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Fertility Decline, Gender Composition of Families, and Expectations of Old Age Support

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Abstract

Recent fertility declines in non-Western countries may have the potential to transform gender systems. One pathway for such transformations is the creation of substantial proportions of families with children of only one gender. Such families, particularly those with only daughters, may facilitate greater symmetry between sons and daughters. This article explores whether such shifts may influence gendered expectations of old age support. In keeping with patriarchal family systems, old age support is customarily provided by sons, but not daughters, in India. Using data from the 2005 Indian Human Development Survey, I find that women with sons overwhelmingly expect old age support from a son. By contrast, women with only daughters largely expect support from a daughter or a source besides a child. These findings suggest that fertility decline may place demographic pressure on gendered patterns of old age support and the gender system more broadly.

Keywords

fertility decline; gender; family; old age support; expectations

¹While gender has been largely absent from classic discussions of the first demographic transition, which includes the transition from high to low levels of fertility. The same cannot be said for discussion around the second demographic transition, which includes fluctuations within low levels of fertility (Lesthaeghe 2010; Lesthaeghe and Neidert 2006; McDonald 2000).

²It should be noted that the NFHS does provide data on change over time in fertility in India; NFHS-1 was collected in 1992-93, while the most recent NFHS-3 was collected in 2005-06. However, this roughly 14 year period is not long enough to show a substantial change in the number of children in families. According to the NFHS, the mean number of children among ever married Indian women fell from 2.65 in 1992-93 to 2.46 in 2005-06 (author's calculations). This decline of 0.19 children is not big enough to demonstrate the potential changes in the gender composition of families. By contrast, the mean number of children among ever married women in 2005-06 was 2.99 in Uttar Pradesh and 1.93 in Kerala, a difference of 1.06 children.

³The adoption of unrelated orphans is rare and stigmatized (Bharadwaj 2003), but the informal adoption of a male family member is acceptable because it keeps inheritance and family ties within the appropriate patriline.

⁴The hypothetical percentages of women that would expect support from a son were calculated by multiplying the predicted probabilities given in Figures 7 and 8 by the gender compositions for the high fertility scenario and Kerala respectively. For example, the estimate of 91% expecting financial support from a son in the high fertility scenario is provided by the following: $(93.72 \times 0.9255) + (3.50 \times 0.9618) + (2.78 \times 0.3389)$. Similarly, the estimate of 78% for when the gender composition matches that of Kerala is given by: $(45.78 \times 0.9255) + (27.80 \times 0.9618) + (26.41 \times 0.3389)$. These calculations also assume that the population in the high fertility scenario is not practicing son preference and the probability of having a daughter is 0.4886.

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Introduction

Understanding how the demographic transition influences social life is one of the core questions of demography. For decades, demographers have theorized about and examined how the demographic transition impacts economic growth, urbanization, and many other aspects of social life (Chesnais 1992; Notestein 1953; Reher 2011). One important aspect of social life that is usually not included in this list is the gender system (Tim Dyson 2010; Mason 1997).[1] By gender system I use Mason's (1997:161) term to refer to "a set of beliefs and norms, common practices, and associated sanctions through which the meaning of being male and female and the rights and obligations of males and females of different ages and social statuses are defined."

There are compelling reasons to expect that the demographic transition and, in particular, fertility decline play a powerful role in contributing to the transformation of gender systems. Specifically, the demographic transition may create demographic pressure for women to taken on roles, responsibilities, and practices that are more similar to those of men. Recent theoretical work outlines potential mechanisms through which the demographic transition may create such pressure (Allendorf 2012; Tim Dyson 2001, 2010; Malhotra 2009; Mason 1997). However, research that evaluates whether there is evidence supporting these links is scarce. There is a small literature examining the consequences of fertility decline and control on women's employment in Western countries (Bailey 2006; Bloom, Canning, Fink, and Finlay 2009; Matysiak and Vignoli 2008). There are also a handful of studies that explore how the demographic transition transforms women's family lives by reducing the time spent bearing and raising children (Davis and Van den Oever 1982; Watkins, Menken, and Bongaarts 1987).

The rapid fertility declines that many non-Western countries have experienced in recent years suggest that connections between the demographic transition and gender systems in non-Western contexts should also be examined. The total fertility rates of both Asia and Latin America fell by over half in 35 years; from 5.0 children per woman in 1970-75 to 2.3 in 2005-10 (United Nations 2011). Further, fertility decline may play a powerful role in influencing gender systems through individuals' roles and responsibilities as sons and daughters, as well as parents (Allendorf 2012; Yount, Zureick-Brown, Halim, and LaVilla 2014).

This article builds on previous research by examining another way in which the demographic transition may facilitate greater similarities in men and women's roles and responsibilities in a non-Western setting. Specifically, it explores how fertility decline may change gendered expectations of old age support in India. Fertility decline should change the gender composition of families; leading to a larger proportion of families with children of only one gender (Allendorf 2012). In turn, these shifts in the gender composition of families may change gendered patterns of old age support. In places with patriarchal family systems, sons are expected to support their parents in old age, while daughters are not. I expect that the growth in the proportion of families with only daughters will challenge these gendered expectations. Thus, I examine whether the gender composition of women's children influences their expectations of who will provide old age support. I hypothesize that women

with only daughters will be more likely than those with sons to expect support from a daughter or source other than a child. I also hypothesize that this link is moderated by the completeness of women's childbearing. If the gender composition of children does influence expectations of old age support than the growing proportion of families with only daughters may contribute to changes in old age support in the future, as well as family and gender systems more broadly.

Background

The Demographic Transition and Gender Systems

Gender does not occupy a prominent place in discussions of the (first) demographic transition (Dyson 2001, 2010; Mason 1997; Saavala 2001). Classical formulations of demographic transition theory outline important consequences of the demographic transition for many aspects of economic and social life, but do not include gender among them (Chesnais 1992; Coale 1986; Davis 1963; Notestein 1953). More recent descriptions of the consequences of the demographic transition mention gender, but usually only briefly (Lee 2003; Reher 2007, 2011). Paradoxically, when gender is mentioned, demographers suggest that the demographic transition creates profound changes in the gender system (Malhotra 2009; Mason 1997; McDonald 2000). Reher (2011:19) states that “the transformation of women's roles [has its] roots in the demographic transition,” while Tim Dyson (2010:175) contends that “the [demographic] transition... bring[s] about a reduction in gender differentiation in society.” Davis and Van den Oever (1982: 508) even characterize “the rise of the women's movement in recent decades in industrial societies” as an “inevitable response” to the demographic transition.

Studies that describe how the demographic transition may contribute to such transformations focus on changes in women's life course and their role as mothers (Davis and Van den Oever 1982; Dyson 2010; Lee 2003; Malhotra 2009; McDonald 2000; Reher 2007; Watkins et al. 1987). As mortality and fertility decline, women live longer and give birth to fewer children. Thus, they spend smaller proportions of their lives bearing and raising children. Lee (2003) estimates that women spend 14% of their lives bearing and raising children in post-transition contexts, while in 1800 they spent 70% of their adult lives doing so. Thus, in post-transition societies, women have more time to devote to activities outside their family roles. In turn, women take up employment outside the home and marriage becomes less important, all of which leads to women's lives becoming more similar to men's. Other empirical studies support this link between low fertility and women's employment in Western countries (Bailey 2006; Bloom et al. 2009; Matysiak and Vignoli 2008).

Other research points to demographic pressure for daughters to become more similar to sons. As fertility declines, the number of children in families becomes smaller and children have fewer siblings. The smaller number of children allows for the investment of more resources in each child (Desai 1995). It also presents additional advantages for daughters. The proportion of girls that are wanted first daughters increases (Das Gupta and Bhat 1997). Further, with fewer siblings or none at all, daughters are more likely to attend school rather than being kept at home to care for younger siblings (Bhat 2002; Ye and Wu 2011). In fact,

Grant and Behrman (2010) speculate that this dynamic closed much of the gender gap in schooling in recent decades.

The reduction in the number of children also leads to a shift in the gender composition of children in families. The probability of having children of only one gender – only son(s) or only daughter(s) – is larger among families with fewer children (Guilmoto 2009). Thus, as fertility declines the proportion of families with children of only one gender increases. In turn, such families may put further pressure on the gender system. Families without sons may adapt by treating daughters more like sons and, conversely, those without daughters may treat sons more like daughters (Allendorf 2012). Parents may transmit gendered responsibilities, interests, skills, and experiences, such as participating in sports, cooking, or having particular occupational aspirations, to children of the other gender when they have none of the matching gender.

Such adaptations may be especially important in non-Western contexts that have patriarchal family systems with substantial differences in customary roles between sons and daughters. These family systems, which Kandiyoti (1988) characterizes as “classic patriarchy,” are tightly interwoven with gender systems. In such contexts, the rise of families with only daughters may be especially important because daughters without brothers may be forced to take on sons' roles and responsibilities. These daughters may inherit family property, reside with their natal families even when married, and care for their own parents in old age. Alternatively, sons may become more like daughters if unique aspects of their roles and responsibilities, such as supporting their elderly parents, move away from children entirely. More broadly, it may become difficult or even impossible for substantial proportions of the population to continue gendered practices that maintain patriarchal family systems. These expectations and practices may also spread from families without sons to those with sons as they become more common and accepted. In turn, this process may result in substantial challenges to the patriarchal family system and, in turn, the gender system.

This discussion suggests that fertility decline pressures family systems to make the roles and responsibilities of daughters more similar to those of sons. By contrast, much of the literature on fertility decline emphasizes how fertility decline increases the pressure for families to discriminate against girls as they attempt to have sons with only a small number of births (Das Gupta and Bhat 1997; Guilmoto 2009). Fertility decline is an important contributing cause of sex-selective abortion and neglect of girls (Arnold, Kishor, and Roy 2002; Pande 2003). These claims are not mutually exclusive, however; they refer to different points in time during and after a fertility transition. At first, fertility decline does present a strong incentive for families to engage in more discriminations towards daughters. These practices can also dampen the rise of families with only girls during fertility decline. However, once a fertility transition has been in place for several years, substantial proportions of families will eventually be forced to adapt to having only daughters. Thus, it is only later in the transition that demographic pressure for more similarities between sons and daughters should take affect and possibly outweigh the initial negative impact of fertility decline on girls.

Fertility Decline and the Gender Composition of Families in India

India is a non-Western context with particular relevance for the potential impact of the demographic transition on gender systems. India has high levels of gender inequality supported by a patriarchal family system (Desai and Andrist 2010; Karve 1965; Kolenda 1987) and recently experienced a substantial fertility decline. In the 1950s, India had a total fertility rate of six children per woman (Rele 1987). In the ensuing decades, India's total fertility rate declined by over half to 2.5 children per woman in 2010 (Registrar General [India] 2012).

India's large and demographically diverse population also allows for illustration of the demographic processes described above in one country. Indian states have all experienced fertility declines, but there is variation in the timing and extent of decline. This range of experiences is apparent in Figure 1, which shows total fertility rates from 1961 to 2010 for the states of Uttar Pradesh and Kerala, as well as all India. Uttar Pradesh's total fertility rate fell from 6.3 in the early 1960s to 3.5 in 2010. Thus, Uttar Pradesh has experienced a substantial decline in fertility in recent decades, but is still relatively high. By contrast, in the early 1960s, Kerala's total fertility rate of five children per woman was already one child below the national level. Then, in just three decades, Kerala's fertility rate declined rapidly to a very low level. Since 1990, Kerala's total fertility rate has consistently stayed at around 1.8 children per woman.

In keeping with the pathways described above, these differences in fertility decline have led to differences in the gender composition of families. Compared to Uttar Pradesh, Kerala has a comparatively large proportion of families with children of only one gender (Figure 2). [2] 13% of women with at least one child living in Uttar Pradesh have only daughters. This percentage is doubled in Kerala where 26% of women with at least one child have only daughters.

These distributions also illustrate the initial negative impacts of fertility decline on girls. The proportion of women with only son(s) is higher than the proportion with only daughter(s) in Uttar Pradesh, Kerala, and all India (Figure 2). This disparity is due to families inflating the probability of having sons through sex-selective abortion, stopping or continuing childbearing based on the gender of existing children, and neglecting daughters (Arnold et al. 2002; Basu and De Jong 2010; Clark 2000; Pande 2003). These practices elevate the proportion of families with sons above that of the biological norm (Bhat and Xavier 2003; Clark 2000) and result in masculine sex ratios (Guilmoto 2009). Despite such practices, however, Figure 2 also demonstrates that low fertility inexorably results in a substantial proportion of families with only daughters.

Old Age Support in India

India has a rich diversity of family practices and customs (Karve 1965; Kolenda 1987). As noted above, however, much of the population customarily maintained family practices that fall under Kandiyoti's (1988) category of "classic patriarchy," which is practiced in many other parts of Asia, as well as North Africa. Kandiyoti's categorization is an oversimplification of complex and varied family systems, but it does point to the importance

of common traits across contexts. In particular, inheritance and descent are patrilineal and residence is patrilocal in these family systems. Men, as core members of the patriline, remain members of their natal families throughout their lives and inherit their family's wealth. Conversely, women leave their natal families at marriage to become members of their husbands' family and do not inherit from their natal families.

In this patriarchal family system, sons and their wives are responsible for supporting parents in old age (Dharmalingam 1994; Jeffery, Jeffery, and Lyon 1989; Lamb 2000; Vatuk 1990; Vera-Sanso 2004). Their responsibilities can include co-residence and financial support, as well as daily assistance, such as bathing, cooking, feeding, and help with physical activities. The Hindu concept of *seva* (service) embodies these expectations of elder care, in which the younger generation provides intellectual, emotional, and physical care to the older generation (Brijnath 2012; Lamb 2000, 2007, 2009; Vatuk 1990). Such service is seen as reciprocal in nature; the younger generation cares for the older generation in return for the care that they were provided by the older generation when they were children. Although ethnographers also caution that not all sons and their wives take up this customary responsibility (Shaw 2004; Vera-Sanso 2004).

Unlike men, women care for their parents-in-law, rather than their own parents, in their role as daughters-in-law. Since women become members of their husband's family at marriage, they do not provide old age support for their own parents. In many parts of India, parents are not supposed to accept gifts or even food and drink from married daughters and their marital family members. If parents do rely on daughters for old age support it is customarily perceived as undesirable and unfortunate (Jeffery et al. 1989; Karve 1965; Niraula 1995). For example, in 1990 in West Bengal, Lamb (2000: 83) found that parents who relied on daughters for old age support “incur[red] considerable loss of respect,” while Vatuk (1990:77) described it as “shameful and demeaning” in 1970s New Delhi. These differences between daughters' and sons' roles are also an important reason for son preference (Brijnath 2012; Dharmalingam 1994; Jeffery, Jeffery, and Lyon 1988; Jeffery and Jeffery 1997; Niraula 1995; Vatuk 1990). Having a son is the customary means of ensuring old age support.

The family system does provide alternative sources of old age support for those who do not have a biological son (Karve 1965; Vatuk 1990; Vera-Sanso 2004; Vlassoff 1990). Parents without sons can adopt another male member of the patriline as a son who will take on the responsibilities of elder care in exchange for the benefits of inheritance.[3] Those without sons may also bring in a husband of one of their daughters as a surrogate son, which is known as a *ghar jamai* (house son-in-law). A *ghar jamai* becomes a member of his wife's patriline, inherits their family wealth, and supports his wife's parents in old age. However, the practice is customarily disliked (Jeffery et al. 1988; Lamb 2000; Vatuk 1990). Parents who take on a *ghar jamai* are seen as unfortunate and men who become *ghar jamais* are seen as emasculated by taking on the role of a woman in some respects.

Fertility decline should also put pressure on these alternative sources of old age support however. Both the adoption of male family members and finding a *ghar jamai* depend on the availability of “extra” sons. In other words, parents with multiple sons can have one son take

care of them in old age and inherit their wealth, while yet another son is available to do the same for another family. With fertility decline, however, fewer families will have multiple sons and the supply of extra sons will decline. At the same time, the demand for extra sons should increase as the proportion of families with only daughter(s) increases. Thus, the practice of the *ghar jamai* is likely to continue and even expand, but change profoundly as such men retain membership in their own patriline, as well as responsibility for their own parents. Thus, the expansion of the *ghar jamai* role in the face of fertility decline is likely to push the family system towards transformative bilineal, rather than customary patrilineal, practices.

Hypotheses

I expect that the shift in the gender composition of children brought about by fertility decline pressures families to treat daughters and sons more similarly. This article looks for evidence of just such demographic pressure in reference to old age support specifically. I examine whether the gender composition of their children influences people's gendered expectations of old age support. I expect that those without sons are forced to consider other sources of support. Turning to daughters would make daughters more like sons, while turning to sources other than children, such as other family members or government assistance, would make sons more like daughters. This leads to the following hypothesis:

Hypothesis 1: Individuals with only daughters are more likely than those with sons to expect old age support from a daughter or another source besides a child.

As discussed above, the family customs surrounding old age support are also an important influence on son preference and childbearing. Thus, individuals who have only daughters, but still hope to have a son in the future may still expect old age support from a son. By contrast, those who have only daughters and do not expect to have more children may be even more likely to expect support from a daughter or alternative source. This leads to a secondary hypothesis:

Hypothesis 2: The association between the gender composition of children and expectations of old age support is moderated by the completeness of childbearing. Among individuals with only daughters, those who have finished childbearing will be more likely to expect support from a daughter or a source other than a child compared to those who have not completed their childbearing.

Methods

Data

The data come from the 2005 Indian Human Development Survey (IHDS). The design and collection of the IHDS was overseen by researchers at the University of Maryland and National Council of Applied Economic Research in New Delhi (Desai et al. 2010). The survey is nationally representative of India with data from 41,554 households located in 33 Indian states and union territories. Data were collected in face-to-face interviews with household heads and ever married women aged 15-49 that were residing in selected households. The questions on old age support were part of the module administered to women only. Thus, the analytical sample comprises 32,767 ever married women aged 15-49

who answered questions on expectations of old age support. I expect that the hypotheses apply to both men and women, but given the data constraints, I test them with a sample comprised only of women.

Measures

Dependent variables—Expectations of support in old age are measured using two items. Women were asked “Who do you expect to live with when you get old?” and “Who do you expect will support you financially when you get older?”. Response options for both questions include: 1) son; 2) daughter; 3) both (son and daughter); and 4) no one or other. All four response options are retained to create two categorical measures of expectations of old age support, one for residential support and another for financial support.

Independent variable—The independent variable of interest is the gender composition of women's children at the time of survey, which includes the following categories: 1) both son(s) and daughter(s); 2) son(s) only; 3) daughter(s) only; and 4) no children.

Moderator—Childbearing status is an ordinal variable that categorizes women's childbearing as incomplete, possibly complete, or complete. Conceptually, the categories were designed so that the incomplete and complete categories provide extremes of the spectrum. Women with incomplete childbearing want more children and have a high chance of realizing that hope, while women with complete childbearing will definitely not have more children and know it. Women with possibly complete childbearing fall in-between these two extremes.

These conceptual categories were operationalized using multiple items on women's fertility preferences, pregnancy status, contraceptive use, and age. Women with incomplete childbearing comprise those who want to have another child, are less than 40 years old, and are not sterilized. All women that were pregnant at the time of the survey are also placed in the incomplete category. Women with possibly complete childbearing comprise two subtypes: 1) all women aged 40 or older who are not sterilized, and 2) women of any age who do not want another child and are not sterilized. Finally, women with complete childbearing comprise all sterilized women.

Controls—Several variables that are likely to be associated with both expectations of old age support and the gender composition of children are included as controls. These variables include standard socio-economic measures and measures of the local gender system. The socio-economic variables comprise region, urban residence, religion/caste, number of household assets, log of household income, women's age, education, and employment.

The measures of the local gender system tap into gendered practices and beliefs that pertain to the individual, household, and community. The household and individual level measures include whether the respondent practices purdah, whether the men and women in her household eat together, whether her natal family lives nearby, and how often she visits her natal family. The community measures include the respondent's reports of the number of reasons men in the community beat their wives, whether girls in the community are often harassed, which families support widows in the community, and whether girls in her caste

are married within the village. The categories and descriptive statistics for the controls appear in Table 1.

Analysis

The analysis comprises three steps. First, I descriptively explored the hypothesized associations between the gender composition of children and expectations of old age support using bivariate associations. I explored how the distributions of women's expectations of old age support differ by the gender composition of their children. I also examined how these distributions vary by childbearing status among women with only daughter(s).

Second, in a multivariate analysis, I examined whether the associations between the gender composition of children and expectations of old age support persist when potentially confounding factors are taken into account. The measures of old age support expectations are both categorical variables, thus, this step uses multinomial logit models. The reference category is the customary option of expecting a son to provide support. The models are also weighted to adjust for the survey design. To aid interpretation of these models I also calculated predicted probabilities of expectations of old age support. These calculations assume that women are average on all control variables in the model.

The multivariate analysis includes the presentation of two sets of models, one for each hypothesis. The first set of models tests hypothesis 1 by showing the association between the gender composition of children and expectations of old age support among the full sample when controlling for potentially confounding factors. The second set of models tests hypothesis 2 by showing how this association varies by childbearing status among women with only daughter(s). Thus, the second set of models is run on the subsample of 4,581 women with only daughter(s) and includes childbearing status as the independent variable of interest. I also tested whether the interactions of childbearing status and gender composition of children are statistically significant using adjusted Wald tests in models with the full sample.

Finally, I explored whether there is evidence of reverse causation. I expect that the gender composition of children is influencing women's expectations of old age support. However, it is possible that any association between the two variables is due to causation working in the opposite direction. Namely, women who begin childbearing with non-customary expectations of old age support may be more content to have only daughters. Thus, it may be non-customary expectations of old age support that are influencing the gender composition of children. To explore this possibility I used another set of multinomial logit models to compare the expectations of women with 1-2 daughters only to women with 3+ daughters only. Compared to women with 1-2 daughters only, women with 3+ daughters only should be disproportionately comprised of those who were *not* content to have only daughters. Having a large number of daughters indicates that women kept having births in order to have a son, but were not successful (Chaudhuri, 2012). Thus, women with 3+ daughters should have more patriarchal expectations of support in old age than women with 1-2 daughters. In turn, if reverse causation is driving the results, the women with 1-2 daughters only should be significantly more likely than those with 3+ daughters only to expect support from a daughter or other source.

Results

Bivariate Analysis

The distribution of women's expectations of who they will live with when they are older by the gender composition of their children appears in Figure 3. Expectations of residential support among women who have only son(s) are similar to those of women who have both son(s) and daughter(s). The vast majority of these women with son(s), 95% and 92% respectively, expect to live with a son in old age. In turn, only a very small proportion of these women with sons expect to live with a daughter or in some other situation. Specifically, among women with children of both genders, 1% expect to live with a daughter, 4% expect to live with both a son and daughter, and 3% expect to live with no one or someone else. Similarly, among women with only sons, less than one percent expect to live with a daughter, 1% expect to live with both a son and daughter, and 3% expect to live with no one or someone else. These expectations of co-residence do differ significantly between those with only sons and those with both sons and daughters, but the differences are far from substantial. Overall, women who have son(s) overwhelmingly expect to live with a son, regardless of whether or not they also have daughter(s).

Women without sons have very different expectations of who they will live with when they are older. Among women with only daughter(s), 33% expect to live with a daughter, 6% expect to live with both a son and daughter, and 26% expect to live with no one or in some other situation (Figure 3). The remaining third of these women with only daughter(s) gave the customary expectation of living with a son. Among women with no children, nearly half expect to live with a son and 45% expect to live with no one or in some other situation. The remaining 7% of women with no children expect to live with a daughter or with both a son and daughter. Thus, the majority of these women expect to live with daughters or in some other situation. These differences are statistically significant and substantial in size.

The results for expectations of financial support are nearly identical to those for residential support (Appendix Figure 1). Again, the vast majority of women with sons, 90% or more, expect financial support from a son, regardless of whether or not they also have daughter(s). The expectations of women who do not have a son are much more mixed. Women with only daughter(s) are relatively evenly divided among expecting financial support from a son, a daughter, and no one or other. This group also stands out as being the only group with a sizeable proportion expecting support from a daughter. Women with no children at all are relatively evenly divided between expecting financial support from a son and no one or other.

The percent of women with only daughter(s) who expect support from a daughter also varies substantially by childbearing status. Women with only daughters whose childbearing is more complete are more likely to expect to live with a daughter. Specifically, 58% of women who have completed their childbearing expect to live with a daughter compared to 36% with possibly complete childbearing and 20% with incomplete childbearing (Figure 4). The pattern is nearly identical for financial support. 60% of women with completed childbearing expect financial support from a daughter compared to 36% among those whose childbearing

is possibly complete and 22% among those with incomplete childbearing (Appendix Figure 2).

By contrast, the proportion of women with only daughters who expect old age support from no one or some other source differs significantly, but not substantially, across childbearing statuses. 26% of women with only daughters whose childbearing is incomplete expect to live with no one or in some other situation in old age (Figure 4). This percentage is comparable to those whose childbearing is possibly complete and definitely complete at 29% and 23% respectively. Similarly, the percentages of women who expect financial support from no one or some other source are 24%, 28%, and 21% respectively for women with incomplete, possibly complete, and complete childbearing (Appendix Figure 2).

One other result also stands out inductively in this descriptive exploration. Even women without a son, and who will not have a son in the future, still expect old age support from a son in sizeable proportions. 17% of women with only daughter(s) and complete childbearing say they expect to live with a son in old age (Figure 4), while 15% of them expect financial support from a son (Appendix Figure 2).

Multivariate analysis

The strong associations between gender composition of children and expectations of old age support do persist when taking potentially confounding factors into account. The coefficients for the gender composition of children are very large for both residential and financial support, indicating an exceedingly strong and statistically significant effect (Table 2). Specifically, the coefficients for women with only daughters are 5.32 for expecting to live with a daughter and 5.13 for expecting to receive financial support from a daughter. These coefficients indicate that women with only daughter(s) are considerably more likely than women with both son(s) and daughter(s) to expect support from a daughter, rather than a son. These women with only daughter(s) are also much more likely than those with children of both genders to expect support from no one or a source other than a child. The coefficients for daughter(s) only are 3.72 and 3.59 respectively for expecting residential and financial support from no one or other.

The expectations of women with no children also differ substantially from those of women with both son(s) and daughter(s) (Table 2). All of the coefficients for women with no children are positive, large, and significant, indicating that these women are more likely than those with children of both genders to expect support from a source other than a son. These women with no children are most likely to expect old age support from no one or someone other than a child. For expectations of residential support, the no children category has a coefficient of 1.19 for expecting a daughter and 1.21 for expecting both a son and a daughter. By contrast, the coefficient for expecting to live with no one or other among those with no children is significantly and substantively larger at 4.13. The coefficients are very similar for expectations of financial support; the coefficient for expecting a daughter is 1.49, for both a son and daughter 0.87, and for no one or other 4.01.

The expectations of women with only son(s) also differ significantly from those with both son(s) and daughter(s) (Table 2). Women with only son(s) are significantly less likely than

women with children of both genders to expect support from a daughter or both a son and a daughter. In other words, they are even more likely than those with children of both genders to expect support from a son. The coefficients for women with only son(s) expecting co-residence with a daughter is -0.86 and -1.39 for both son and daughter. Similarly, the coefficients for expectations of financial support among these women with only son(s) are -0.79 for expecting support from a daughter and -1.43 for expecting it from both a son and daughter. These women with only son(s) do not differ significantly from women with children of both genders in expecting support from no one or someone other than their child. The coefficients for son(s) only and expecting to residential and financial support from no one or other are both an insignificant 0.12.

Overall, these results provide strong support for hypothesis 1; women with only daughter(s) are much more likely to expect support from a non-customary source. This broader pattern is illustrated more clearly in the predicted probabilities shown in Figure 5 and Appendix Figure 3. These predicted probabilities are nearly identical to the bivariate distributions. The predicted probability of expecting residential or financial support from a son is over 90% for women with only sons, as well as for women with both sons and daughters. The predicted expectations of women with only daughters are strikingly different. Among women with only daughters, the predicted probability of expecting residential or financial support from a son, daughter, and no one or other are each around 30%. The predicted expectations for women with no children are also markedly different, being relatively evenly divided between a son and no one or other.

Next, I examined whether the results of the multivariate analysis support hypothesis 2, that childbearing status moderates the link between gender composition of children and expectations of old age support. Overall, according to adjusted Wald tests, the interaction between gender composition of children and childbearing status are statistically significant for both residential and financial support in models with the full sample of 32,767 women. However, as described above, the more specific part of hypothesis 2 was tested in models with childbearing status as the independent variable of interest using the subsample of 4,581 women with only daughter(s) (Table 3). Namely, using the models in Table 3, I tested whether women who with more complete childbearing are more likely to expect support from a daughter or a source other than a child.

As hypothesized, among women with only daughter(s), childbearing status does have a significant effect on expecting support from a daughter. Women with complete and possibly complete childbearing are significantly more likely to expect old age support from a daughter compared to those with incomplete childbearing. Specifically, the coefficients of 0.66, 0.75, 0.57 and 0.79 indicate that the relative risk of expecting residential and financial support from a daughter is roughly twice as large for woman with possibly complete and complete childbearing compared to women whose childbearing is incomplete (Table 3).

The impact that childbearing status has on expecting support from a daughter is limited to a distinction between incomplete versus possibly complete and complete childbearing though. Among women with only daughter(s), the likelihood of expecting support from a daughter does not differ significantly between those with possibly complete and complete

childbearing. According to a Wald type test, the coefficient of 0.66 for expecting residential support from a daughter among women with possibly complete childbearing does not differ significantly from the coefficient of 0.75 for those with complete childbearing. Similarly, the coefficient of 0.57 for expecting financial support from a daughter among women with possibly complete childbearing does not differ significantly from the coefficient of 0.79 for those with complete childbearing.

Contrary to hypothesis 2, however, childbearing status is not significantly associated with expecting support from a source other than a child among women with only daughters. The coefficients for expecting old age support from no one or another source are 0.28, 0.27, 0.31, and 0.25 for possibly complete and complete childbearing (Table 3). These coefficients suggest that women with more complete childbearing are slightly more likely to expect support from no one or some other source compared to those with incomplete childbearing. However, Wald type tests indicate that the childbearing status variable as a whole is not statistically significant for either residential or financial support. While this result is contrary to hypothesis 2, it is consistent with the pattern seen in the descriptive results.

These associations between childbearing status and expectations of old age support among women with only daughters are illustrated more clearly in the predicted probabilities presented in Figure 6 and Appendix Figure 4. The predicted probability of expecting residential support from a daughter rises from 25% among women with incomplete childbearing to 36% and 39% respectively for women with possibly complete and complete childbearing (Figure 6). Similarly, the predicted probability of expecting financial support from a daughter is 28% among women with incomplete childbearing, 36% with possibly complete, and 43% with complete childbearing (Appendix Figure 4). The predicted probability of expecting residential and financial support from no one or some other source stays relatively stable at around 30% for women of all childbearing statuses.

The models appearing in Table 2 also point to other influences on expectations of old age support. Women living outside the North and Central regions and in urban areas are more likely to expect support from non-customary sources. Among the religion/caste groups, Adivasis are more likely to expect support from a daughter and no one or some other source. Age also has a significant and positive impact on expecting support from a daughter and no one or some other source. Women with high levels of education and non-agricultural employment are also more likely to expect support from non-customary sources. Several, but not all, measures of the gender system are also significantly associated with expectations of old age support in predictable ways. Overall, indicators of greater gender equality are associated with greater likelihood of expecting support from a daughter, both sons and daughters, and/or no one or some other source. Contrary to this overall pattern though, women who said girls in their caste do marry within their village are less likely to expect residential support from a daughter.

Is there evidence of reverse causation?

To look for evidence of reverse causation I compared the expectations of women with 1-2 daughters only to those with 3+ daughters only. If reverse causation is driving the results, the women with 3+ daughters only should be more likely than the women with 1-2 daughters

only to expect support from a son. However, it is the women with 1-2 daughters who are significantly more likely than those with 3+ daughters to expect support from a son (results not shown). Further, this pattern holds up for each category of childbearing status, although the differences are not always significant within childbearing categories. These results suggest that reverse causation is not driving the findings; it is primarily the gender composition of children that is shaping women's expectations of old age support, rather than the other way around.

Discussion and Conclusion

Overall, the results provide strong support for hypothesis 1. Women with only daughters are much more likely to expect old age support from a daughter or a source other than a child compared to women with sons. While the expectations of women with *only* son(s) do differ significantly from those of women with *both* son(s) and daughter(s), they do not differ substantially. Regardless of whether they also have daughter(s), women with son(s) overwhelmingly expect old age support from a son. Women with no children at all also have transformative expectations of old age support, but having no children is largely a temporary stage in the life course. Most women will go on to have at least one child later in life. It is women that reach old age with only daughters that bear the brunt of demographic pressure on old age support.

The results also support most, but not all, of hypothesis 2. Overall, the completeness of childbearing does moderate women's expectations of old age support. Among women with only daughters, those with more complete childbearing are more likely to expect support from a daughter compared to those with incomplete childbearing. However, childbearing status does not influence their expectations of support from a source other than a child. The likelihood of expecting support from an alternative source is not significantly greater among women with only daughters who have completed their childbearing.

When placed in the context of fertility decline these results have important implications. They support the suggestion that shifts in the gender composition of families that accompany fertility decline may put demographic pressure on the gendered nature of old age support. As the proportion of families with only daughter(s) increases with fertility decline, the proportion of people who expect old age support from a son should fall in response. A hypothetical example can illustrate this dynamic. In a population in which families have five children, 94% of families would have children of both genders, 3% would have only son(s), and 3% only daughter(s). If people's expectations of residential support were equal to the predicted probabilities found in Figure 5 and they had the gender composition associated with families of five children, 93% of people would expect residential support from a son. If fertility declined and the hypothetical population gained the gender composition of Kerala, seen in Figure 2, 80% would expect residential support from a son. Similarly, 91% of people would expect financial support from a son in the high fertility scenario, while the percentage would fall to 78% if the gender composition matched that of Kerala.[4] This hypothetical example oversimplifies the process and likely underestimates the scope of actual change, but it does give a rough sense of the demographic pressure that fertility decline may put on expectations of old age support.

It is important to emphasize that this analysis focuses on expectations, rather than practices, of old age support. There are often substantial gaps between expectations of behavior and actual behavior. In this case, however, there is good reason to believe that expectations underestimate, rather than overestimate, the extent of future transformative behavior. About 15% of women who finished childbearing and only had daughter(s) said they expected old age support from a son. Some of these women may intend to adopt a son and it is this surrogate son that they were thinking of when they reported expecting old age support from a son. It is likely though that a substantial proportion of these women were voicing the social norm. Regardless, when they reach an age when they need old age support, a large proportion of them will be forced to turn to a daughter or alternative source of support. The positive association between age and expecting support from a daughter or another source further support this conclusion. Older women are closer to the period in their lives when they will need old age support and, thus, are more likely to be aware and accepting of their demographic fate. This demographic reality is also one reason why the hypothetical example given above may underestimate the demographic pressure for change in old age support.

The role of expectations themselves should not be minimized however. The results also imply that many women who go on to have a son will temporarily expect old age support from a daughter, or some other source, before they have children or when they temporarily have only daughter(s). Such experiences, especially lengthy ones, may make women more open to non-customary arrangements. They may be more accepting of neighbors and relatives who turn to daughters for old age support – lessening the stigma and increasing the social acceptance of such practices. Such women may also be among the first to follow the lead of women with only daughters and accept old age support from a daughter themselves even though they have a son.

Ethnographic studies suggest that these expected changes in behavior may be starting to happen. Some research indicates that daughters are increasingly providing elderly care for their own parents (Allendorf 2012; Kunreuther 2009). For example, in a village in West Bengal in 2010, some people said that daughters are taking care of and living with their own parents more in the current period than in the past, especially when the parents have no sons (Allendorf 2012). Other studies suggest that old age homes have recently emerged in India and are growing in popularity (Brijnath 2012; Lamb 2007, 2009). In the past, old age homes were nonexistent, apart from a few provided by Christian missionaries largely for Anglo Indians (Lamb, 2009). In the 1980s old age homes started appearing in urban centers and became more common in the 1990s and 2000s. Further, Lamb (2009:61) reports that nearly half of the 100 people living in old age homes in Kolkata that she interviewed in the early 2000s did not have children or had only daughters.

This ethnographic research on old age support in India also points to other causes of old age support moving outside the family, including Westernization, urbanization, higher living standards, industrialization, and the breakdown of the family (Cohen 1998; Lamb 2009). The results presented here also point to some of these influences. Women living in urban areas, with greater education, and employed outside of agriculture were all more likely to embrace daughters and other alternative sources of old age support. These associations

reinforce that urbanization, increasing levels of education, and economic change may also change expectations of old age support.

The findings also highlight that other forces will resist the demographic pressure for greater similarity between men and women's responsibilities and roles. The greater endorsement of non-customary sources of support by highly educated, employed women employed suggests that the gendered nature of the labor market in India is one such resistant force. In India, women are much less likely than men to participate in the labor force and when they do they are more likely to work in agriculture, more likely to earn daily wages rather than salaries, and earn less overall (Desai et al. 2010). The rare women with high levels of education and salaried occupations outside of agriculture probably expect their daughters to resemble themselves and, thus, expect that their daughters' will have the economic resources to support them in old age. Conversely, the bulk of women who are not highly educated and do not hold formal occupations are well aware that their sons are more likely than their daughters to be in an economic position to provide residential and financial support.

The strong regional effects, as well as the effects of measures of the local gender system, also point to the broader power of gender scripts as a resistant force. Women residing in the North and Central regions are less likely than those in the South, West, East, and Northeast to embrace daughters and other alternative sources of support. The North and Central regions are known for the prominence of gender scripts that place great emphasis on women's sexual purity, seclusion, and dependence on men, which are tied, to but not synonymous with, family roles and practices (Desai and Andrist 2010; Desai and Temsah 2014; Dyson and Moore 1983). Further, the measures of local gender systems that tap into some of these gender scripts, primarily men and women eating together or not, are also significantly associated with the primacy of sons providing old age support. Demographic pressure for greater similarity between sons and daughters will meet powerful resistance from these customary gender scripts.

Thus, I do not suggest that changes in the gender composition of families is the only or primary factor that may change gendered patterns of old age support, nor do I suggest that the transformation of the gendered nature of old age support will be automatic or simple. Instead, I contend that fertility decline should be added to the list of forces that puts transformative pressure on gender systems. In fact, these other influences may combine with fertility decline to produce even greater changes in family and gender systems than any individual factor would cause by itself. For example, the absence of sons due to migration and the spread of Western ideas about elderly care may hasten the spread of transformative practices from families without sons to those with sons. However, both the demographic pressure of fertility decline, as well as these other transformational forces, must also overcome powerful counteractive forces as described above. Further, the gender system is multi-dimensional; greater similarities between women and men in one dimension does not necessarily lead to greater similarities in another (Desai and Temsah 2014; Malhotra and Schuler 2005; Presser and Sen 2000). Thus, even if sons and daughters do become equally appropriate sources of old age support, it may have a limited impact on other aspects of the gender system.

Finally, in closing, a central limitation of the analysis should be explicitly emphasized. This article outlines a causal chain from fertility decline to greater similarity between sons and daughters, but it provides strong empirical support for only one link in the causal chain. Namely, it shows that the gender composition of families influences expectations of old age support. Since the data are cross-sectional, it does not show changes in the gender composition of families over time, nor does it show that such changes in composition lead to changes in expectations of old age support. Moreover, it does not empirically connect changes in expectations to behavior, nor does it empirically connect changes in old age support practices to any other changes in the gender system more broadly. Thus, future research should track changes over time in the gender composition of families and connect them directly to gendered changes in old age support. Future research should also examine these dynamics for other family practices, such as inheritance, and in other non-Western locations.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Figure 1. Total fertility rates for all India and the states of Uttar Pradesh and Kerala, 1961-2010. Sources: Rele (1987) and Registrar General [India] (2009 and Registrar General [India] (2012).

Figure 2.

Gender composition of children among women with at least one child living in Uttar Pradesh, Kerala, and all India in 2005-06.

Source: Author's calculations using the 2005-06 National Family Health Survey (International Institute for Population (IIPS) and Macro International, 2007).

Figure 3.
Women's expectations of who they will live with when they are older by the gender composition of their children (n = 32,767).

Figure 4. Expectations of who they will live with when older by childbearing status among women who have only daughter(s) ($n = 4,581$).

Figure 5.

Predicted probabilities of who women expect to live with when they are older by the gender composition of their children.

Note: These predicted probabilities are calculated using the model from Table 2 and assume women are average on all other variables in the model.

Figure 6.

Predicted probabilities of residential support expectations among women with only daughter(s) by their childbearing status.

Note: These predicted probabilities are calculated using the model from Table 3 and assume women are average on all other variables in the model.

Table 1

Descriptive statistics for variables used in multivariate analysis for the full sample and subsample of women with only daughters.

Variable	Full sample (n=32,767) %	Subsample with only daughters (n=4,581) %
Expect to live with		
Son	81.8	35.0
Daughter	5.4	33.4
Both son and daughter	3.9	5.7
No one or other	9.0	26.0
Expect financial support from		
Son	79.8	33.9
Daughter	5.6	34.6
Both son and daughter	5.8	6.7
No one or other	8.8	24.8
Composition of children		
Both son(s) and daughter(s)	57.8	0
Son(s) only	21.5	0
Daughter(s) only	14.3	100
No children	7.9	0
Childbearing status		
Incomplete	21.1	47.4
Possibly complete	40.7	30.8
Complete	38.2	21.8
Region		
North	31.5	25.3
Central	12.3	10.7
East	12.1	14.5
West	15.9	15.5
South	24.7	30.5
Northeast	3.5	3.6
Urban residence	28.8	34.1
Religion/caste		
Upper caste Hindu	20.2	21.7
Other Backward Caste	35.7	35.1
Dalit	22.3	21.3
Adivasi	7.5	8.1
Muslim	11.6	10.3
Other religion	2.8	3.6
Household assets	mn:11.4 sd:6.2	mn:12.0 sd:6.2
Log of household income	mn:10.2 sd:1.6	mn:10.2 sd:1.6
Age	mn:33.0 sd:7.9	mn:29.7 sd:7.9
Education		

Variable	Full sample (n=32,767) %	Subsample with only daughters (n=4,581) %
None	48.1	37.5
1-5 years	16.7	16.2
6-9 years	18.4	22.0
10-12 years	12.4	16.5
College	4.5	7.8
Employment		
Not employed	56.3	62.1
Unpaid agricultural work	18.1	13.0
Paid agricultural work	16.4	15.5
Non-agricultural work	9.3	10.4
Practices purdah	54.7	47.9
Men and women eat together	49.1	53.0
Natal family lives nearby	56.2	58.2
Natal family visits		
< once a year	5.3	4.3
Once a year	23.9	19.7
2-3 times a year	46.6	47.6
Monthly	13.0	14.2
Weekly or daily	7.5	9.6
No natal family	3.8	4.5
Reasons for beating wife	mn:2.1 sd:1.7	mn:2.0 sd:1.7
Girls harassed in community	19.4	18.7
Widow support in community		
Husband's family	36.9	34.7
Husband's and natal families	31.4	32.4
Natal family	25.3	27.7
Other or neither	6.4	5.2
Girls marry within village	48.1	52.4

Table 2

Coefficients and standard errors from multinomial logit models of women's expectations of residential and financial old age support (n = 32,767). The reference category is expecting a son to provide support.

	Expect to live with			Expect financial support from		
	Daughter	Both daughter and son	No one or other	Daughter	Both daughter and son	No one or other
Composition of children						
Son(s) and daughter(s) (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Son(s) only	-0.86 [*] (.33)	-1.39 ^{***} (.16)	0.12 (.11)	-0.79 ^{**} (.24)	-1.43 ^{***} (.13)	0.12 (.10)
Daughter(s) only	5.32 ^{***} (.18)	1.38 ^{***} (.13)	3.72 ^{***} (.13)	5.13 ^{***} (.17)	1.09 ^{***} (.11)	3.59 ^{***} (.12)
No children	1.19 ^{**} (.42)	1.21 ^{***} (.16)	4.13 ^{***} (.13)	1.49 ^{***} (.32)	0.87 ^{***} (.14)	4.01 ^{***} (.13)
Region						
North (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Central	0.23 (.26)	-2.17 ^{***} (.24)	-0.34 (.18)	-0.06 (.23)	-2.09 ^{***} (.24)	-0.40 [*] (.18)
East	2.08 ^{***} (.28)	0.54 ^{***} (.20)	1.51 ^{***} (.18)	1.80 ^{***} (.23)	0.71 ^{***} (.18)	1.26 ^{***} (.18)
West	1.28 ^{***} (.26)	-0.83 ^{***} (.20)	0.40 [*] (.16)	1.30 ^{***} (.24)	0.01 (.16)	0.36 [*] (.16)
South	2.55 ^{***} (.32)	0.67 ^{***} (.16)	0.57 ^{***} (.15)	2.06 ^{***} (.19)	1.07 ^{***} (.16)	0.50 ^{**} (.15)
Northeast	2.39 ^{***} (.39)	0.75 ^{***} (.27)	1.05 ^{***} (.23)	1.38 ^{***} (.31)	1.53 ^{***} (.24)	1.02 ^{***} (.22)
Urban residence	0.20 (.17)	-0.08 (.13)	0.48 ^{***} (.10)	0.24 [*] (.12)	-0.29 [*] (.12)	0.54 ^{**} (.09)
Religion/caste						
Upper caste Hindu (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Other Backward Caste	-0.16 (.14)	-0.04 (.12)	-0.14 (.12)	-0.04 (.11)	0.02 (.11)	-0.07 (.11)
Dalit	0.27 (.18)	0.16 (.15)	0.21 (.12)	0.06 (.14)	0.00 (.12)	0.20 (.11)
Adivasi	0.91 ^{***} (.23)	0.20 (.21)	0.33 [*] (.15)	0.77 ^{***} (.20)	0.14 (.19)	0.39 ^{**} (.15)
Muslim	-0.09 (.17)	0.09 (.18)	-0.12 (.13)	-0.09 (.16)	-0.08 (.16)	-0.07 (.13)
Other religion	0.54 (.28)	0.35 (.29)	0.21 (.18)	0.39 (.25)	0.36 (.21)	0.14 (.16)
Household assets	-0.00 (.01)	0.00 (.01)	0.01 (.01)	-0.01 (.01)	0.01 (.01)	0.01 (.01)
Log of household income	-0.06 (.04)	-0.01 (.03)	-0.02 (.03)	-0.05 (.03)	0.01 (.02)	-0.03 (.03)
Age	0.06 ^{***} (.01)	-0.00 (.01)	0.03 ^{***} (.01)	0.07 ^{***} (.01)	0.00 (.01)	0.03 ^{***} (.01)
Education						

	Expect to live with			Expect financial support from		
	Daughter	Both daughter and son	No one or other	Daughter	Both daughter and son	No one or other
None (ref)	0.00	0.00	0.00	0.00	0.00	0.00
1-5 years	0.01 (.19)	0.13 (.13)	0.23 [*] (.10)	0.27 [*] (.13)	0.24 [*] (.12)	0.28 ^{**} (.10)
6-9 years	0.10 (.16)	0.13 (.12)	0.12 (.10)	0.26 [*] (.12)	0.31 ^{**} (.11)	0.23 [*] (.09)
10-12 years	0.24 (.18)	0.59 ^{***} (.15)	0.04 (.10)	0.54 ^{***} (.15)	0.68 ^{***} (.13)	0.22 [*] (.10)
College	0.85 ^{**} (.23)	0.83 ^{***} (.18)	0.41 ^{**} (.14)	0.85 ^{***} (.19)	0.86 ^{***} (.16)	0.61 ^{***} (.14)
Employment						
Not employed (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Unpaid agricultural labor	-0.08 (.19)	0.24 (.13)	0.28 (.16)	0.08 (.18)	0.21 [*] (.10)	0.32 [*] (.16)
Paid agricultural work	-0.02 (.18)	-0.05 (.18)	-0.04 (.13)	0.24 (.14)	0.02 (.14)	0.07 (.13)
Non-agricultural work	0.85 ^{**} (.33)	-0.02 (.16)	0.23 (.14)	0.42 ^{**} (.14)	-0.12 (.13)	0.26 [*] (.11)
Practices purdah	0.02 (.15)	0.01 (.12)	0.09 (.09)	-0.02 (.13)	-0.09 (.12)	-0.04 (.09)
Men and women eat together	0.18 (.19)	0.37 ^{***} (.11)	0.47 ^{***} (.09)	0.33 ^{**} (.10)	0.25 ^{**} (.09)	0.49 ^{***} (.09)
Natal family lives nearby	0.08 (.17)	-0.23 (.11)	0.30 ^{**} (.09)	-0.07 (.11)	-0.20 [*] (.09)	0.22 [*] (.09)
Natal family visits						
< once a year (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Once a year	0.06 (.32)	-0.31 (.24)	0.32 (.18)	-0.20 (.21)	-0.16 (.23)	0.15 (.16)
2-3 times a year	-0.25 (.23)	-0.47 [*] (.23)	0.22 (.41)	-0.07 (.22)	-0.59 [*] (.22)	0.20 (.17)
Monthly	0.12 (.27)	-0.45 (.24)	0.41 [*] (.19)	0.31 (.24)	-0.26 (.24)	0.38 [*] (.18)
Weekly or daily	0.38 (.30)	-0.11 (.28)	0.49 [*] (.20)	0.63 [*] (.27)	-0.29 (.27)	0.45 [*] (.19)
No natal family	0.20 (.31)	-0.13 (.31)	0.70 ^{**} (.22)	0.35 (.30)	-0.02 (.30)	0.63 ^{**} (.22)
Reasons for beating wife	-0.04 (.03)	-0.10 ^{**} (.03)	-0.14 ^{***} (.02)	-0.03 (.03)	-0.04 (.03)	-0.12 ^{***} (.02)
Girls harassed in community	-0.60 ^{***} (.16)	-0.10 (.13)	0.09 (.11)	-0.12 (.13)	0.27 [*] (.10)	0.09 (.10)
Widow support in community						
Husband's family (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Both families	0.20 (.13)	0.80 ^{***} (.12)	0.04 (.10)	0.05 (.13)	0.72 ^{***} (.11)	0.07 (.10)
Natal family	0.08 (.14)	-0.15 (.16)	-0.11 (.10)	-0.23 (.13)	-0.20 (.15)	-0.20 (.10)
Other or neither	1.17 (.63)	-0.11 (.35)	0.87 ^{***} (.19)	-0.15 (.19)	-0.47 [*] (.21)	0.56 ^{***} (.15)

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	Expect to live with			Expect financial support from		
	Daughter	Both daughter and son	No one or other	Daughter	Both daughter and son	No one or other
Girls marry within village	-0.36 [*] (.17)	-0.21 (.12)	0.09 (.08)	-0.13 (.11)	0.04 (.10)	0.18 [*] (.08)
Constant	-8.25 ^{***} (.69)	-2.94 ^{***} (.49)	-5.96 ^{***} (.41)	-7.95 ^{***} (.72)	-3.28 ^{***} (.42)	-5.71 ^{***} (.40)

^{*} $p<0.05$,
^{**} $p<0.01$,
^{***} $p<0.001$,
two-tailed tests

Table 3

Coefficients and standard errors from multinomial logit models of expectations of residential and financial old age support among the sample of women with only daughter(s) (n = 4,581). The reference category is expecting a son to provide support.

	Expect to live with			Expect financial support from		
	Daughter	Both daughter and son	No one or other	Daughter	Both daughter and son	No one or other
Childbearing status						
Incomplete (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Possibly complete	0.66*** (.15)	0.76** (.24)	0.28 (.14)	0.57*** (.15)	0.73** (.23)	0.31* (.14)
Complete	0.75*** (.17)	0.00 (.33)	0.27 (.18)	0.79*** (.17)	0.05 (.30)	0.25 (.18)
Region						
North (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Central	0.08 (.27)	-2.15*** (.44)	-0.24 (.21)	0.06 (.26)	-2.02*** (.41)	-0.16 (.22)
East	2.14*** (.30)	-0.10 (.45)	1.81** (.24)	2.21*** (.30)	-0.39 (.39)	1.69*** (.25)
West	1.46*** (.25)	-0.02 (.34)	1.00** (.21)	1.57*** (.24)	0.20 (.31)	1.06*** (.22)
South	2.24*** (.23)	-0.20 (.35)	0.43* (.21)	2.30*** (.22)	0.30 (.34)	0.62** (.21)
Northeast	1.87*** (.35)	0.48 (.44)	1.69** (.36)	1.98*** (.37)	1.12* (.44)	1.98*** (.36)
Urban residence	0.30* (.14)	-0.17 (.26)	0.43* (.15)	0.19 (.15)	-0.36 (.23)	0.42** (.16)
Religion/caste						
Upper caste Hindu (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Other Backward Caste	0.12 (.14)	0.57* (.24)	-0.09 (.17)	0.05 (.14)	0.57* (.23)	-0.12 (.16)
Dalit	0.16 (.17)	0.65* (.30)	0.05 (.19)	0.08 (.18)	0.59 (.30)	0.12 (.19)
Adivasi	0.85** (.26)	0.47 (.42)	0.08 (.28)	0.77** (.25)	0.41 (.39)	0.05 (.28)
Muslim	-0.15 (.22)	0.74* (.32)	-0.14 (.24)	-0.04 (.23)	0.56 (.34)	-0.01 (.23)
Other religion	0.69 (.38)	0.06 (.50)	0.13 (.31)	0.58 (.40)	0.11 (.52)	0.33 (.32)
Household assets	-0.00 (.02)	0.03 (.02)	0.01 (.01)	0.01 (.02)	0.03 (.02)	0.02 (.01)
Log of household income	-0.05 (.05)	-0.12* (.05)	0.01 (.04)	-0.05 (.05)	-0.09 (.05)	-0.00 (.04)
Age	0.07*** (.01)	0.01 (.02)	0.05*** (.01)	0.07*** (.01)	0.01 (.01)	0.05*** (.01)
Education						

	Expect to live with			Expect financial support from		
	Daughter	Both daughter and son	No one or other	Daughter	Both daughter and son	No one or other
None (ref)	0.00	0.00	0.00	0.00	0.00	0.00
1-5 years	-0.06 (.18)	0.14 (.33)	0.03 (.18)	-0.02 (.18)	0.10 (.31)	0.02 (.18)
6-9 years	-0.01 (.16)	-0.12 (.33)	-0.13 (.17)	-0.13 (.16)	0.17 (.28)	-0.21 (.16)
10-12 years	0.28 (.18)	0.41 (.30)	0.02 (.18)	0.21 (.18)	0.74 ** (.27)	0.05 (.18)
College	0.30 (.24)	0.57 (.39)	-0.30 (.25)	0.16 (.24)	0.61 (.37)	-0.22 (.25)
Employment						
Not employed (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Unpaid agricultural labor	0.01 (.22)	0.10 (.26)	0.02 (.21)	0.09 (.22)	0.13 (.24)	0.17 (.21)
Paid agricultural work	0.24 (.20)	-0.01 (.41)	-0.04 (.20)	0.40 * (.20)	0.16 (.30)	0.18 (.21)
Non-agricultural work	0.40 * (.18)	0.22 (.41)	0.00 (.19)	0.54 ** (.20)	0.23 (.42)	0.33 (.19)
Practices purdah	0.38 * (.15)	0.43 (.23)	0.09 (.14)	0.35 * (.15)	0.22 (.23)	-0.03 (.14)
Men and women eat together	0.36 ** (.12)	0.35 (.20)	0.29 * (.12)	0.37 ** (.12)	0.16 (.18)	0.17 (.13)
Natal family lives nearby	0.12 (.14)	-0.10 (.19)	0.34 ** (.12)	0.18 (.14)	0.06 (.18)	0.37 ** (.12)
Natal family visits						
< once a year (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Once a year	-0.90 * (.40)	-1.66 ** (.54)	-0.21 (.39)	-0.82 * (.40)	-1.36 * (.53)	-0.32 (.38)
2-3 times a year	-0.73 (.40)	-1.37 ** (.52)	-0.07 (.38)	-0.63 (.41)	-1.60 ** (.51)	-0.14 (.38)
Monthly	-0.26 (.43)	-1.36 * (.54)	0.25 (.40)	-0.16 (.43)	-1.09 * (.54)	0.15 (.40)
Weekly or daily	-0.15 (.45)	-1.04 (.59)	-0.09 (.42)	-0.11 (.46)	-1.37 * (.61)	-0.31 (.42)
No natal family	-0.36 (.46)	-2.19 ** (.72)	0.11 (.46)	-0.38 (.47)	-2.34 ** (.69)	-0.09 (.46)
Reasons for beating wife	-0.05 (.04)	-0.19 ** (.06)	-0.14 ** (.04)	-0.06 (.04)	-0.13 * (.05)	-0.15 *** (.04)
Girls harassed in community	-0.60 *** (.15)	0.11 (.25)	-0.13 (.17)	-0.45 ** (.15)	0.43 (.21)	-0.23 (.17)
Widow support in community						
Husband's family (ref)	0.00	0.00	0.00	0.00	0.00	0.00
Both families	0.36 * (.15)	0.50 * (.22)	0.19 (.13)	0.34 * (.15)	0.58 * (.21)	0.19 (.14)
Natal family	0.15 (.14)	-0.02 (.31)	-0.06 (.10)	0.02 (.15)	-0.19 (.34)	-0.02 (.16)
Other or neither	-0.07 (.26)	-0.69 (.55)	0.51 * (.21)	-0.06 (.24)	-0.92 (.53)	0.44 * (.22)

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	Expect to live with			Expect financial support from		
	Daughter	Both daughter and son	No one or other	Daughter	Both daughter and son	No one or other
Girls marry within village	-0.21 (.15)	-0.06 (.24)	0.14 (.13)	-0.24 (.15)	0.15 (.21)	0.20 (.14)
Constant	-3.37*** (.81)	-0.67 (1.01)	-2.82*** (.65)	-4.05*** (.68)	-1.12 (1.00)	-2.71*** (.54)

* $p<0.05$,
** $p<0.01$,
*** $p<0.001$,
two-tailed tests