Social Support Networks and Fertility in South Asia:
How Does Allocare Shape Fertility in the Context of High Social Competition?

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Abstract (200 words)

How does support from social network members shape fertility? Cross-culturally, help from kin and other social network members has often been found to increase women's fertility in both high fertility pre-demographic transition contexts and high-income, low fertility contexts. This literature has emphasized the role of grandmothers in supporting fertility by helping to care for grandchildren, and older siblings in helping to care for younger children. Here we examine the effect of support from social network members on fertility in South Asia, a region where this topic has been little studied. Using detailed ego network data on social support collected in 2022 in HDSS sites in Matlab, Bangladesh and Birbhum, India, we use Cox proportional hazard models to examine effects on interbirth intervals and parity progression models to examine effects on parity. We find clear evidence of a pattern in which support from older social network members, particularly grandmothers, is associated with slower birth intervals and reduced fertility while support from older children, and younger relatives in general, is associated with higher fertility and faster interbirth intervals. We also find that these patterns are more pronounced when fertility targets have been met in terms of both numbers and genders of children.

I. Introduction

Previous research into the effects of social networks on fertility has focused on two contexts. The first is “natural fertility” populations characterized by high fertility uncontrolled by contraceptive technology, with large and kin-dense social networks. This research has generally found that more social support is correlated with shorter birth intervals and higher lifetime fertility (Crognier et al. 2001; Draper & Hames 2000; Hawkes et al. 1989, 1997; Kramer 2009; Lahdenpera et al. 2004). In such populations, shortening the birth interval may result in higher lifetime fertility because it allows mothers to fit more births into their limited reproductive career (Kramer 2010:424). Research has generally focused on the effects of grandmothers (Alvarez 2000; Hawkes et al. 1997, 1998)—who often help their daughters or daughters-in-law with caring for grandchildren either directly or indirectly, along with the role of older siblings (Kramer 2011; 2014), who have been frequently demonstrated to help with their younger siblings and also defray their own costs through work in farming or pastoralism.

The second research context in which the effects of social networks on fertility has been examined is modern low-fertility populations in high-income countries. These populations are characterized by consciously curtailed fertility using contraception, and by local social networks that of social support that are generally smaller and far less kin-dense (Newson 2005, 2007), both because of the mobility demands of modern wage labor markets and because kin have deliberately curtailed their fertility as well. Despite the contrast with natural fertility populations, research in these contexts have generally also shown that social network support for childbearing is associated with higher fertility and sometimes with shorter interbirth intervals (Coall and Hertwig 2010; Kaptijn et al. 2010; Sear and Coall 2011). Again, we find that grandmothers (Coall and Hertwig 2010; Sear and Coall 2011) and other older relatives can be an important factor in these contexts, while we sometimes—though less commonly—also see the effects of alloparental care by older siblings.

While these two contexts broadly characterize societies preceding and following a modern demographic transition to low fertility, they are not necessarily representative of societies in the midst of this process. The present study looks at one such intermediary context – a pair of societies that are well advanced in their trajectory of fertility reduction and yet are still primarily rural and retain locally kin-dense social networks more characteristic of pre-transition societies. Such societies might at first appear paradoxical: why should societies that are still primarily rural and have plenty of social support exhibit fertility declines characteristic of more developed societies? Das et al. (2023) argue that parents in West Bengal (one of the two sites considered here) are motivated by two considerations: first, that they should "make fertility decisions that do not create hardship or challenges for their children", and second, that they limit fertility so that their children can "escape poverty and achieve economic stability and upward social mobility". In the context of rapid economic change, parents make decisions for the economy they believe their children will face, not the economy as it stands now. This perceived future is one of increasing labor market integration with strong competition for the best jobs, with access to those jobs highly contingent on education. Indeed, modelling suggests that this joint combination of investment in earning potential and social status in the context of increasing inequality and status competition are prime drivers of fertility reduction, that may drive fertility to lower levels than the economic changes brought about by development would alone (Shenk et al. 2016).

What role, then, might social support—and especially allocare—play in a context where potential caregivers are still relatively abundant and yet economic conditions favor fertility reduction? Where a mother's intent is to limit her fertility, will social support enable a mother to have more children or will it instead be channeled into higher investment in individual children? Additionally, fertility reduction is associated with greater investment in individual offspring, and so it is possible that allocare might lengthen interbirth intervals, as mothers attempt to maximize investment in one child before having another. Offspring gender preferences may also shape fertility decisions. For example, Das and Ghosh (2021) found that women in rural West Bengal were more likely to adopt effective contraception after having had a son. We thus examine the effects of social support in the context of fertility quantum, fertility timing (tempo), and additionally test whether fulfillment of fertility intentions—in terms of child number and the desire to have a son—alter the effects of social support.

II. Methods

Field Sites. Data were collected as part of a larger multi-site study funded by the John Templeton Foundation and the Templeton Religion Trust that seeks to understand how religion impacts family size, child health, and child success. Data were collected from well-known HDSS sites in Matlab, Bangladesh (Alam et al. 2017) and Birbhum, West Bengal, India (Ghosh et al.

2015), providing us with sampling frames from which to recruit a random sample of participants. The two sites share much in common. Both are Bangla speaking populations, with patrilocal residence. Historically the local economy centered around agriculture (with some fishing in Matlab) but economic development in the late 20th and early 21st centuries led to a decline in traditional agricultural and subsistence work and an increase in wage labor employment. Residents of Matlab are more likely to engage in circular labor migration both domestically and internationally, typically in construction or domestic work to countries in the Persian Gulf. Birbhum is characterized by lower rates of labor migration, primarily to cities within India.

With increasing economic development and expanded access to family planning programs, both sites have experienced a rapid decline in fertility in recent decades. West Bengal began its fertility decline early, with notable decreases in the 1940s among urban elites followed by significant declines across all sectors of society from the 1960s through 1980 (Kamal 2020). The total fertility rate is currently 1.7 children per woman, one of the lowest rates in India and similar to much of Europe. Bangladesh, in contrast, is well-known for its late but very rapid fertility decline of over 4 children per woman which began in earnest in the 1980s. The total fertility rate is currently 2.1 children per woman, in line with much of Latin America. West Bengal contrasts relatively high fertility in some rural areas with lowest low fertility (1.2 children per woman) among the educated urban classes in Kolkata, while Bangladesh's demographic transition shows greater equality across rural and urban regions. Yet in both areas the combination of falling fertility, rapid market integration, increased competition for market-oriented jobs, and continued access to extended kin and dense local social networks provides an opportunity to examine the effects of social network support on fertility behavior in a transitional context.

Survey. Data were collected in 2022 from 1003 Bangladeshi (2936 births, 1785 focal children) and 1135 Indian women (3269 births, 1759 focal children) aged 25-60 who each had at least one child. Surveys covered broad topics including fertility, socioeconomic status, religiosity, and health. Surveys also included a social support network section in which respondents were asked to provide a list of people who helped them and to whom they provided help across several domains. Follow-up questions were then asked about the characteristics of these people. In the analyses presented here we refer to the people named in the social support survey as the "women's network". Each respondent was additionally asked a series of questions about 2 of her children (or 1 if she only had one child), during which she could refer to her support network to identify allocarers, i.e. people who helped care for each specific focal child. This was followed by a series of questions about the specific types of care provided. These child-specific sets of network members are referred to below as the "focal child networks".

Analysis. We apply two methods to investigate the effects of allocare on women's fertility behavior. The first uses Cox proportional **hazards models** to examine the effects of allocare and other factors on the spacing between births. Durations of closed intervals are calculated as the time between successive births. Intervals were also treated as closed if the respondent reported being pregnant at the time of the survey, with an additional four months added to the time since the previous birth. The duration of open intervals (those following the final birth, when the respondent did not report being currently pregnant) were calculated as the elapsed time since the previous birth, or until the woman turned 45 years old. We do not attempt to model time to first birth since we cannot estimate onset of conception risk more precisely than the year of marriage.

To examine the effects of allocare on the probability of progressing to another child, or **parity progression**, we use a generalized linear model with the log odds of progression modeled as a linear combination of covariates. For each child born to a respondent, progression to the next parity was coded as having occurred if the respondent had a subsequent child, or (for the last-born child) the respondent reported she was currently pregnant. Progression to the next parity was coded as having not occurred following last-born children only, that is, if the respondent was now post-reproductive (aged 45 or older) or if the respondent were younger than age 45, not currently pregnant, and intended to have no further children. (Contraception is readily available and effectively employed in both populations to limit fertility.) Cases of progression beyond the last-born child were dropped for women who were still reproductive, as eventual progression to the next parity could not be determined for these women (those younger than age 45 who did not indicate they were done bearing children). As a criteria for inclusion in the study was that a participant must have had at least one child, we do not model the probability of progression from no children to the first child.

For both proportional hazards and parity progression models, we identify a set of demographic and socioeconomic controls to include in all subsequent models. Models are then run with two groups of covariates: the first set includes counts of allocare givers in broad categories; the second set includes counts for specific categories of relatives. Because covariate effects are likely to vary depending on the current parity of the respondent (i.e. how many children have already been born), for parity progression analyses we further split the sample and model specific parities or groups of parities. Finally, in models where the same woman may contribute more than one birth interval or parity to the sample, we calculate robust standard errors (clustered by respondent) for coefficient estimates and adjust p-values accordingly.

III. Results

Descriptives. Both Matlab and Birbhum are well advanced in their transition from high to low fertility. Figure 1 compares fertility ideals with realized fertility (for post-reproductive women only; Matlab n = 871, Birbhum n = 893) between the two sites. Though the modal ideal fertility is similar at the two sites (2 at each), the mean (± s.d.) is slightly higher (2.52 ± 0.78) in Matlab than in Birbhum (2.23 ± 1.01). More Matlab women expressed an ideal of 3 children than did Birbhum women, while more Birbhum women expressed an ideal of 1 child. Despite these differences, completed fertility is similar between the two sites (Matlab: 3.11 ± 1.22; Birbhum: 3.04 ± 1.54).

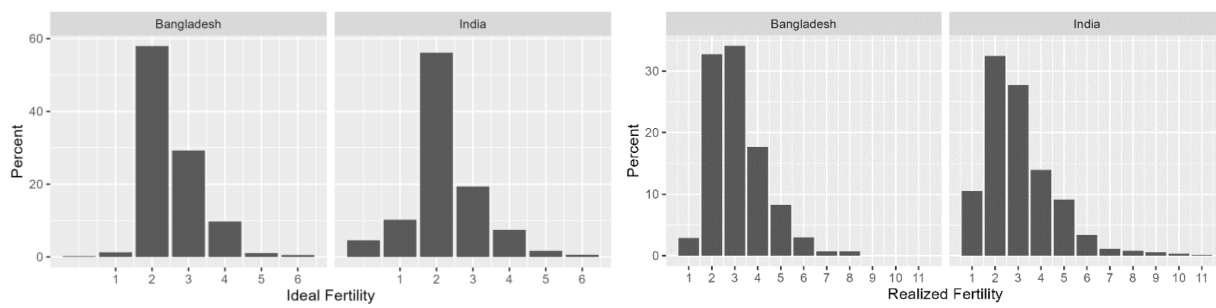

Figure 1. Ideal vs. Completed Fertility, Matlab, Bangladesh and Birbhum, India.

In terms of control variables, mother's age, religion (being Hindu), and increasing level of education all decreased the hazard of another child (i.e. increased the elapsed time between births) and reduced the probability of having a subsequent birth. Having a husband engaged in agriculture both accelerated the time to the next child and increased the probability of having another child. In addition, event history models include a control for birth order; in parity progression models, we instead control for birth order effects by modeling specific parities or by grouping parities according to whether specified fertility goals have yet been met.

Hazard Models. Each covariate listed in the figures was entered individually, along with those controls described above. Analyses were done on one of two networks: (a) the general network of childcare support reported by the woman, without reference to any specific child, and

(b) the network of alters listed as having provided childcare for a specific focal child. When the former is used, covariates are regressed across the sample of all birth intervals to each woman. When the latter is used, only birth intervals following focal children are included. The former provides a larger sample, and therefore more power, but may also be less accurate. The advantage of the latter is that individuals were reported to have provided allocare for each specific interval being modeled, leading to more accurate estimate.

Figure 2 presents the effects of general categories of allocaregivers on the duration of the interbirth interval for both the woman's general and the focal child-specific networks in Matlab and Birbhum. Coefficient estimates greater than 1 indicate an increase in the hazard, accelerating the time to the next birth and shortening the interbirth interval. Those less than 1 lead to longer intervals. Estimates based on the two different versions of the allocare network (woman's or focal child's) tend to be of similar magnitude and direction (except for a few estimates close to 1). Estimates based on the women's general allocare networks have greater power and to detect significant results.

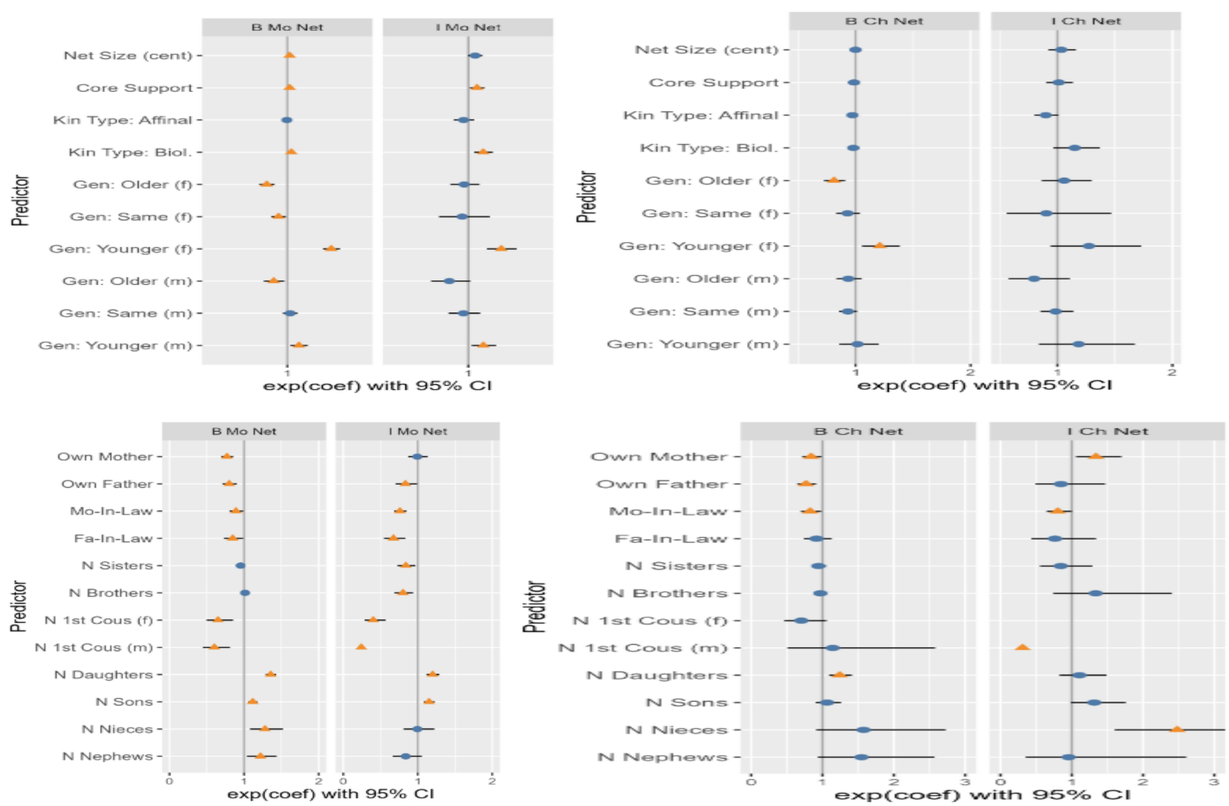

Figure 2. Effects of allocare givers on interbirth interval duration by relation, generation, and gender (first two panels) and by specific relation to the respondent (third and fourth panels) for

Matlab, Bangladesh and Birbhum, India. Mother's general and focal child-specific allocare networks compared. (Cox proportional hazards model coefficients expressed as hazard ratios with 95% confidence intervals. Estimates significantly different from 1 plotted as orange triangles.)

In panels 1 and 2, the number of core supporters (those alters that respondents said they "very likely" or "certain[ly]" rely on for help "in the case of a major distressing event"), biological kin, and younger males and females all tended to decrease the interbirth interval (IBI) and increase the hazard of having the next child, and these effects were significant for the women's networks in both Matlab and Birbhum. Overall network size also significantly increased the hazard in Matlab, while older men and women, and women of the same generation as the respondent tended to reduce the hazard and lengthen the IBI. Estimates made using the focal children-specific networks are of similar magnitude and direction, but only two coefficients reach significance.

In panels 3 and 4, the first four relatives (parents and in-laws) are those in the "older" generation; the next four (siblings and cousins) are those in the "same" generation as the respondent; and the last four (children and nieces/nephews) are those in the "younger" generation. These results show that IBI-shortening effects are primarily correlated with the presence of sons and daughters in one's allocare network. The causal mechanism is not entirely clear here: it is possible that, for sons and daughters at least, a woman's number of offspring is associated shorter IBIs (increased hazard) because of a generally faster pace of reproduction in higher fertility women, and not due to any allocare provided by one's own children in caring for later-born siblings. The results using the focal child-specific networks of allocare providers may be more informative here, as any siblings in these networks were named as caregivers to specific younger siblings. The results here are mixed: though the direction and magnitude of the coefficients are similar to those observed using women's general networks, only the effect of daughters remains significant. We investigate this effect further in the next figure.

Relatives associated with longer IBIs (reduced hazard) tend to be those in the same generation or a generation above the respondent. When using the women's general network of allocare alters, most of these effects are significant, and are similar in Matlab and Birbhum. In the focal children's networks only a few of the parental effects are significant, and notably in Birbhum the respondent's own mother is associated with a shorter IBI (increased hazard).

To further investigate the effects of older siblings as well as fertility goals, we construct a series of parity-specific sibship variables: for each interval, we code a set of covariates based on the sibship as it stood for each parity. Later-born children are excluded from covariates, so that only older siblings who may have plausibly provided care to their younger siblings are included. We also code each parity as having met or not yet met each respondent's expressed ideal fertility, and whether a son has yet been born.

The effects of these covariates are presented in Figure 3. The strongest effect is not yet having met one's ideal fertility, which increases the hazard by 2.7 (Matlab) to 4.5 (Birbhum) times. Having a first-born daughter also increases the hazard in both populations, as does a daughter preceding the modeled interval (i.e. the most recent child), and the total number of older daughters, though the effect is not apparent for just any older daughter. Not yet having had a son is also associated with shorter birth intervals (greater hazard), while the number of older sons is associated with longer intervals (lower hazard).

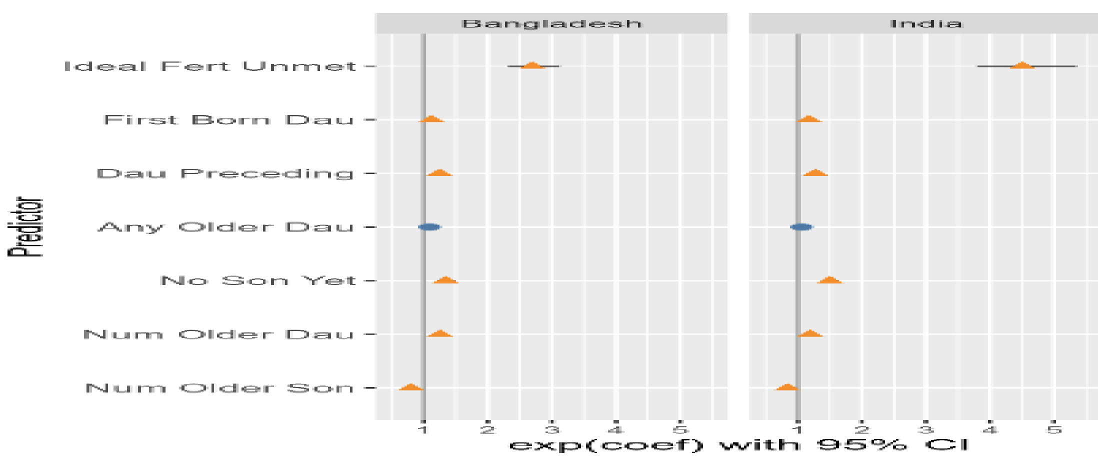

Figure 3. Effects of allocare givers on interbirth interval duration by parity-specific sibship effects.

Parity Progression. Our baseline models of parity progression split the intervals into three groups: progression from parity 1 to 2, from 2 to 3, and progression to the next birth for all parities 3 or higher. (An inclusion criteria for this study was that the respondent must have had at least one child, so we cannot model progression to the first child.) Because any given respondent could not contribute more than one case to each of the first two groups, the standard errors for estimates from these groups are unadjusted. For the third group (and all later groups where a respondent may contribute multiple cases) we calculate robust standard errors, clustering by respondent. All models include the controls discussed above. Predictors of interest were then entered individually in separate models.

We first examine the effects of general categories of allocare givers on parity progression.

In Figure 4 the covariates are derived from women's general allocare networks. In Figure 5 the covariates are derived from the focal children's allocare networks. Similar to what we observed in the hazard models, here we see that older relatives tend to decrease the probability of having the next child and younger relatives increase the probability, but in this case only for parities 2 or higher. This may be because the vast majority of women have 2 or more children (see Figure 1). The significant effects increasing the probability of progressing from parity 1 to 2 are core support (Matlab), biological kin (Birbhum), and younger female relatives (both). It may be easier to interpret these influences in the inverse: women lacking these sources of support are less likely to have a second child. At higher parities, the number of biological kin in one's network increases the probability of another child in Birbhum, as does network size and core network size above parity 3.

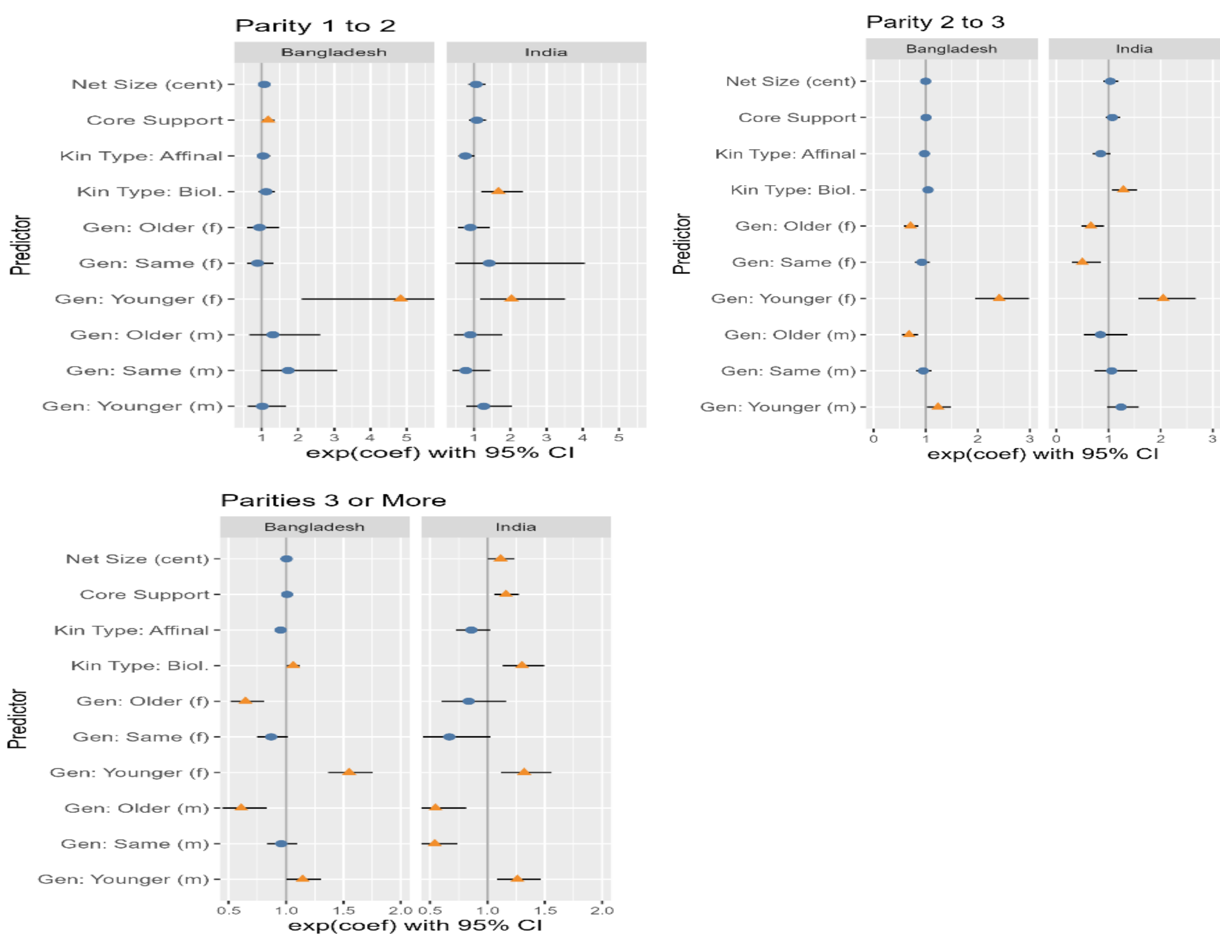

Figure 4. Effects of allocare givers on parity progression by relation, generation, and gender for Matlab, Bangladesh and Birbhum, India: mother's general networks, by parity. (Logistic regression model coefficients expressed as odds ratios with 95% confidence intervals. Estimates

significantly different from 1 plotted as orange triangles.)

The effects are less apparent in the focal children's allocare networks (Figure 5), though the general direction and magnitude of the coefficient estimates is similar: at parities 2 and higher, the presence of older allocare givers reduce the probability of parity progression while younger relatives increase it. In some cases for parity 1 to 2, a coefficient could not be estimated, either due to a lack of the relative type in the focal children's networks, or Hauck-Donner effects (Hauck and Donner 1977, 1980).

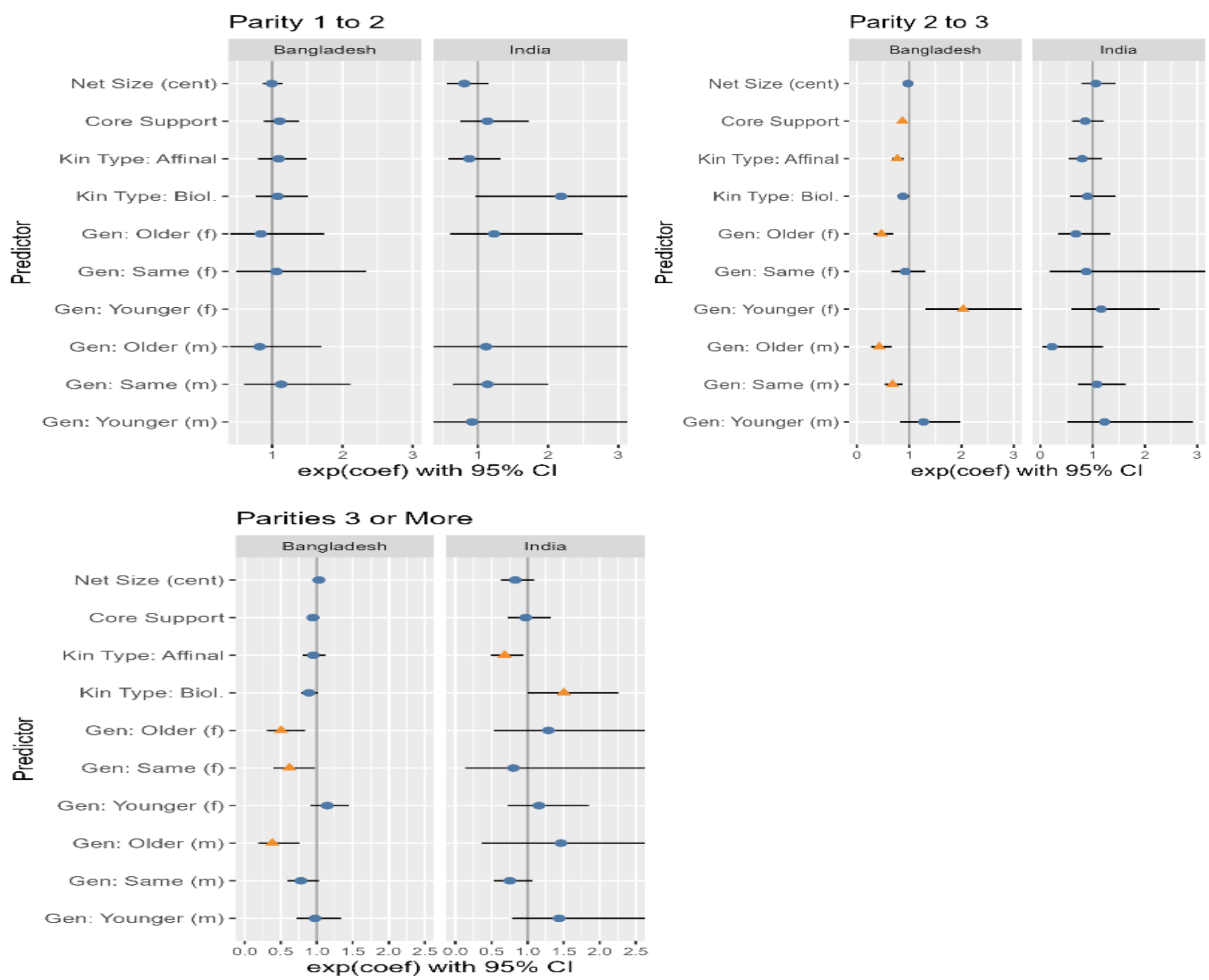

Figure 5. Effects of allocare givers on parity progression by relation, generation, and gender for Matlab, Bangladesh and Birbhum, India: focal children's networks, by parity. (Logistic regression model coefficients expressed as odds ratios with 95% confidence intervals. Estimates significantly different from 1 plotted as orange triangles.)

To further investigate the generational effects of allocare givers, we break these categories down into their component classes of relatives. Figures 6 and 7 present the effects of specific types of relatives in allocare networks on parity progression. In many cases (especially for relatives in the same or younger generations, and earlier parities) we could not estimate an effect because of an absence or paucity of counts of that relative in the reported allocare networks. At parities above 1, we again see that those in the older generation tend to reduce the probability of another child, and in many cases the effect is significantly different from 1. Where siblings have a significant effect, they also reduce the odds of parity progression. Only among relatives in the younger generation do we see any positive effects on fertility, and one significant negative effect for nephews in Birbhum.

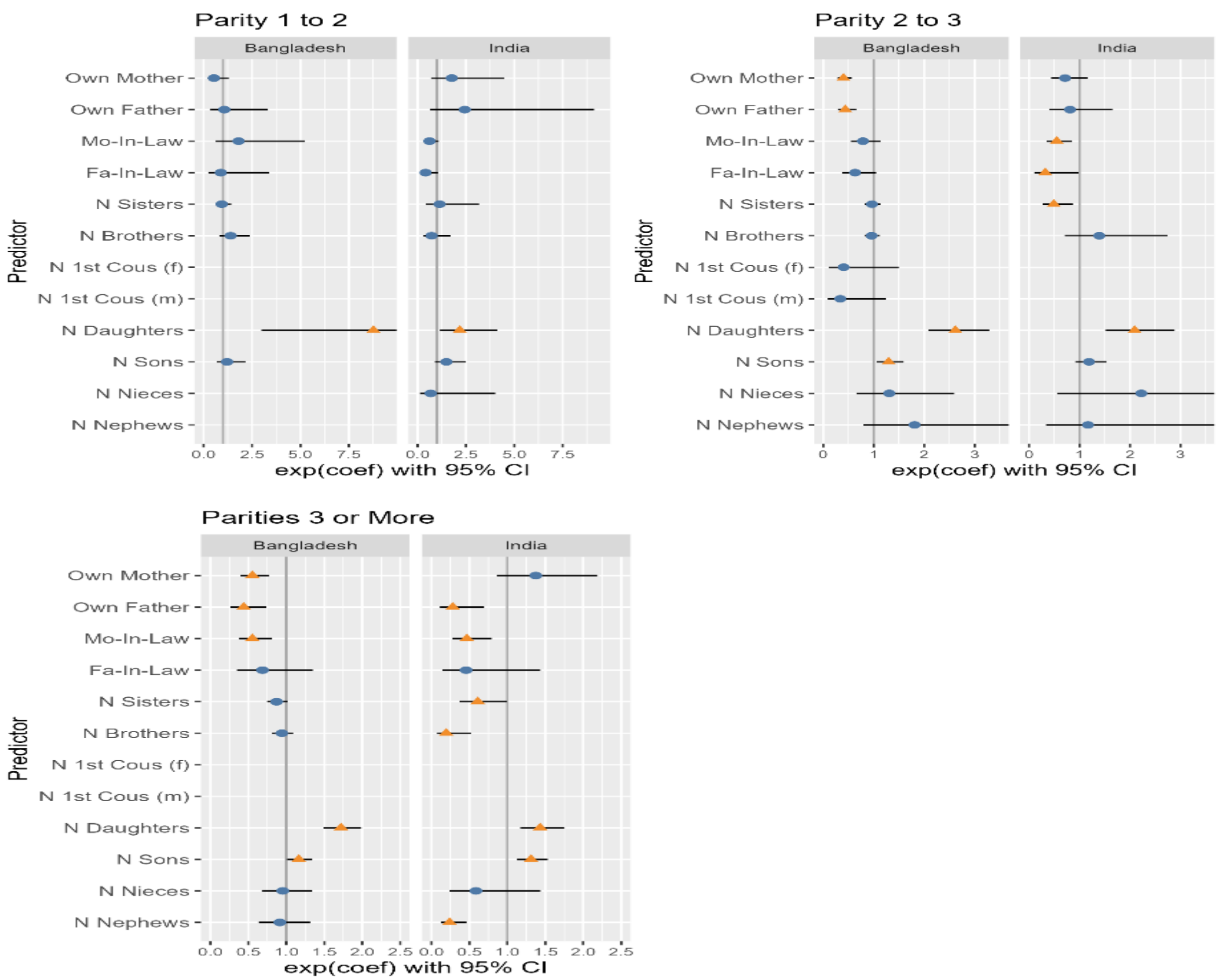

Figure 6. Effects of allocare givers on parity progression by specific relation to the respondent for Matlab, Bangladesh and Birbhum, India: mother's general networks, by parity. (Logistic regression model coefficients expressed as odds ratios with 95% confidence intervals. Estimates significantly different from 1 plotted as orange triangles.)

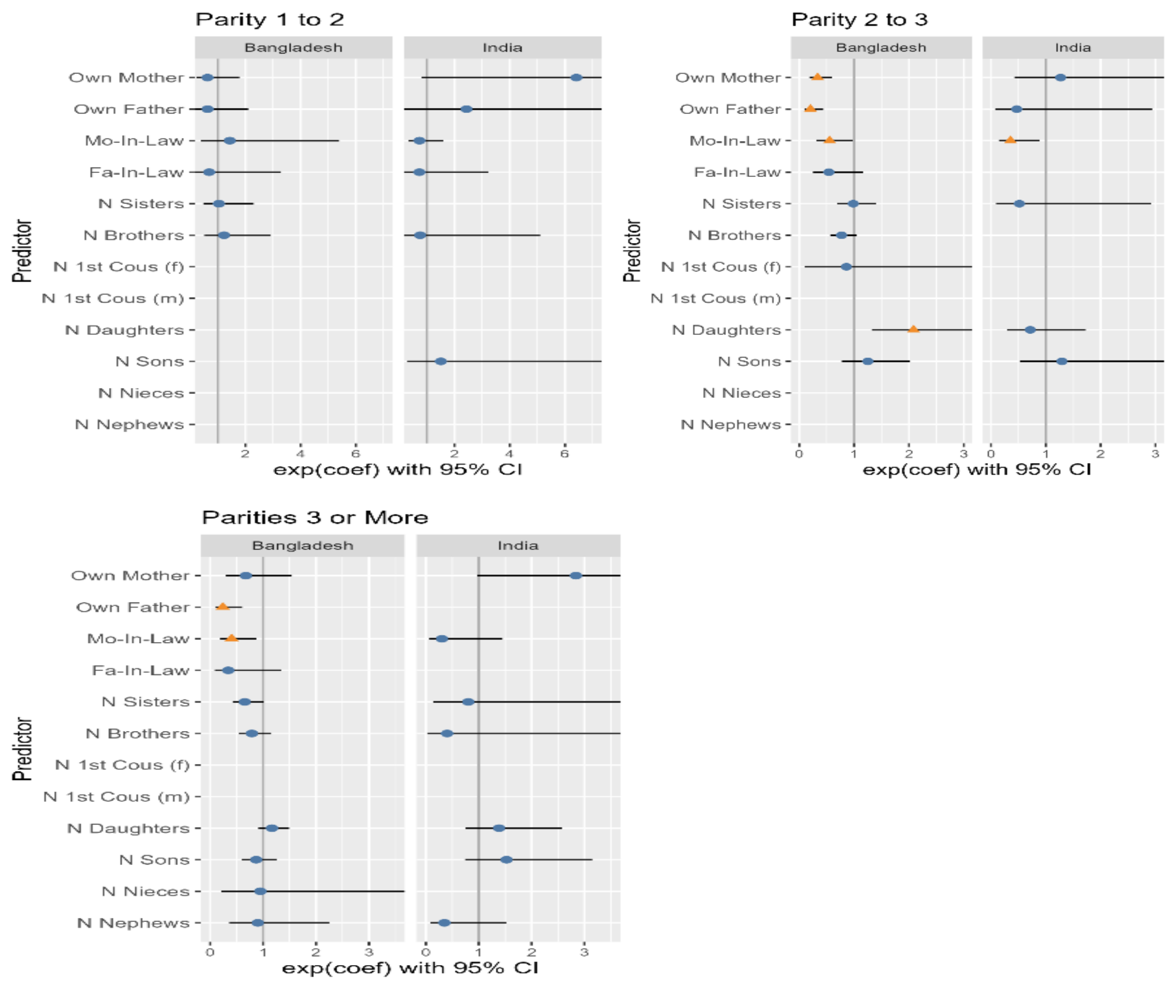

Figure 7. Effects of allocare givers on parity progression by specific relationship to the respondent for Matlab, Bangladesh and Birbhum, India: focal children's networks, by parity. (Logistic regression model coefficients expressed as odds ratios with 95% confidence intervals. Estimates significantly different from 1 plotted as orange triangles.)

Effect of Whether Fertility Ideal is Met or Unmet. Figures 4-7 suggest there are substantial differences in the effects of allocare between first and later parities, while Figure 3 shows that one of the strongest effects on the hazard of the next child is whether the respondent's ideal fertility is still unmet. To examine this effect in greater detail, we split our sample according to whether a woman's ideal fertility has been achieved at each birth and model the effects of allocare on these intervals separately for each population. Here we present the results from women's general social support networks; those from focal children are generally in the same direction and of similar magnitude, but less commonly significant because of the smaller sample size (as in the earlier analyses presented above).

In Figure 8, panel 1, we see in both populations that core network support and younger male relatives shorten the time to next birth only when ideal fertility has not yet been achieved, whereas older male relatives lengthen the time in Matlab. The presence of younger women and biological kin in one's allocare network tends to shorten interbirth intervals regardless of whether ideal fertility has been achieved. Coefficient estimates for men and women in the older generation are less consistently significant; where they are, the effect is associated with longer intervals.

Looking more closely at specific types of relatives in panel 2, we see that younger relatives significantly increase the hazard of next birth for Matlab women when they have not yet met their ideal fertility, but the effects of these relatives is otherwise mixed. The effects for older relatives reduce the hazard, but primarily when fertility ideals have not yet been met. The effects of relatives of the same age are otherwise mixed, and some cases could not be estimated because of low counts of these relatives in networks (leading to near-complete separation and Hauck-Donner effects).

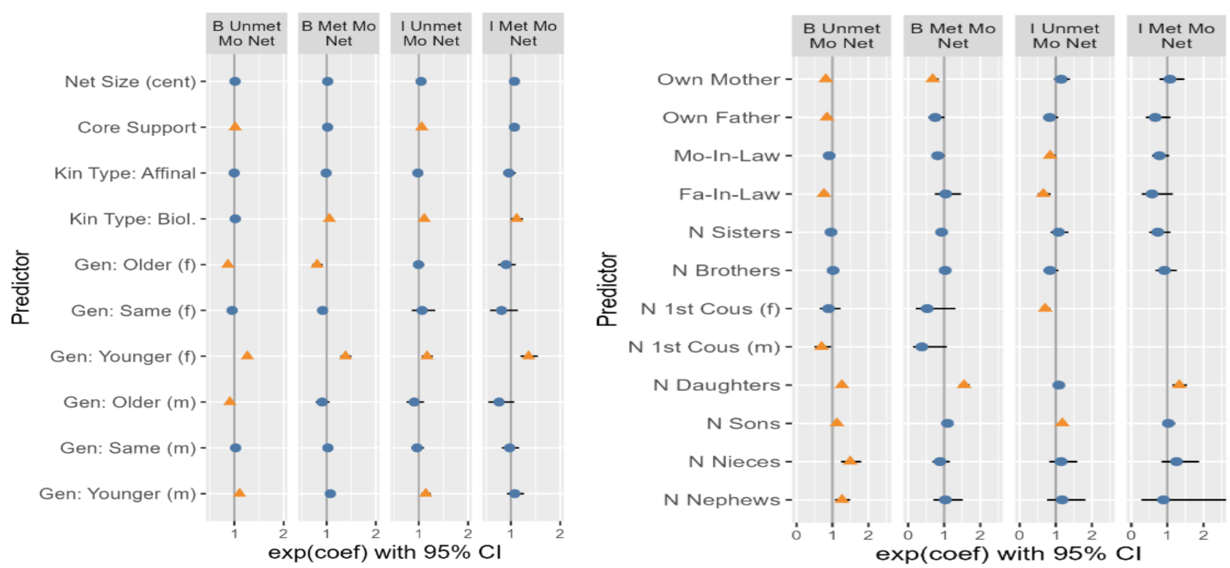

Figure 8. Effects of allocare givers on interbirth interval duration by relation, generation, and gender (panel 1) and by specific relation to the respondent (panel 2) for Matlab, Bangladesh and Birbhum, India. Mother's general allocare networks, birth intervals grouped by whether ideal fertility was met. (Cox proportional hazards model coefficients expressed as hazard ratios with 95% confidence intervals. Estimates significantly different from 1 plotted as orange triangles.)

In contrast to the event history models, the parity progression models show more pronounced effects once ideal fertility has been achieved (Figure 9). When fertility ideals have yet to be met, most estimates are close to zero or their confidence intervals substantially overlap the

OR=1 line. Only the effects of younger female relatives (in Matlab) or biological kin (in Birbhum) increase the probability of another child. When fertility has been met, younger female kin have a positive effect on parity progression in both populations, as do biological kin in Matlab. Older kin significantly reduce the probability of parity progression in Matlab.

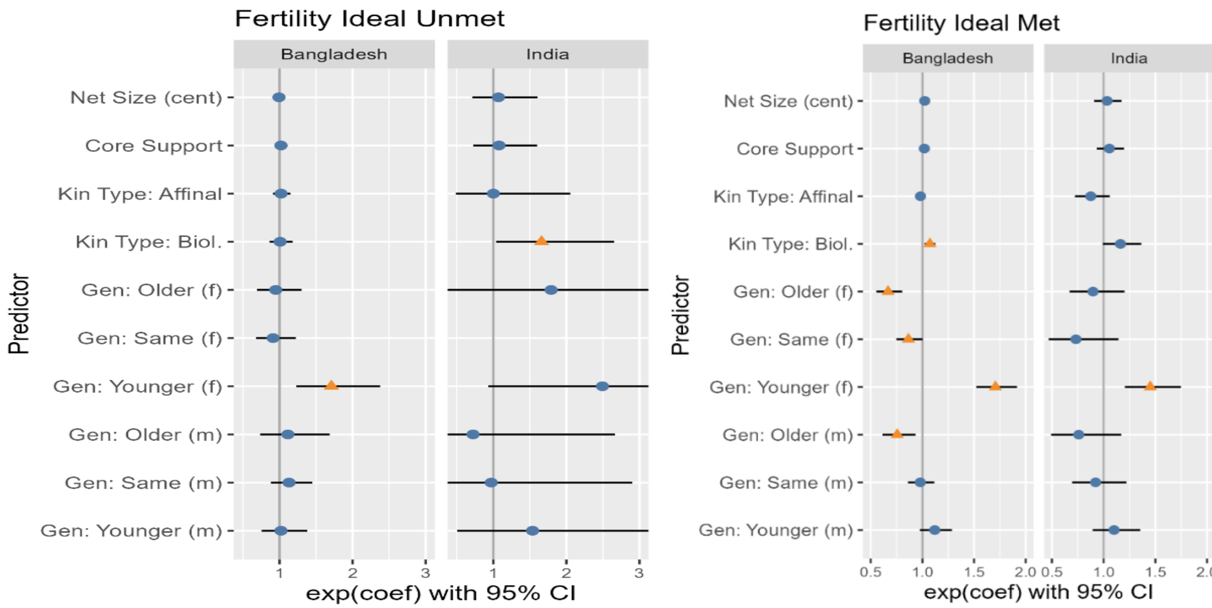

Figure 9. Effects of allocare givers on parity progression by relation, generation, and gender for Matlab, Bangladesh and Birbhum, India: mother's general networks, parities grouped by whether ideal fertility was met. (Logistic regression model coefficients expressed as odds ratios with 95% confidence intervals. Estimates significantly different from 1 plotted as orange triangles.)

Looking at specific relatives (Figure 10), we see only one significant effect before fertility ideals have been met (a positive effect for daughters in Matlab); otherwise we see no effects, and in many cases effects could not be estimated. When fertility ideals have been met, however, we see a significant negative effect of older relatives and male first cousins in Matlab, and a significant positive effect for daughters in both populations.

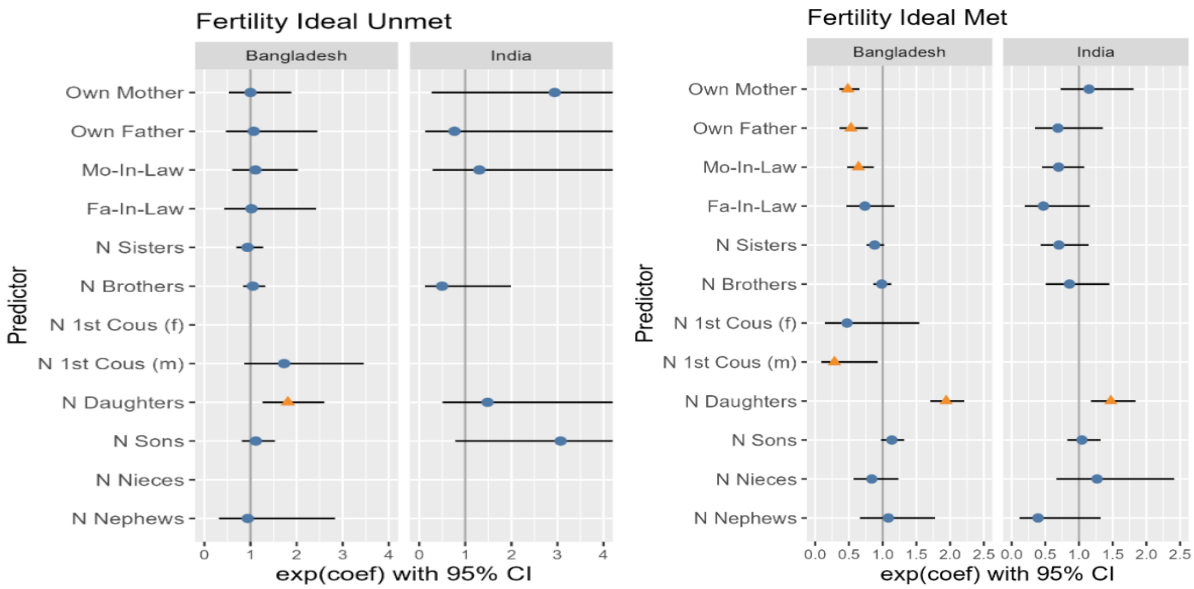

Figure 10. Effects of allocare givers on parity progression by specific relation to the respondent for Matlab, Bangladesh and Birbhum, India: mother's general networks, parities grouped by whether ideal fertility was met. (Logistic regression model coefficients expressed as odds ratios with 95% confidence intervals. Estimates significantly different from 1 plotted as orange triangles.)

Effects of Son Preference. Beside achieving a particular family size, another common fertility goal in this region is to have at least one son. When we split the sample of births according to whether this goal has been met, most effects of social support appear to be independent of this goal (Figure 11, panel 1). Allocare from younger relatives of both sexes consistently and significantly shortens the interbirth interval (increase the hazard) while allocare from older relatives tends to increase it (reduce the hazard), in most cases significantly. The effects of allocare providers within the same generation as the respondent are less consistent. The effects of network size, the number of core supporters, and biological kin allocare providers are also less consistent, but where significant effects exist they tend to shorten the interval.

Looking at specific categories of relatives (panel 2), we see that the estimated effects of older relatives tend to lengthen birth intervals, in most cases significantly, and independently of whether a son has been born or not. The same is largely true of relatives in the same generation, though fewer of these effects are significant. In contrast, in the younger generation the effects are in the opposite direction (an increased hazard leading to shorter interbirth intervals). The notable exception is the effect for nephews in Birbhum, which is negative. The majority of these effects are significant.

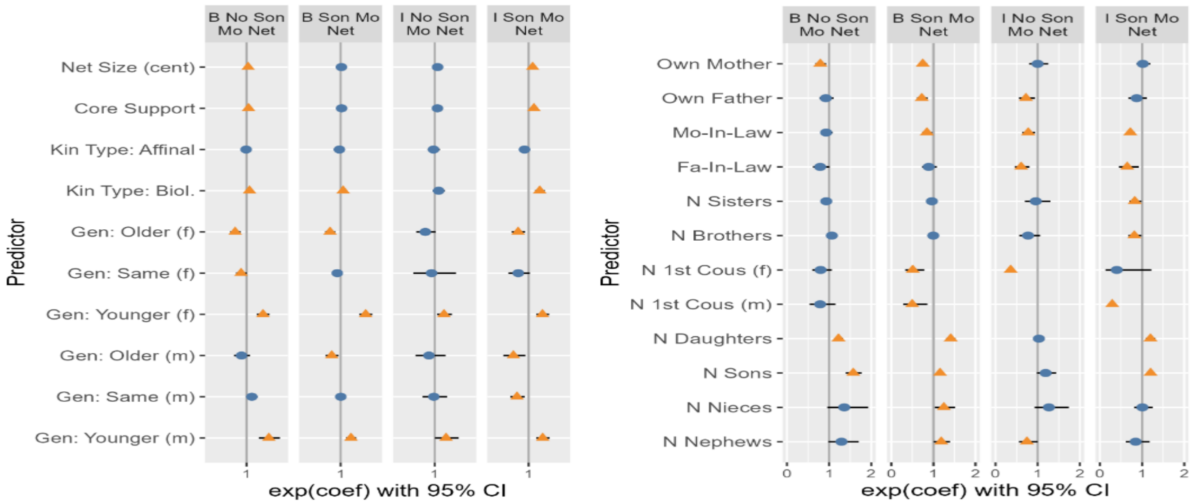

Figure 11. Effects of allocare givers on interbirth interval duration by relation, generation, and gender (panel 1) and specific relation to the respondent (panel 2) for Matlab, Bangladesh and Birbhum, India. Mother's general allocare networks, birth intervals grouped by whether at least one son had been born.

We finally turn to the effects of allocare on parity progression conditional on having had at least one son (Figure 12). We see few significant effects before any son has been born: in Birbhum, allocare from older male and female relatives tends to reduce the probability of parity progression while in Matlab, care from males in the same and younger generations tends to accelerate parity progression (Figure 12). Once a son has been born, however, we see the same generational pattern exhibited in earlier models: allocare from older or the same generation tends to reduce the probability of parity progression, while allocare from younger relatives tends to increase it. In Birbhum, network size, core supporters, and biological kin all significantly increase the probability of parity progression, while affinal kin (with whom respondents primarily reside) significantly reduce the probability.

Looking at specific categories of relatives (panels 3 and 4), we see significant negative effects of allocare provided by the respondent's father and in-laws but not mother in Birbhum when no son has yet been born, but no similar effects in Matlab. Within the same generation as the respondent, effects are mixed in Matlab, with male relatives (brothers and cousins) increasing the probability of parity progression, and female cousins reducing it. (Counts for these relatives in Birbhum were too low to permit accurate estimation.) Once at least one son has been born, we see significant negative effects on parity progression probability for parents in Matlab, and mothers-in-law in both populations. Within the same generation, coefficient estimates tend to be negative (and half are significant). However, in the younger generation, allocare from own children increases the probability of parity progression.

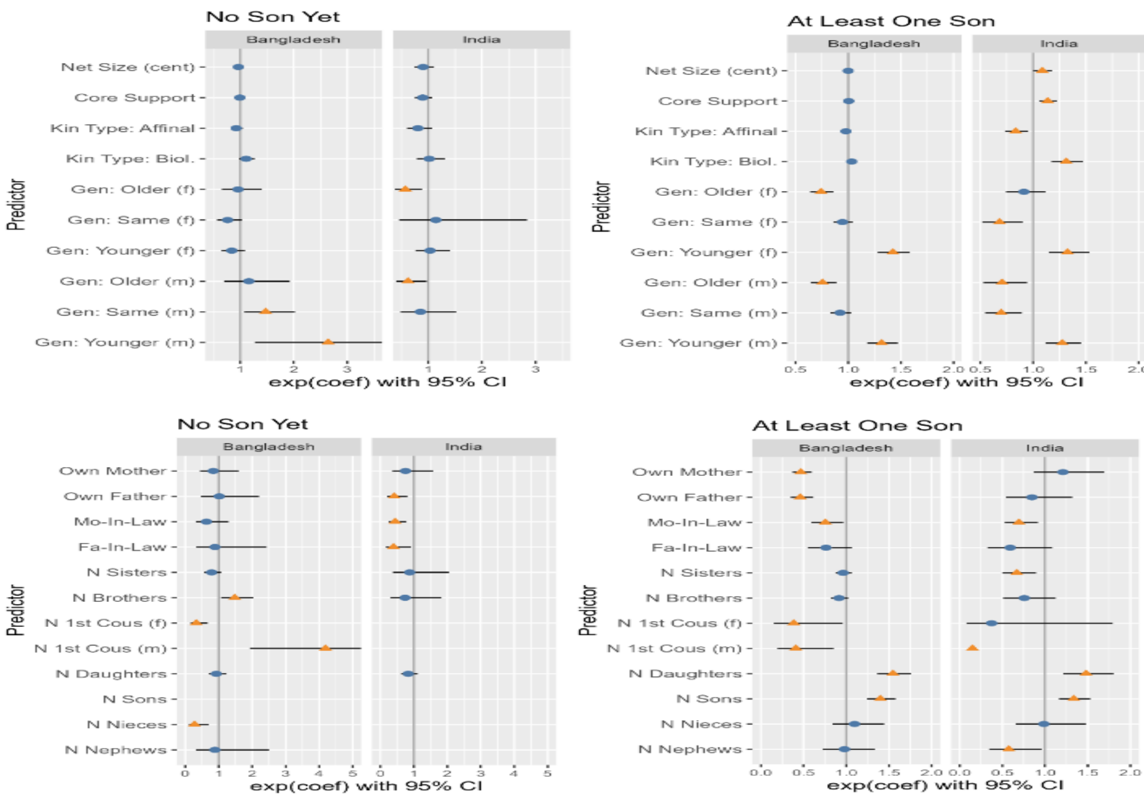

Figure 12. Effects of allocare givers on parity progression by relation, generation, and gender (panels 1 and 2) and by specific relation to the respondent (panels 3 and 4) for Matlab, Bangladesh and Birbhum, India: mother's general networks, parities grouped by whether at least one son had been born.

IV. Discussion

The foremost pattern we find across models is a generational one: Relatives of older or the same generation generally slow reproduction and reduce the probability of progression to the next parity. In contrast, relatives from younger generations tend to accelerate reproduction and increase the probability of parity progression. Where we find gender differences, the effects of female relatives tend to be larger and more frequently significant than those of male relatives. We do not find consistent differences between study sites, but instead the primary pattern is quite similar between sites.

What is particularly interesting is the difference between the event history models and the parity progression models. In the event history models, we see these generational effects independently of whether fertility goals have been met, that is, before ideal fertility has been achieved or before a son has been born. In contrast, in the parity progression models, we tend to see these effects primarily only after fertility goals have been achieved. While some exceptions exist, they are rare compared to the broad and consistent pattern seen across most results.

We also see some evidence of effects from overall network size, core supporters, and biological kin on overall fertility. These effects are more apparent when fertility goals have been met. This suggests that women are more likely to continue reproduction after meeting their fertility goals if they have higher levels of support, or conversely that women without these vectors of support are those that are less likely to exceed their fertility goals.

We interpret these effects in the demographic and economic context of falling fertility and increasing market integration with increased competition in the labor market. Relatives in the older and the same generation may be encouraging smaller family sizes and contributing to greater investment in existing children. This manifests as longer interbirth intervals in event history models, and reduced probabilities of progression to higher parities once fertility goals have been met. More generally, this suggests that mothers in this context are navigating a tradeoff between quantity and quality of offspring, i.e. between increased investment in existing children versus having another child.

Our previous work in this region, particularly Das et al. (2023) and Das and Ghosh (2021), are consistent with these results. Das et al. (2023) find that a strong sense of responsibility to children aligns with increasing competition to educate one's children and put them in a position to get a good job outside of agriculture, creating a situation in which very low fertility (a TFR of 1.6) is now common in disadvantaged communities in rural West Bengal. Relatedly, Das and Ghosh (2021) find differential stopping behavior in this region. While some of this is linked to religion, the tendency to stop after having a son is in part driving the patterns we see in both Bangladesh and West Bengal—in which it appears that support from a woman's parents and in-laws may be instrumental in encouraging her to stop reproduction.

In contrast, help from a woman's own older children and other younger relatives appears to allow/encourage her to have another child and/or have the next child more quickly—and that this effect is especially strong when a woman has help from an older daughter. This result is highly consistent with the cross-cultural literature (e.g. Kramer 2010) and makes sense ethnographically in the region—but it will take further analysis to fully disentangle why help from younger relatives should so strongly push in the opposite direction of help from older relatives.

A possible alternative interpretation that might be suggested is that the effects of the older generation reflect a dual-care burden on respondents, i.e. that due to the joint burden of caring for both their children and their parents and in-laws, women with more older relatives are forced to slow and curtail reproduction. Yet we do not think this is likely in the case of our data, as if this were true we might expect to see a strong effect of older relatives on parity progression even before fertility goals are met. The absence of such an effect suggests that the fertility-reducing effects of older relatives does not in fact reflect a dual care burden. In addition, early ages at marriage and first birth combined with low fertility in these populations means that generation time is often not particularly long, making it likely that women will have their children before parental or in-law disability becomes a key concern.

Where we see positive effects on fertility, these primarily come from biological relatives, overall network size, or the number of core supporters. Younger female relatives, especially daughters also tend to have a strong positive effect on respondents' fertility. In several other studies, older daughters have been shown to be strongly associated with their mother's fertility. Evidence of this effect is also seen in Figure 3, where having a first-born or preceding daughter, and the number of older daughters, are associated with shorter interbirth intervals. Overall, these effects are similar to those that have been found in other, higher fertility, populations with dense networks of kin supporting childcare. It may be better to consider these sources as providing the baseline level of support needed for regular reproduction, and what we are really seeing are the effects of the absence of these factors of support on reproduction.

One limitation is that it is not always possible to estimate an effect size for all categories of relatives, especially those in focal children's networks where overall sample size is smaller. With different analytic methods we might be able to estimate an effect for these relatives, yet the limited representation of these relatives in women's social support networks underscores how relatively unimportant they likely are for most women.

In conclusion, we find clear evidence of a pattern in which support from older social network members, particularly grandmothers and mothers-in-law, is associated with longer birth intervals and reduced fertility while support from older children, and younger relatives in general, is associated with higher fertility and faster interbirth intervals. We also find that these patterns are more pronounced when fertility targets have been met in terms of both numbers and genders of children. While the results for help from young relatives, and particularly daughters, are consistent with the cross-cultural literature, the result that grandmothers and other members of older generations are actively discouraging fertility stands in contrast to most of the literature which focuses on natural fertility populations and low fertility populations in high-income countries. This intriguing result is, however, consistent with the high levels of investment in children described both qualitatively and quantitatively for this region (e.g. Das et al. 2023, Shenk et al. 2013) and suggests that while grandmothers and other senior kin may often encourage higher fertility, in conditions of social competition they may instead act as fulcrums of tradeoffs who may instead work to slow women down and encourage higher levels of parental investment instead of more children.

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