm or pulled her hair	Moderate	4,823	42.03	8.33
Spouse has punched respondent	Severe	3,359	29.27	5.80
Spouse has kicked or dragged respondent	Severe	3,445	30.02	5.95
Spouse has strangled or burned respondent	Severe	689	6.00	1.19
Spouse has threatened or attacked respondent with a weapon	Severe	450	3.92	0.78
Types of sexual violence				
Spouse forced respondent to have sex		3,296	93.80	5.70
Spouse forced respondent to perform other sexual acts		1,652	47.01	2.85
Cumulative items				
Respondent has experienced any psychological violence		6,133	100	10.60
Respondent has experienced any physical violence		11,475	100	19.83
Respondent has experienced any sexual violence		3,514	100	6.07
Respondent has experienced any psychological, physical, or sexual violence		14,278	100	24.67

Note. Incidence refers to the number of respondents who responded that this item occurred within the year prior to survey. The individual types of violence do not sum to the cumulative measures because some respondents experienced more than one form of violence. NFHS = National Family Health Survey.

Table 2.

Weighted Descriptive Statistics by Imbalanced and Balanced SRFB Subsample and Significant Differences by Firstborn Sex Within Each Subsample.

	Imbalanced SRFB					Balanced SRFB				
	Female (*N* = 5,941)		Male (*N* = 7,328)			Female (*N* = 20,983)		Male (*N* = 23,621)		
	M	*SD*	*M*	*SD*	Sig.	*M*	*SD*	*M*	*SD*	Sig.
Intimate partner violence outcomes										
Any psychological violence	0.12		0.11			0.12		0.12		
Frequency										
Sometimes	0.10		0.09			0.09		0.08		
Often	0.02		0.02			0.03		0.03		
Any physical violence	0.25		0.22		*	0.22		0.23		
Frequency					*					
Sometimes	0.21		0.19			0.17		0.18		
Often	0.03		0.04			0.05		0.05		
Severity					*					
Moderate	0.14		0.14			0.13		0.13		
Severe	0.10		0.08			0.09		0.09		
Any sexual violence	0.07		0.06			0.07		0.07		
Frequency										
Sometimes	0.05		0.05			0.06		0.06		
Often	0.02		0.02			0.02		0.01		
Controls										
No education	0.45		0.46			0.51		0.52		
Wealth					*					**
Quintile 1	0.13		0.14			0.23		0.22		
Quintile 2	0.16		0.15			0.22		0.21		
Quintile 3	0.25		0.22			0.19		0.19		
Quintile 4	0.22		0.23			0.19		0.19		
Quintile 5	0.24		0.26			0.18		0.19		
Caste										
Scheduled tribe/caste	0.30		0.28			0.28		0.27		

	Imbalanced SRFB					Balanced SRFB				
	Female (*N* = 5,941)		Male (*N* = 7,328)			Female (*N* = 20,983)		Male (*N* = 23,621)		
	M	*SD*	*M*	*SD*	Sig.	*M*	*SD*	*M*	*SD*	Sig.
Other backwards class	0.39		0.39			0.39		0.39		
Forward caste	0.31		0.32			0.30		0.30		
None, don't know, refused	0.00		0.01			0.03		0.04		
Religion										
Hindu	0.80		0.78			0.82		0.82		
Muslim	0.08		0.09			0.14		0.14		
Christian	0.04		0.05			0.02		0.02		
Sikh	0.07		0.08			0.00		0.00		
Buddhist	0.00		0.00			0.01		0.01		
Other	0.01		0.01			0.01		0.01		
Employed in the last year	0.53		0.50		*	0.45		0.44		†
Urban	0.34		0.37		**	0.30		0.31		*
Age at first birth (10–44)	19.07	3.53	19.18	3.64		19.26	3.56	19.32	3.55	
Marital duration at first birth (0–316)	31.03	25.47	31.04	26.89		26.49	25.13	26.13	24.55	
Additional characteristics of interest[a]										
Fertility (1–14)	3.11	1.62	2.86	1.55	***	3.31	1.86	3.07	1.76	***
Desires at least one son	0.80	0.40	0.77	0.42	**	0.84	0.37	0.82	0.39	***
Desires at least two sons	0.26	0.44	0.28	0.45		0.32	0.47	0.34	0.47	***
Desires at least two daughters	0.12	0.33	0.08	0.28	***	0.13	0.34	0.09	0.28	***
Desired proportion male	0.54	0.13	0.58	0.16	***	0.55	0.14	0.58	0.15	***

Note. Significant differences in means calculated with OLS bivariate regression. Significant differences in proportions calculated with chi-square test. Significant differences calculated across mothers with female and male firstborns within each subsample. SRFB = sex ratio of first birth; OLS = ordinary least square.

[a]These measures are not included in any model and are presented for descriptive purposes only.

†$p < .10$.

*$p < .05$.

**$p < .01$.

***$p < .001$ (two-tailed test).

Table 3.

Results From Logistic and Multinomial Logistic Regression Models Estimating the Effects of Firstborn Sex and Controls on the Odds, Frequency, and Severity of Intimate Partner Violence Within the Last Year.

	Psychological			Physical					Sexual		
	I	II		III	IV		V		VI	VII	
	Any	Sometimes	Often	Any	Sometimes	Often	Moderate	Severe	Any	Sometimes	Often
Firstborn female	1.01	1.00	1.04	0.99	0.99	0.99	1.01	0.97	0.98	0.97	1.01
	(0.03)	(0.03)	(0.05)	(0.02)	(0.02)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.07)
Imbalanced SRFB	0.99	1.07	0.78**	1.17***	1.23***	0.91	1.20***	1.13*	0.92	0.90	1.00
	(0.05)	(0.06)	(0.06)	(0.05)	(0.06)	(0.07)	(0.06)	(0.06)	(0.07)	(0.07)	(0.11)
No education	0.96	1.01	0.83**	1.08**	1.08*	1.10†	1.08*	1.09*	0.95	0.95	0.92
	(0.03)	(0.04)	(0.05)	(0.03)	(0.03)	(0.06)	(0.04)	(0.04)	(0.04)	(0.05)	(0.08)
Wealth (ref.: Quintile 1)											
Quintile 2	0.98	0.98	0.99	0.88**	0.89**	0.85*	0.89*	0.88*	0.90†	0.91	0.86
	(0.05)	(0.05)	(0.08)	(0.03)	(0.04)	(0.06)	(0.04)	(0.05)	(0.05)	(0.06)	(0.09)
Quintile 3	0.78***	0.76***	0.83*	0.69***	0.71***	0.64***	0.70***	0.68***	0.72***	0.70***	0.80†
	(0.04)	(0.05)	(0.08)	(0.03)	(0.03)	(0.05)	(0.04)	(0.04)	(0.05)	(0.05)	(0.10)
Quintile 4	0.60***	0.63***	0.53***	0.52***	0.55***	0.41***	0.59***	0.43***	0.52***	0.53***	0.48***
	(0.04)	(0.04)	(0.06)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.04)	(0.05)	(0.07)
Quintile 5	0.35***	0.38***	0.27***	0.22***	0.23***	0.15***	0.29***	0.13***	0.23***	0.24***	0.21***
	(0.03)	(0.03)	(0.04)	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)	(0.02)	(0.03)	(0.04)
Caste (ref.: scheduled tribe/caste)											
Other backward class	0.86***	0.87**	0.84*	0.85***	0.84***	0.87*	0.85***	0.85***	0.80***	0.83**	0.68***
	(0.04)	(0.04)	(0.06)	(0.03)	(0.03)	(0.06)	(0.04)	(0.04)	(0.05)	(0.05)	(0.07)
Forward	0.77***	0.73***	0.87	0.78***	0.76***	0.84*	0.83***	0.69***	1.01	1.03	0.93
	(0.04)	(0.04)	(0.08)	(0.03)	(0.03)	(0.07)	(0.04)	(0.04)	(0.06)	(0.07)	(0.10)
None, don't know, refused	0.84†	0.85	0.81	0.77**	0.78**	0.72*	0.77**	0.77*	1.29*	1.35*	1.09
	(0.08)	(0.09)	(0.14)	(0.06)	(0.07)	(0.11)	(0.07)	(0.08)	(0.15)	(0.17)	(0.23)
Religion (ref.: Hindu)											

	Psychological			Physical					Sexual		
	I	II		III	IV		V		VI	VII	
	Any	Sometimes	Often	Any	Sometimes	Often	Moderate	Severe	Any	Sometimes	Often
Muslim	1.16*	1.16*	1.17	1.23***	1.21***	1.27**	1.20**	1.28***	1.27**	1.26**	1.31*
	(0.07)	(0.08)	(0.11)	(0.06)	(0.06)	(0.12)	(0.07)	(0.08)	(0.09)	(0.10)	(0.16)
Christian	0.95	1.06	0.60***	0.71***	0.76***	0.49***	0.69***	0.75***	0.59***	0.67***	0.36***
	(0.07)	(0.08)	(0.08)	(0.04)	(0.05)	(0.07)	(0.05)	(0.06)	(0.06)	(0.07)	(0.08)
Sikh	1.20	1.27	0.94	1.24*	1.24*	1.17	1.20	1.28†	1.02	1.00	1.08
	(0.17)	(0.19)	(0.29)	(0.13)	(0.13)	(0.28)	(0.16)	(0.19)	(0.18)	(0.20)	(0.32)
Buddhist	0.89	0.82	1.11	0.88	0.87	0.92	0.99	0.71*	0.64*	0.66†	0.58
	(0.11)	(0.12)	(0.23)	(0.10)	(0.11)	(0.18)	(0.13)	(0.12)	(0.12)	(0.14)	(0.22)
Other	0.91	0.99	0.69	1.20*	1.32**	0.72	1.20	1.21	1.05	1.23	0.52†
	(0.10)	(0.12)	(0.17)	(0.11)	(0.13)	(0.16)	(0.14)	(0.15)	(0.16)	(0.21)	(0.18)
Employed in the last year	1.37***	1.33***	1.51***	1.18***	1.13***	1.39***	1.09*	1.32***	1.10*	1.04	1.31***
	(0.05)	(0.05)	(0.09)	(0.03)	(0.03)	(0.07)	(0.04)	(0.05)	(0.05)	(0.05)	(0.11)
Urban	1.38***	1.32***	1.59***	1.49***	1.44***	1.74***	1.42***	1.61***	1.12†	1.09	1.25*
	(0.07)	(0.07)	(0.15)	(0.06)	(0.06)	(0.14)	(0.07)	(0.09)	(0.07)	(0.08)	(0.14)
Age at first birth	0.97***	0.97***	0.97**	0.96***	0.97***	0.95***	0.97***	0.96***	0.96***	0.97***	0.95***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)
Marital duration at first birth	1.00**	1.00*	1.00*	1.00**	1.00*	1.00**	1.00*	1.00†	1.00*	1.00*	1.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.26***	0.19***	0.07***	0.73***	0.56***	0.18***	0.40***	0.33***	0.22***	0.16***	0.06***
	(0.03)	(0.02)	(0.01)	(0.06)	(0.05)	(0.03)	(0.04)	(0.04)	(0.03)	(0.02)	(0.02)
Observations	57,820	57,820	57,820	57,845	57,845	57,845	57,845	57,845	57,846	57,846	57,846

Note. Robust standard errors, clustered by survey cluster, in parentheses. SRFB = sex ratio of first birth.

† $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$ (two-tailed test).