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Household Structure and School Attendance in 57 Countries: Why Children with Absent Fathers Do Better in Some Places

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Household Structure and School Attendance in 57 Countries:
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***Abstract**: In contrast to richer countries where children living with both biological parents have numerous educational advantages, children in poorer countries living with only one biological parent may do as well or better. I used Demographic and Health Survey data from 57 countries to assess how children's living arrangements affect school attendance in poorer countries. Children living with only their biological mother enjoy higher attendance rates in a substantial minority of countries. In most places, the advantage is explained by the mother being in union with an absent partner (children may benefit from remittances). Higher school attendance in father-absent homes is also partly explained by their concentration in communities with higher school attendance rates: unlike in the industrialized West, single mothers in poor countries are often socioeconomically advantaged and often live in more advantaged areas. My final models show almost no advantage among children living with unpartnered mothers or with stepfathers, but they still provide little evidence of an attendance advantage among children living with both their parents. Family structure does not affect school attendance in poorer countries as much as it does school achievement in richer countries.*

In the United States and Europe, children reared by both biological parents experience educational advantages over both children in step-families and those raised by sole parents: more years of schooling, greater likelihood of high school completion, higher grades, higher standardized tests scores, and more (e.g., Amato and Keith 1991, Fabrizio and Radl 2014, Hampden-Thompson 2009, Magnuson and Berger 2009, McLanahan and Sandefur 1994; Popenoe, Elshtain, and Blankenhorn 1996, Shriner, Mullis, and Shriner 2010). Living with both biological parents confers the greatest advantage in the highest income countries (Schiller, Khmelkov, and Wang 2004; Chiu 2007), but existing research has done little to explain why living in intact families does not contribute more to the education of children in poorer countries. Further, there is scattered evidence that children living with only one parent have *better* educational outcomes than those living with both (Scott et al. 2013 for Ethiopia, Kenya, Nigeria, India, Egypt, and Turkey; Park 2007a for Indonesia and Thailand; Fuller and Liang 1999 for South Africa).

This study makes several significant contributions to what is known about the relationship between children's living arrangements and their school attendance in poorer countries. First, I map how the presence of biological parents in the household affects school attendance across 57 countries—a much broader range of relatively poor countries than ever previously assessed. The contrast with high-income countries is greater than expected: in 16 countries, children living with their biological mother but not their biological father are *more* likely to attend school than those living with both biological parents. I then evaluate three hypotheses that might explain the educational advantage to children in father-absent homes: 1) the reasons for father absence matter (widows receive more support than divorcées and other single mothers; children benefit from intact unions even when their father is not coresident); 2) extended family substitute for fathers in producing good educational outcomes; and 3) father absence may be concentrated in geographical areas with better schooling opportunities.

Why the effect of family structure on education varies between countries

In poor countries children living with both of their biological parents have been shown to have better educational outcomes (Anderson, Case, and Lam 2001, Argeseanu 2006, Cherian 1989, Creighton, Park, and Teruel 2009, Huisman and Smits 2009, Mahaarcha and Kittisuksathit 2009, Mboya and Nesengani 1999, Townsend et al. 2002, Willms and Somer 2001), but the evidence is nowhere near as consistent as that which emerges from wealthy countries (Anderson 2003, Heaton et al. 2012, Park 2007a, Psacharopoulous 1997, Scott et al. 2013). What explanations have been offered for why parental presence in the household matters less in some settings than in others?

First, the proportion that became single parents through widowhood rather than non-marital childbearing or divorce varies dramatically across countries. Pong (1996) showed no difference in educational outcomes between Malaysian children living with both parents and those living with widowed mothers, but a substantial disadvantage for children living with divorced mothers. Asian countries in general have stronger marriage cultures than either Latin America and the Caribbean or Africa (Lippman, Wilcox, and Ryberg 2013), and the relatively high proportion of widows among single parents in Asia might explain why children from intact families were not at a consistent advantage there (Schiller et al. 2004; Park and Sandefur 2006; Park 2007a).

A closely related hypothesis is that where extended family plays a prominent role in educational processes, the importance of an intact nuclear family is diminished (Chiu 2007). Thus an additional reason that the rather thin literature on family structure and children's education in Asia (Park 2007a, Park 2007b, Pong 1996, Mahaarcha and Kittisuksathit 2009, Wilcox et al. 2009) does not consistently show an advantage to living with both biological parents may be that extended family resources can substitute for parental presence in promoting good educational outcomes. Children of widows are more likely to receive support from extended family (both theirs and their deceased husband's) than never-married or divorced women. Significant proportions of single mothers live with their parents not only in Asia (e.g., Shirahase and Raymo 2013), but also in Latin America and the Caribbean (Lesthaghe and

Roman 2013). In sub-Saharan Africa, “patron” family members help children with academic promise access good schools (Lloyd and Blanc 1996). In a pooled sample of 30 developing countries, children living in extended families were more likely to be enrolled in school (Huisman and Smits 2009). The presence of extended family may substitute for the presence of parents in promoting children’s education.[i]

High rates of labor migration may also condition the relationship between children’s living arrangements and their educational outcomes. While children living with both biological parents have often been shown to be at an educational advantage in South Africa (Anderson, Case, and Lam 2001, Lu and Treiman 2011, Mboya and Nesengani 1999 for the whole country; Cherian 1989 for Transkei; Townsend et al. 2002 for Agincourt; Argeseanu 2006 for KwaZulu-Natal), work showing that South African children with absent fathers do just as well (Anderson 2003; Heaton et al. 2012) or better (Fuller and Liang 1999) highlights a long history of labor migration and matrifocal families associated with apartheid. Part of the reasoning appeals to adaptation where fatherless households were a cultural norm, plus resources from absent fathers can also help support children’s education.

While it is beyond the scope of this paper to review the effects of migration on children’s education, I nonetheless call attention to two specific threads within this literature. First, work stimulated by the New Economics of Labor Migration (Stark and Bloom 1985) focuses on migration as a household strategy that has benefits and consequences for those left behind. Migration disrupts family life which compromises schooling through many channels including the emotional costs of separation, less supervision of children, and children’s labor substituting for the absent parent’s labor (in both household and market work); in contrast, remittances can improve schooling outcomes by covering school expenses and reducing the need for child labor to meet household economic needs. Empirical studies that assess both positive and negative effects of parental migration generally show that the net effect is positive (at least when the father is the migrant parent). Lu and Treiman's (2011) work on South Africa very clearly identified both the negative effects of parental absence from the home and the positive effects of migrant remittances: where household members other than parents remitted, children were more likely to be enrolled; where a parent migrated but did not remit, children were less likely to be enrolled; and where a parent migrated and did remit, the balance of the positive and negative factors on enrollment was overall positive (but not as positive as the migration of household members other than parents, and negative if *both* parents migrated and remitted). Similar effects have been observed in other contexts with parental migration having a net positive effect on schooling only if there are remittances (Bredl 2011, Giorguli and Gutiérrez 2011 as cited in Jensen et al. 2013, Hu 2013, Ishida 2010).

Second, I note that family disruption due to labor migration is less drastic than family disruption due to parental divorce. This means that even if migration did not have a positive effect on children's education, lumping all parent-absent children into one category would still likely obscure disadvantages associated with divorce (including stigma and loss of income), especially given the high proportion of households affected by labor migration in the developing world (Hanson 2010). Literature examining differences among single-parent homes provides evidence that migration has quite distinct educational consequences. Mexican children have far more contact with migrant fathers than divorced fathers, and these ties are associated with better schooling outcomes (Nobles 2011). Divorce compromised the enrollment probabilities of Malaysian children while paternal migration generally did not (Mahaarcha and Kittisuksathit 2009). Similarly, in South Africa both having one deceased parent and parental divorce compromised schooling, but parental absence due to migration usually did not (Lu and Treiman 2011).

Next, the hypothesis that women prefer investments in children more than do men—the maternal altruism hypothesis—has been invoked to explain why children in female-headed households often have better educational outcomes in sub-Saharan Africa (Buchmann and Hannum 2001, Lloyd and Blanc 1996) and are not disadvantaged in Latin America (Chant 1997, Feijoó 1999 as cited in Ishida 2010). The idea is that men, but especially coresident men, spend household resources that might have been used for school fees or uniforms. Father absence then increases the decision-making power of mothers who prioritize education to a greater extent.

Separation of male and female spheres is hardly unique to sub-Saharan Africa, but is arguably pronounced there (Arnfred 2004). Men's time with their children is minimal even when they do coreside with them (Engle and Breaux 1998). A lack of paternal involvement in supervision or tutoring could explain why there is not a significant advantage to living with both biological parents. Further, in West Africa there is not only separation of spheres, but also a rigidly gendered system of spending responsibilities. While women are responsible for daily expenses for the family, larger periodic expenditures like housing and education are men's responsibility (Lloyd and Gage-Brandon 1993). Men's absence from the home does not obviate the cultural expectation that they will provide for the education of their children. Thus absent fathers who do not remit for other purposes might still provide for educational needs. At first blush this argument seems like it contradicts the maternal altruism hypothesis, but both could operate if men were culturally expected to support education, and women altruistically take on responsibilities that are not culturally proscribed. Therefore any advantage to female-headed households might be magnified in West Africa.

In sum, then, the literature on cultural differences between nations that may mediate the relationship between parental presence in the household and children's education points to differences in proportion orphaned, a buffering role provided by extended family, cultural adaptation to female-headed households, differences in the extent and consequences of labor migration, and gendered spending patterns (including maternal altruism). Among these, it seems like only labor migration and gendered spending patterns have the potential to explain why children living with only one parent would have *better* educational outcomes than children living with both—the other candidates only explain why they might do just as well. For more guidance on why poor countries differ so much from richer ones with respect to the effect of living with both biological parents on schooling, I next consider why national income per se would condition the relationship.

Why the effect of family structure on education varies by national income

The explanations I have briefly reviewed so far—sources of single parenthood, extent of support from extended families, cultural adaptation, migration, and gendered spending—all point to reasons why parental presence in the home might matter less in particular areas or with stronger marriage cultures. I add to this list reasons why children living with both biological parents may not experience as strong of an advantage in poorer countries more generally.

It may simply be that at lower national income levels, school-level factors matter more than family background in determining educational outcomes. Heyneman and Loxley (1983) demonstrated that in poor countries, school-level factors were stronger determinants of children's performance than family background, but that in richer countries, family background mattered more. Heyneman and Loxley focused on socioeconomic status: higher status parents were better able to transmit their advantage to their children where opportunities were abundant. In areas with poor schools, everybody did poorly and the socioeconomic gradient was negligible. Heyneman and Loxley's data was from the 1970s before mass education had reached a number of developing countries; data from the 1990s showed that the effect of parental socioeconomic status did not depend on national income in middle- and higher-income countries (Baker, Goesling, and LeTendre 2002; Hanushek and Luque 2003), but parental socioeconomic status still mattered less in the poorer countries of Latin America into the late 1990s (Gamoran and Long 2007). Still more recent data from Latin America and the Caribbean showed parental socioeconomic status mattered consistently across ten countries with widely disparate income levels (Author 2013). Thus while the "Heyneman-Loxley" effect has not been re-evaluated with data from across the globe, the evidence from Latin America and the Caribbean suggests that Baker and his colleagues were right: "family inputs can take on larger effects as schooling quality reaches a threshold throughout a nation".

But why? Why do family inputs become more important as schools become more accessible and as schooling quality improves? One answer is that families with more resources are better able to take advantage of the opportunities that are available in their communities. The literature described above focused on parental socioeconomic status, but parents can bring to bear other resources to support their children's education. Ishida (2010) suggested that the reason father absence had a greater negative impact on schooling among indigenous people in Guatemala than the majority Ladino population was that indigenous women commonly—more commonly than indigenous men—lacked the language and other skills necessary to interface with schools. Parental time may differentiate students more as schooling quality reaches a threshold, i.e., as the floor is raised. While higher parental socioeconomic status seems to advantage children consistently across many levels of national income (Schiller et al. 2004, Author 2013), living with both biological parents confers a greater advantage in higher income countries (Schiller et al. 2004, Chiu 2007, Author 2013). When physical resources become widely available, the benefits accrued from their use may depend on intangible resources like time, attention, encouragement, and supervision (Chiu 2007). This hypothesis is supported by evidence that early home literacy activities contribute to children's later reading performance more in wealthier countries (Park 2008). It is also consistent with public resources like *Sesame Street* widening educational differentials between poor children who watched alone and middle class children who watched with their parents (Cook et al. 1975 as cited in Morrow 2006).

A second reason why parental presence may matter more at higher national income levels has to do with socioeconomic development changing the contributions from extended family. The geographic mobility that comes with opportunities created by national wealth may create greater distance between extended family members and thus limit the types of support that extended family can provide (Cochran et al. 1990; Schiller et al. 2004). Further, in wealthier countries household extension may be a response to economic hardship that is chosen less frequently in more prosperous times (Fussell and Palloni 2004 and references therein). For both of these reasons, children in wealthier countries may receive fewer intangible resources from their extended families simply because they are less likely to live with them.

Third, the relationship between income and family structure at the individual level seems to be quite different in richer countries than in poorer countries. In richer countries, children with single parents tend to live in households with fewer economic resources; when income is controlled, the estimated advantage to living with both biological parents diminishes. In contrast, living with both biological parents seems more advantageous after controlling for wealth in poorer countries (Author 2013). One reason is that poorer adolescents are more likely to marry than to remain in school, and therefore single motherhood is more common among those who have delayed marriage (Calvès 1999) and are of higher socioeconomic status (Yabut-Bernardino 2011). Other evidence supporting this type of selection comes from Argentina and Panama where bivariate analysis showed few differences in educational outcomes by family structure, but an advantage to living with two parents emerged with controls (De Vos 2000). Similarly, Huisman and Smit's (2009) analysis of 30 developing countries showed no negative effect of father absence in the bivariate, but father absence led to lower enrollment probabilities in the multivariate. It is not the fact of difference between bivariate and multivariate analyses that is instructive here—it is the direction of the differences. In richer countries, children with different living arrangements look more similar after controls are introduced, but in poorer countries they look more different. In poorer countries, the advantage to living with both biological parents is more likely to be observed after controlling for household wealth.

I believe that the importance of different selection factors determining family structure has been overlooked in cross-national studies of the effect of family structure on education. Living with only one biological parent is a less traditional family structure in many parts of the developing world, and it is more common among those who are more modern in other ways as well. For example, a woman who has a modern sector job in a poor economy is unusual: she is more likely to be a single parent, and she is quite likely to educate her children whether or not she is in a union. At the other end of the spectrum, a girl who drops out of school at age 12 and marries at age 15 has little opportunity to become a single parent, and the same socioeconomic conditions that limited her schooling may disadvantage her children as well. This relationship can also be thought of at the community level: where divorce has become more widespread, schooling has too. Children of divorce are then more likely to be living in communities with ample schooling opportunities. Similarly, children may unlikely to be raised by never married mothers in more remote and rural areas of developing countries where schooling opportunities are poor.

Because this third hypothesis has not received attention in the literature, I take a moment to develop it more fully here by showing that selection into divorce changes as nations develop. This change was anticipated by William Goode (1963) who postulated that where divorce was innovative, its practice would be concentrated among the elite, but as legal and normative barriers to divorce eroded, lower classes would begin to divorce and would eventually do so more frequently than the upper class because of family strain. Recent research has supported Goode's theory. In the Netherlands, more educated women used to be more likely to divorce, but in the younger cohorts, it is less educated women who are more likely to divorce. The same "cross-over" was observed in Taiwan with less educated women having the highest divorce rates by the 1990-99 marriage cohort (Chen 2012). Even where a cross-over is not observed, trend over time is still toward a concentration of divorce at the bottom end of the socioeconomic spectrum. In Spain, probability of divorce does not vary by education, but that represents a change from when educated women were the most likely to divorce (Bernardi and Martinez-Pastor 2011). Japan went from having no educational differentials in divorce in 1980 to having it concentrated among those who had not gone beyond high school by 2000 (Raymo, Iwasawa, and Bumpass 2004). In both the United States and South Korea, the negative relationship between education and divorce has become stronger in recent decades (Martin 2006, Park and Raymo 2013). In short, there is much evidence from wealthier countries that divorce becomes more selective of lower classes over time. I apply this insight to understanding why intact families might support education more consistently in richer countries than in poorer ones: if those most likely to educate their children are also most likely to divorce, then upper class status is codetermining children's education and children's living arrangements.

I recognize that not all poorer countries are ones where divorce is what Goode called an innovation: for example, matriliny in West Africa contributes to higher rates of marital instability by decreasing the costs of divorce for women (Takyi and Gyimah 2007). Härkönen and Dronker's (2006) work also showed that the costs of divorce vary culturally among wealthy nations. Nonetheless, the costs of divorce may be particularly high among the groups least likely to educate their children in many poor countries. Further, migration of divorced women to urban areas as a result of social and economic problems associated with their divorced status (e.g., Sweetman 2010) may give their children the advantage of proximity to schools even if they are not otherwise advantaged. In rural areas with high rates of labor migration, fathers still present in the household may be among the least employable with associated school attendance consequences for their children (see Townsend et al. 2002). In other words, even where the elite are not the most likely to divorce there may be a spurious relationship between divorce and schooling in poorer countries that explains why living with two biological parents does not appear to be an advantage.

Finally, comparable data on schooling outcomes are not as available in poorer countries as in richer ones. This means that the indicators used to measure education will not differentiate as finely between children in poorer countries and in richer ones. For example, much cross-national education research has made use of data from the Trends in International Mathematics and Science Study (TIMSS) or the Program in International Student Assessment (PISA) which includes standardized tests of achievement (e.g., science, reading literacy) and reports of whether the student has ever repeated a grade. In contrast, common outcomes for developing countries are enrollment in school or being behind grade for age which is an unknown combination of late enrollment and grade retention. Therefore, a fourth reason why the relationship between family structure and children's education may be weaker in poorer countries is simply the use of coarser data when measuring educational outcomes. Family structure may differentiate achievement more than it differentiates enrollment or on-time progression.

To summarize, the reasons why the effect of parental presence in the household might vary by national income include low quality of schools in poorer areas, increased importance of intangible inputs after physical resources are ubiquitous, greater distance between extended family members in more economically advanced countries, selection (concentration of father absent households in advantaged areas for multiple reasons explained above), and available measures of education not differentiating educational outcomes well in poorer countries. Among these, only the selection hypotheses could explain why living with only one biological parent might put children at an educational advantage. If children living with one parent are relatively elite or they are concentrated in urban areas where schooling is of higher quality, then they would be at an educational advantage for reasons related to family structure, but not caused by family structure.

Data

The data are from the Demographic and Health Surveys (DHS). DHS data are best known for analysis based on detailed interviews of reproductive-aged women, but there are a number of features of the data sets that make them well-suited for studying the effects of family structure on children's educational outcomes in poorer countries. They are nationally representative surveys that have been fielded in a broad geographic and cultural range of countries (mostly in the Southern Hemisphere) that contain information about relationships between individuals within household, the survival status of children's biological parents, and education information for all household members. Many investigations of educational outcomes use school-based samples which carry the obvious disadvantage of excluding out-of-school youth. In school-based samples, the measured effect of student background factors may be attenuated because attrition produces greater homogeneity in the remaining student population (Chudgar and Luschei 2009). DHS data allowed me to avoid this bias. The issue is particularly important in poorer contexts where schooling is far from universal.

Since 2000, the DHS released data from standard surveys in 60 countries. I utilized 57 of these (listed by region in Table 1), omitting the 3 where the biological parents of school-aged children were not identified on the household roster. I used the most recent survey wherever possible.[ii] Countries with DHS surveys tend to be lower income countries, especially in Asia and Europe.

My first analysis used the DHS household files which provide a nationally representative sample of children living in households. I then incorporated further information on the children's living arrangements using information from the individual interviews with their mothers; the sample with the more extensive data is restricted to children living with their mothers. See the appendix table for evidence that the sample of children living with interviewed mothers is representative of all children living with mothers (but not all children living with only one biological parent; the appendix table also shows that children living with only their father have substantially lower enrollment probabilities).

Methods

Analytic Approach

I performed separate analysis for each country, starting by tabulating children's school attendance rates by the number of biological parents that they live with (with tests of statistical significance) for the full sample. I then focused on children living with their biological mother, but not their biological father.

I evaluated the first hypothesis, *H1: the reasons for father absence matter*, in two steps. To test whether differences in the proportion of children whose fathers have died explain variation between countries in the effect of father absence, I compared all children living with their biological mother to the subsample with living fathers. Then, among children with living fathers, I separately estimated the effects on school attendance of 1) living with a single mother, 2) living with a mother and stepfather, 3) living with a mother in an intact union that is not coresidential. A large proportion—at least 72%—of the non-coresidential unions are with the child's biological father,[iii] but biological fathers are directly identified in the data only if they live in the household.

The DHS marital status codes for most countries distinguish never married, married, living together, divorced, widowed, and separated; in a few countries, married and living together are combined. I combined them for all countries. Thus the category of children of single mothers does not include any children living an adult male who is the mother's partner, i.e., represents sole parents whether or not extended family are present. Also, if the mother's partner is absent due to marital separation, the child is also in the single mother category. This means that children whose mother is separated are not counted as having a non-coresident father or stepfather. Children are identified as living with a stepfather if their biological father is not in the household, but the mother's partner is in the household.

I evaluated the second hypothesis, *H2: extended family substitute for fathers in producing good educational outcomes*, by adding a variable indicating whether or not there are other adults present in the household as well an interaction term with father absence. That is, the main effect of the "other adults" variable is the effect for children living with two biological parents and the interaction term measures whether other adults matter more for children whose father is absent. The interaction term should be significant if other adults really do substitute for fathers in providing supervision, household labor, and other support. In earlier specifications I tested whether other adults mattered differently for children of sole mothers, those with stepfathers, and those with non-coresident fathers/stepfathers: in theory extended family should matter the least for children living with a mother and stepfather because the substitution hypothesis is less relevant, plus the other adults are less likely to be related to the child. However, because there were no systematic differences, I opted for a more parsimonious model with a single interaction term.

Finally, I evaluated the third hypothesis, *H3: the advantage associated with father absence in many countries may be explained by father absence being concentrated in geographical areas with better schooling opportunities*, by testing whether controlling for characteristics of communities helps explain national-level variation in the effects of father absence. The idea here is that if children of sole mothers really are more likely to live in areas with better schooling opportunities—either because they are selected into single motherhood on the basis of being better off or because divorce precipitates migration to urban areas—then statistically controlling for this selection will produce better estimates of the effect of father absence on their attendance probabilities. Similarly, labor migration may be more likely to originate in relatively advantaged areas.

Model specification

My basic model is a logistic regression model predicting school attendance. When I reached the final specification (described above), I employed a multilevel logistic regression model. I used the xtlogit procedure in Stata which allows the effect of father absence on children's attendance to vary with characteristics of communities (a random effects model). When controlling for factors that influence attendance of all children in the community, I obtain better estimates of the effect of the individual child's family structure on attendance.

Dependent variable. Children aged 8-14 are considered to be attending school if they attended during the current year. School start ages vary between 5 and 7 among the countries in my sample, and I observe attendance starting at age 8 so that all children should be in school. Age 14 is at or near the end of secondary school in all countries. I recognize that there are many children at an educational disadvantage (e.g., having low test scores or lacking functional literacy) who will not be identified as disadvantaged by my rough measure, but children out of school at these ages are among the worst off.

Independent variables.

Number of biological parents in the household. The DHS household questionnaire identifies whether the child's biological parents reside in the household.[iv] Children can therefore easily be classified as living with two, one, or no biological parents. (ref=2)

Sole mother. Children whose mother has never been in union or is widowed, divorced, or separated are coded as living with a sole mother. (ref=2 biological parents)

Mother and stepfather. If the mother is in union and her partner is in the household, but the child's biological father is not in the household, the child is living with a stepfather. (ref=2 biological parents)

Mother has absent partner. If the mother is currently in a union but her partner is not in the household, children are assigned to this category. The individual woman's interview specifically asked whether or not her partner resided with her; this is not derived from the household roster (ref=2 biological parents)

Child's gender and age. Gender is a dummy variable (0=female, 1=male), and age is a vector of dummy variables because of variation between countries in transition points for continuation of schooling (most importantly, when primary school ends). (ref=8)

Other children. The presence of other children in the household could compromise attendance if the focus child's labor were needed for income or child care, or more simply because of competition between children for resources like school uniforms, books, and transportation costs. I used two continuous variables to measure other children: the number of siblings (children of the same mother), and the number of other children. For both variables, all values greater than 6 were coded as equal to 6.

Residence. Residence is a dummy variable (0=rural, 1=urban). Residence is a persistent factor impacting educational opportunity.

Parental education. I defined parent's education as the higher of either the mother's or the father's education using six categories: no education, incomplete primary, complete primary, incomplete secondary, complete secondary, and higher. In the few cases where parent's education was missing (and also in the initial analysis that included children living with neither parent), I used education of the household head. Education of the household head has been shown to be a strong determinant of children's schooling (Case and Deaton 1999).

Household Wealth. I constructed a wealth index based on housing quality and ownership of consumer durables. It is an 8-point scale measuring absolute wealth developed by Sarah Giroux (personal communication).[v] Unlike the DHS-provided relative wealth index, this scale has the same meaning across countries.

Other adults. This variable is adults other than parents (i.e., stepfathers are not other adults). Rather than counting the number of other adults, I simply measure their presence in the household. (ref=no other adults).

Proportion of women who are educated in the community. In my final model (see methods section above), I also controlled for community characteristics using DHS sampling clusters as communities (following Boco 2010 and others.) I used the proportion of women who have completed primary school in the community where the child lives. This is measured among all women of reproductive age, and helps determine norms for sending children to school. It is also a measure of socioeconomic development.

Proportion of husbands who work in agriculture in the community. Agriculture competes for potential students' time. Areas where agricultural employment is at higher levels are also areas where returns to schooling are lower than where alternative employment is more available.

Community wealth. The household wealth index described above was averaged within clusters to create the community wealth variable. Wealthier communities are likely to have better schools that are more worth attending.

Results

Descriptive statistics

Table 1 shows the percentages of children attending school in each country by the number of biological parents in the household. In 31 of the 57 countries, children living with *neither* parent are significantly less likely to be attending school, but children living with only one biological parent share this disadvantage in just 17 countries. In addition, in a substantial minority of countries (10 total, many of these in Western Africa), children living with only one biological parent have higher attendance rates than those living with both.

Table 1 here

Logistic regressions: children living with their biological mother

When controlling for all the individual variables described above, there are 16 countries where living with only the biological mother (rather than either biological parent) is associated with greater likelihood of school attendance than living with both biological parents (Table 2, column 1). The countries where father-absence seems to confer an educational advantage are concentrated in Africa and South Central Asia. There are mixed results for Eastern Africa, but in the rest of Africa father absence is either beneficial or neutral. In Central/South America and the Caribbean there are also mixed results, but mostly insignificant differences in school attendance between children living with both biological parents and those living with only their biological mother. In Southeast Asia, Western Asia, and Europe, there are no significant effects of father absence.

Table 2 here

Analysis confined to children with two living parents. When I omitted children with a deceased father from the analytic sample (Table 2, column 2), there were still more countries where children living with only their biological mother were more likely to be attending school (20). In only 4 countries were children living with both biological parents more likely to be attending school. In 32 countries there were no differences in attendance between children living with both biological parents and those living with only their biological mother. These results are also shown in Figure 1.

Figure 1 here

Union status. I next separated children living with only their biological mother into three categories: 1) children of single mothers, 2) children living with a stepfather, 3) children whose mother is in union, but her partner does not reside with her and the child. Table 2, columns 3-5 and Figures 2-4 show that these different living arrangements affect school attendance in very different ways. First, in most of the countries where there was a significant attendance advantage among children in father-absent homes, it was driven by the mother having an intact but non-coresidential union (Figure 4). Only in Uganda was this advantage confined to children of sole mothers. There were 5 additional countries—3 in Western Africa plus Namibia and Honduras—where both children of sole mothers and children of non-coresidential unions had higher attendance (Figure 2). In only 3 countries were children residing with a mother and stepfather more likely to attend school than those living with both biological parents (Figure 3).

Figures 2-4 here

Living with extended family. Other adults in the household have neither a uniform nor a strong effect on children's school attendance (Table 3, final column). More importantly for my purpose of trying to understand higher attendance probabilities in father-absent homes, there is very little evidence that extended family substitute for fathers in promoting school attendance. If they did, living with other adults would matter more in father-absent homes than in other homes. On the contrary, the interaction term between living with only the biological mother and the other adults variables is usually not significant and, where it is, children living with only their mother do *better* in 8 countries if there are no non-parental adults in the household (Table 3, column 4). Only in Ethiopia and India do other adults promote schooling more in father-absent homes than in two biological parent homes (Table 3, column 4).

Table 3 here

Extended family could still help explain an advantage in father-absent homes if other adults did in fact confer an educational advantage and they were more likely to be present in father-absent homes (i.e., if other adults did help, compositional effects could drive an overall advantage even if they did not help significantly more when fathers were absent). The only—very modest—support for extended family promoting school when fathers are absent comes from Liberia and Namibia where the sole mother advantage is no longer significant among those living without other adults. The opposite is the case in Côte d'Ivoire and Gabon where an advantage among sole mothers living without other adults is concealed by a disadvantage associated with living with others. Similarly, in Uganda the sole mother advantage is significantly greater when she lives without other adults, and in Colombia, the *disadvantage* associated with living with a sole mother is explained by the presence of other adults.

Overall, the results obtained when considering other adults in the household (Table 3) are not terribly different from results disregarding other adults (Table 2). Thus when presenting my final model that controls for community characteristics I opt to focus only on the mother's partnership status (not in union, repartnered, non-coresidential union) and exclude the other adults as variables which complicate the model.

Multilevel analysis

When I added the variables that measure the socioeconomic development of the community where the child lives, most of the remaining significant positive effects of living with a single mother disappear (Table 4, column 1). Only in Honduras do children of sole mothers attend school at higher rates than children living with both biological parents. In Honduras and Liberia, living with a mother and a stepfather is also associated with higher rates of school attendance (Table 4, column 2). Finally, the number of countries where having a mother with a non-coresident spouse is associated with an educational advantage drops from 18 to 15 when community controls are introduced (Table 4, column 3).

Table 4 here

Discussion

The attendance of children living with *neither* parent informs my overall interpretations. Most importantly, the significant disadvantage to children living with neither parent in a majority of the countries confirms that insignificant differences between children living with one versus two parents do not derive solely from using a weak measure of educational success. Family structure may matter more for more sensitive measures like standardized test scores, but in poor countries it matters even for whether children show up in school. However, as attendance becomes nearly universal, there is less room for anything (including family structure) to influence it. Only 2 of the 22 countries where attendance is not significantly lower for children living with neither parent are ones that have not achieved mass education, i.e., at least 80% in school. Both of these are in West Africa where fostering children to other family members who live closer to schools is relatively common. Most of the countries with insignificant results (17) have attendance rates of 90% or higher. Thus my measure is appropriate for many poorer countries, but less appropriate where most children attend school.

My work does not support the hypothesis that family structure effects are small in some countries because of relatively large shares of widows among single parents. The idea there was that widows receive more social support than other single mothers, so where divorce and non-marital childbearing are relatively rare, then children of single parents would be more similar to those from intact families. If this were the case, the disadvantage to living with only one biological parent should be *greater* after children with a deceased father were excluded from the analysis. Instead, there were more countries where children living with one parent were at a significant advantage. Even in Asia, children who had lost a father had lower attendance probabilities than other children in father-absent homes. Poverty can cause both higher parental mortality and lower school attendance, plus parental mortality can directly interfere with schooling (e.g., Case and Ardington 2006).

Children living with only their mother when their father was still alive attended school more frequently than children living with both biological parents in a large number of countries (20 out of 57, and nearly half of the 26 with attendance rates under 90%). This became less surprising when considering that often the biological parents of the child were still in union. I found that children whose mother was in an intact union often did better when her partner was absent from the home. This is consistent with literature that shows labor migration generally promotes better schooling outcomes (Deb and Seck 2009, Hu 2013, Kuhn 2006, Townsend et al. 2002, Yabiku 2013, Yabiku and Glick 2013; see Creighton et al. 2009 for an exception). It also points to the importance of marital ties when men do not live with their children. In my data I cannot distinguish labor migrants from other absent fathers and stepfathers, and it is therefore all the more striking that children are often more likely to attend school when living with mothers who have absent partners. However, it is possible that some of the advantage is exaggerated because mothers might be more likely to report themselves as still in union with a partner who remits (they might report their union status as separated if he did not remit).

Living with a stepfather was disadvantageous for children in more countries than living with a single mother was. Although I could not test any of the reasons this might be so, in countries as diverse as the United States (Edin and Nelson 2013) and South Africa (Madhavan et al. 2012), biological fathers contribute less to their children after the mothers remarry. It is also possible that mothers' remarriage compromises schooling more than I estimate here because children are more likely to be fostered to other relatives after remarriage than when the mother remains single (Grant and Yeatman 2012), and children living with neither biological parent were less likely to attend school in a variety of countries.

Other adults in the household did not have consistent effects on schooling, nor did other adults typically benefit children more in father-absent homes. Notably, India was the only Asian country where a significantly lower school attendance among children of sole mothers was almost completely offset if other adults were in the household. Perhaps extended family in Asia matter more for school success than simply for attendance. I unexpectedly found that in a number of countries living with other adults was associated with a stronger *disadvantage* in father absent homes, but I caution against interpreting this causally: mothers' economic independence might allow for independent living as well as promoting children's schooling.

When I controlled for community characteristics that would help determine the attendance rates of all children, the attendance advantage associated with living with a sole mother disappeared in five of the six countries where it had been statistically significant. In other words, concentration of sole mother families in areas where more children go to school helps explain why children of sole mothers attend school at higher rates in some countries. The single mother advantage remained only in Honduras. However, if the concentration of single mothers in areas with more schools were a large part of the reason that children living with two biological parents were not at an advantage in poor countries, I would expect to see an advantage to those living with both biological parents emerge in the final model. Instead, children's living arrangements are mostly an insignificant predictor of their school attendance (there still were only 5 countries where children of single mothers were significantly less likely to attend school). Thus, consistent with analyses of richer countries where family structure has been shown to matter more at higher income levels (Schiller et al. 2004, Chiu 2007, Author 2013), it matters little for school attendance among poorer countries. Again, family structure may matter for achievement in school even in poorer countries, but it matters little for attendance.

Conclusions

I discovered that in a large number of relatively poor countries throughout the world, children living with their biological mother but not their biological father were more likely to be attending school. Previous literature had shown that the advantage to living with both biological parents was greater in richer countries, but there had been little to suggest an actual educational advantage associated with father absence. This school attendance advantage was not concentrated among children of widows nor among children living in extended families: it turned out to be concentrated among children whose mother was in union with an absent partner.

Given that most of the children whose mother's partner was absent from the household were born during the mother's first and only union, my work is partly consistent with findings from richer countries that intact two-parent families benefit children. In sharp contrast to findings from richer countries, however, children in intact coresidential two-parent families rarely attend school at higher rates than children in sole mother families or coresidential stepfamilies. Thus I conclude that school attendance in poorer countries is mostly unaffected by family structure.

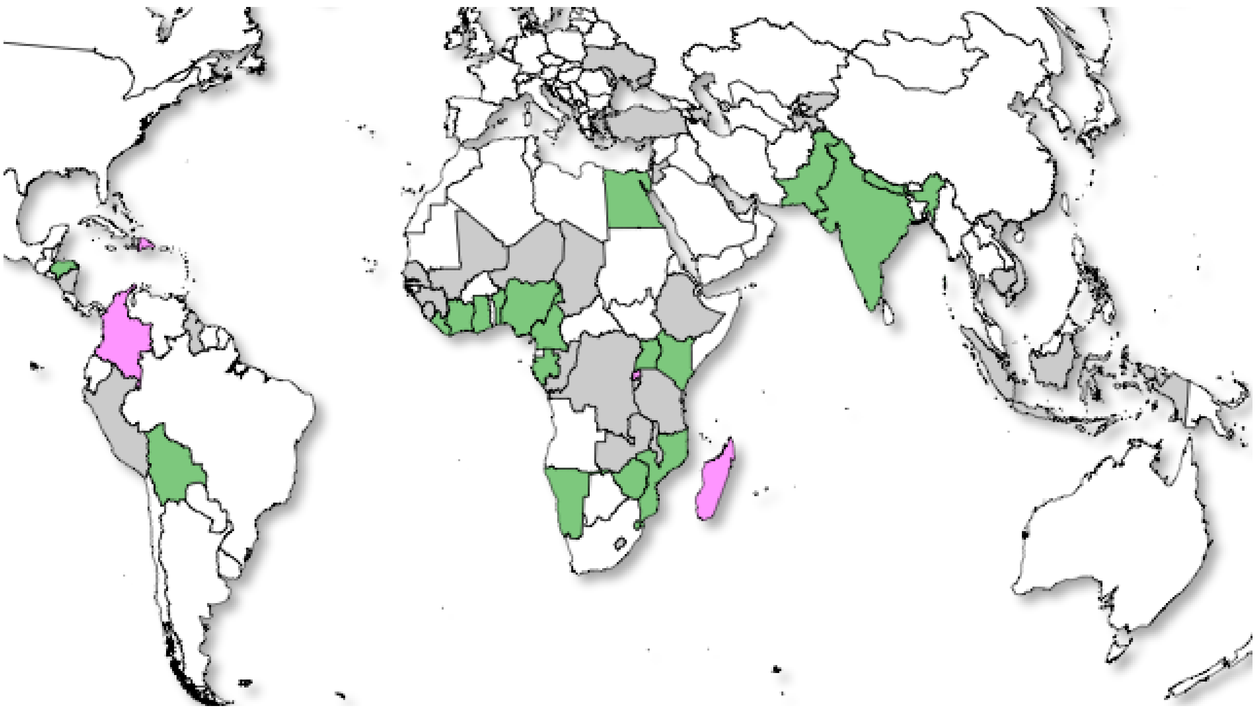
Women living apart from their partners come disproportionately from wealthier areas of poor countries. I attribute the rest of the educational advantage among their children to beneficial effects of labor migration, though I have no direct evidence for the cause.

I do know that the school attendance advantage is rarely shared by children living with sole mothers or in coresident stepfamilies. Children in sole-mother families appeared to be at an advantage in a handful of countries until the concentration of such families in advantaged communities was accounted for. I have therefore provided evidence that cross-national comparisons of the effects of family structure on children’s outcomes must account for differential selection into single motherhood: unlike in the US and Europe, single mothers in poor countries are often socioeconomically advantaged and often live in more advantaged areas.

Tables and Figures

Figure 1: School attendance for children living with biological mother but not (still alive) biological father compared to living with both biological parents, with individual-level controls

green=advantage associated with father absence
pink=disadvantage associated with father absence
grey=no significant difference in school attendance
note: greyscale figures included after the appendix per journal submission instructions



<u>Figure 2</u>: School attendance for children living with **sole mother** (when biological father is alive) compared to living with both biological parents, with individual-level controls

green=advantage associated with father absence
pink=disadvantage associated with father absence
grey=no significant difference in school attendance

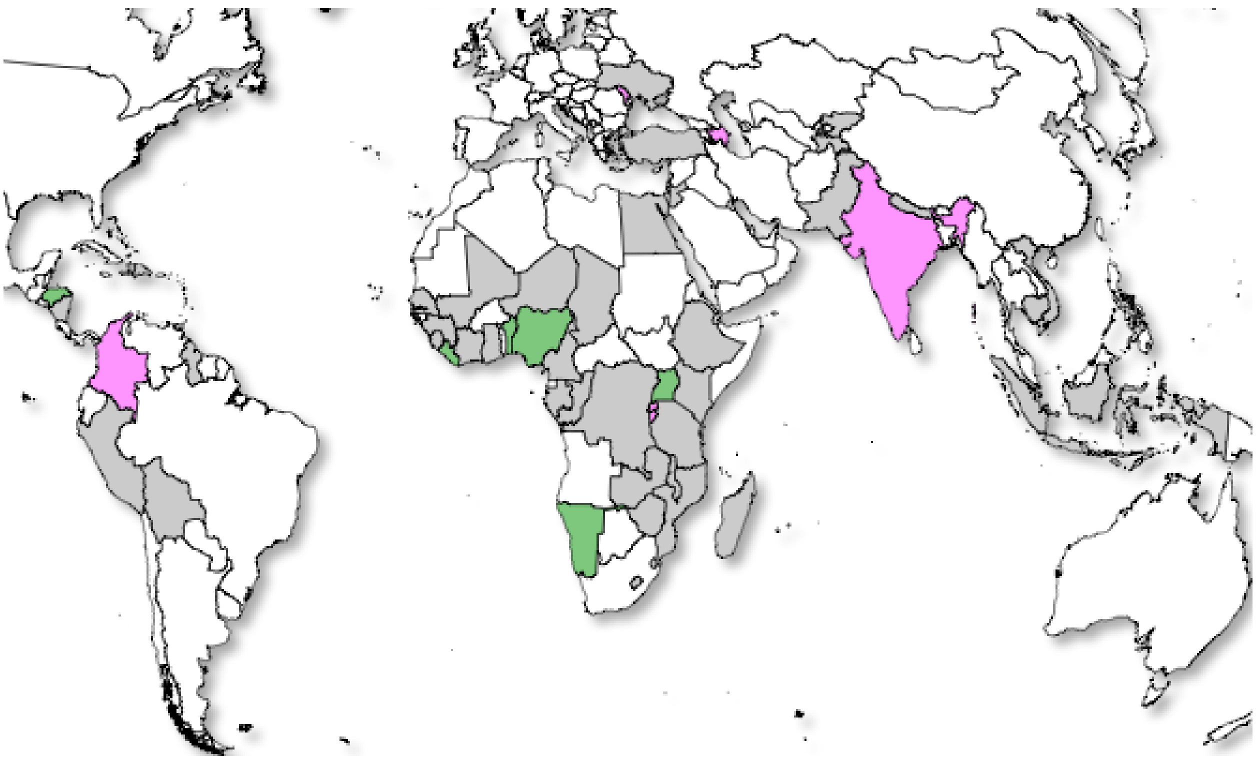


Figure 3: School attendance for children living with **mother & stepfather** (when biological father is alive) compared to living with both biological parents, with individual-level controls

green=advantage associated with father absence
pink=disadvantage associated with father absence
grey=no significant difference in school attendance

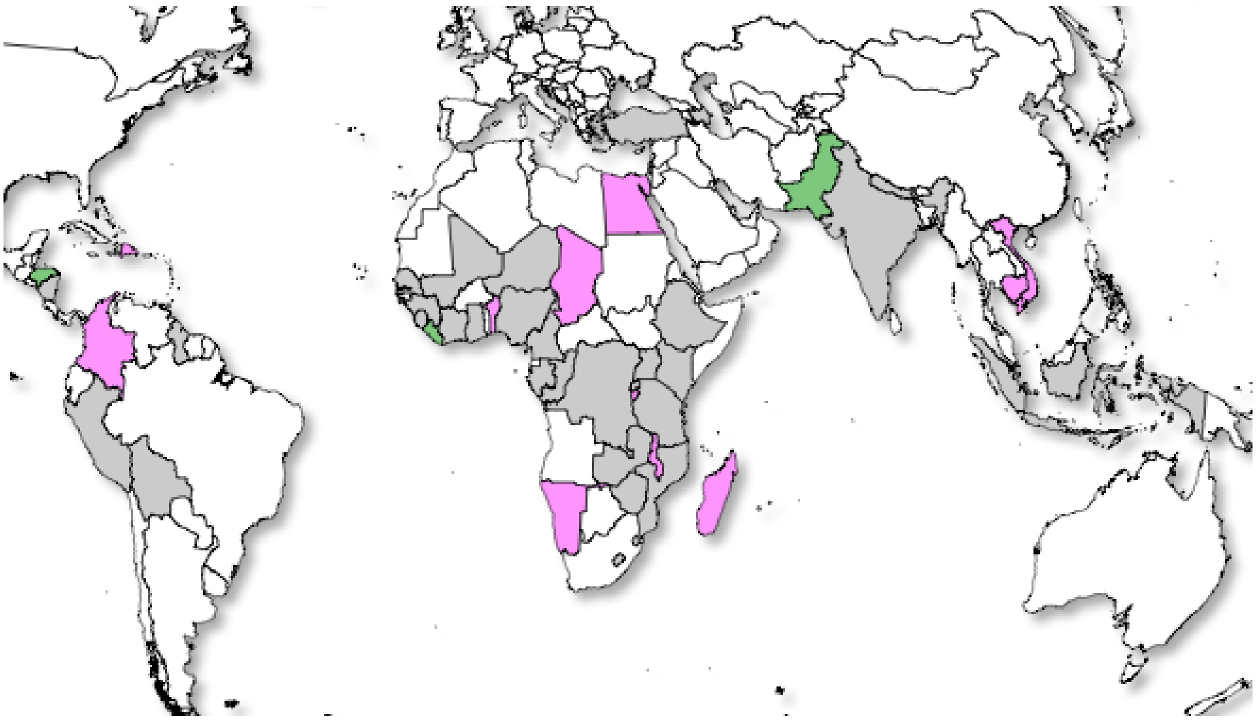


Figure 4: School attendance for children living with **mother with absent partner** compared to living with both biological parents, with individual-level controls

green=advantage associated with father absence
pink=disadvantage associated with father absence
grey=no significant difference in school attendance

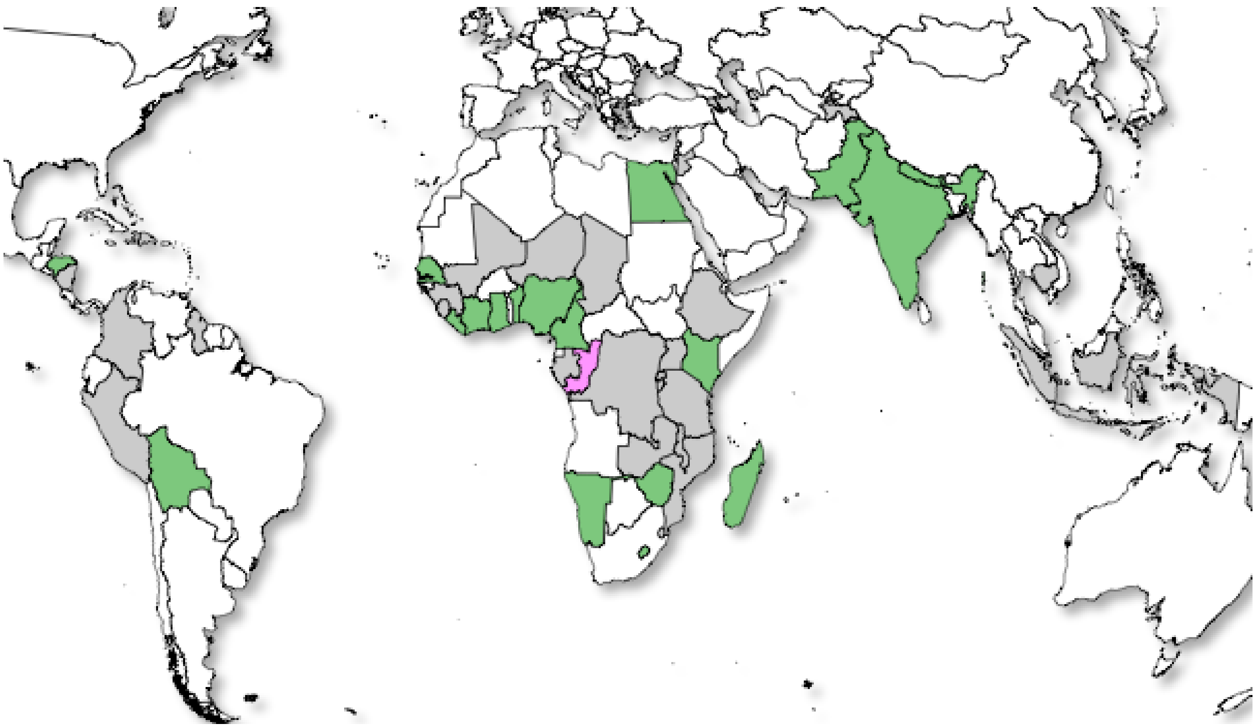


Table 1: School attendance by number of biological parents in the child's household with tests of significant differences from two biological parents			
	Percent of 8-14 year olds attending school		
country and survey year	**Living with two biological parents**	**Living with one biological parent**	**Living with neither biological parent**
Northern Africa			
Egypt (2008)	93	92*	93
Western Africa			
Benin (2011-12)	76	77	67***
Burkina Faso (2010)	56	60**	56
Côte d'Ivoire (2011-12)	69	72**	64***
Ghana (2008)	85	89***	86
Guinea (2012)	59	61	56*
Liberia (2007)	57	61**	53*
Mali (2006)	47	47	44**
Niger (2012)	52	52	50
Nigeria (2008)	67	78***	79***
Senegal (2012-13)	63	69***	69***
Sierra Leone (2008)	76	74	69***
Eastern Africa			
Burundi (2010)	88	85***	74***
Ethiopia (2011)	72	72	68***
Kenya (2003)	88	88	84***
Madagascar (2008-09)	83	74***	72***
Malawi (2010)	94	92***	91***
Mozambique (2011)	83	82	77***
Rwanda (2010)	96	93***	89***
Tanzania (2010)	87	85**	83***
Uganda (2011)	92	91*	89***
Zambia (2007)	88	87	87
Zimbabwe (2010-11)	96	95	91***
Middle Africa			
Cameroon (2011)	86	90***	89***
Chad (2004)	49	49	56***
Congo-Brazzaville (2011-12)	94	93	89***
Congo Democratic Republic (2007)	78	75***	71***
Gabon (2012)	97	97	97
Sao Tome and Principe (2008-09)	95	91***	94

Table 1: School attendance by number of biological parents in the child's household with tests of significant differences from two biological parents			
	Percent of 8-14 year olds attending school		
country and survey year	**Living with two biological parents**	**Living with one biological parent**	**Living with neither biological parent**
Southern Africa			
Lesotho (2009)	94	94	92
Namibia (2006-07)	92	95***	93
Swaziland (2006-07)	91	93	91
Central America			
Honduras (2011-12)	88	89**	87
Nicaragua (2001)	79	79	76**
Caribbean			
Dominican Republic (2007)	96	94***	92***
Haiti (2012)	96	95	92***
South America			
Bolivia (2008)	97	97	94***
Colombia (2010)	98	97***	95***
Guyana (2009)	97	96	94**
Peru (2012)	96	95	92*
Western Asia			
Armenia (2010)	100	99	100
Azerbaijan (2006)	98	96***	92***
Jordan (2012)	98	97*	98
Turkey (2003)	91	90	95
South Central Asia			
India (2005-06)	86	81***	75***
Kyrgyz Republic (2012)	99	99	99
Maldives (2009)	99	99	99
Nepal (2011)	94	97***	92**
Pakistan (2012-13)	74	75***	66***
Tajikistan (2012)	98	97	96
Southeast Asia			
Cambodia (2010)	92	86***	90
Indonesia (2007)	94	90***	89***
Timor-Leste (2009-10)	86	82***	84**
Vietnam (2005)	94	93	92
Eastern Europe			
Moldova (2005)	98	98	98

Table 1: School attendance by number of biological parents in the child's household with tests of significant differences from two biological parents			
	Percent of 8-14 year olds attending school		
country and survey year	**Living with two biological parents**	**Living with one biological parent**	**Living with neither biological parent**
Ukraine (2007)	99	99	99
Southern Europe			
Albania (2008-09)	98	98	95
two biological parent advantage		17 countries	31 countries
two biological parent disadvantage		10 countries	4 countries
difference not significant		30 countries	22 countries
* p < .05, ** p < .01, *** p < .001 levels; two-tailed tests			

Table 2: School attendance by reasons for father absence, children living with biological mother						
Logistic coefficients for school attendance relative to two biological parents						
	All models control for child's gender and age, other children living in the household, place of residence, parental education, and household wealth					
				Children with living fathers		
Country	**All children with absent fathers**	**Children with living fathers**		**sole mother**	**mother & stepfather**	**mother with absent partner**
Northern Africa						
Egypt	0.525***	0.539*		0.051	-1.860**	1.170**
Western Africa						
Benin	0.377***	0.522***		0.513***	-0.537**	0.856***
Burkina Faso	-0.032	0.143		0.416	-0.098	0.149
Côte d'Ivoire	0.261**	0.366***		0.256	-0.310	0.645***
Ghana	0.351*	0.362*		-0.167	0.192	0.706**
Guinea	0.074	0.130		-0.198	-0.221	0.240
Liberia	0.401***	0.361***		0.304*	0.382*	0.329*
Mali	-0.140	-0.148		-0.234	-0.293	-0.094
Niger	0.135	0.148		0.001	-0.574	0.207
Nigeria	1.166***	1.101***		0.948***	0.037	1.306***
Senegal	0.148	0.220*		0.151	0.010	0.260**
Sierra Leone	-0.043	0.010		0.098	-0.132	-0.014
Eastern Africa						
Burundi	-0.116	-0.073		-0.375*	-0.733*	0.356
Ethiopia	0.004	0.063		0.099	0.065	0.060
Kenya	0.485***	0.355*		0.251	1.595	0.335*
Madagascar	-0.230***	-0.248***		-0.157	-0.418**	-0.160
Malawi	-0.071	-0.062		-0.023	-0.374**	0.212
Mozambique	0.229***	0.206**		-0.001	-0.232	0.654***
Rwanda	-0.378**	-0.369**		-0.680***	-0.475	-0.046
Tanzania	0.066	0.023		0.074	-0.083	0.123
Uganda	0.341**	0.307*		0.623*	-0.241	0.288
Zambia	0.146	0.088		0.140	0.054	-0.019
Zimbabwe	0.354	0.522*		0.441	0.518	0.586*
Middle Africa						
Cameroon	0.737***	0.553***		0.387	0.001	0.839***
Chad	0.110	0.025		0.157	-.617*	0.101

Table 2: School attendance by reasons for father absence, children living with biological mother

Logistic coefficients for school attendance relative to two biological parents

	All models control for child's gender and age, other children living in the household, place of residence, parental education, and household wealth					
				Children with living fathers		
Country	**All children with absent fathers**	**Children with living fathers**		**sole mother**	**mother & stepfather**	**mother with absent partner**
Congo-Brazzaville	-0.097	-0.032		0.495	-0.248	-0.595*
Congo DR	0.039	0.099		0.120	-0.072	0.111
Gabon	0.345	0.531*		0.550	0.362	0.656
Sao Tome & Principe	-0.288	-0.186		-0.139	-0.555	0.132
Southern Africa						
Lesotho	0.060	0.130		0.029	0.207	-0.001
Namibia	0.556***	0.523**		0.705***	-0.719**	1.185***
Swaziland	0.599*	0.612**		0.558	-0.266	0.707**
Central America						
Honduras	0.217**	0.322***		0.317***	0.337*	0.474**
Nicaragua	-0.073	-0.018		0.074	-0.194	0.140
Caribbean						
Dominican Republic	-0.280***	-0.258**		-0.134	-0.373**	-0.173
Haiti	-0.174	-0.054		-0.176	-0.391	0.218
South America						
Bolivia	0.184	0.419*		0.341	-0.022	0.945*
Colombia	-0.390***	-0.380***		-0.271**	-0.238*	-0.160
Guyana	-0.142	0.104		-0.010	-0.358	0.807
Peru	-0.009	-0.011		0.032	-0.062	-0.205
Western Asia						
Armenia	0.086	0.533		no estimate	no estimate	0.271
Azerbaijan	-0.383	-0.553		-1.052*	-1.453	-0.228
Jordan	0.238	0.470		0.393	no estimate	0.502
Turkey	0.462	0.141		-0.375	-0.078	no estimate
South Central Asia						
India	0.185***	0.347***		-0.209*	-0.136	0.546***
Kyrgyz Republic	0.563	0.948		0.241	no estimate	no estimate
Maldives	0.003	-0.022		-0.456	0.103	0.269
Nepal	1.056***	1.102***		0.286	0.024	1.189***

Table 2: School attendance by reasons for father absence, children living with biological mother						
Logistic coefficients for school attendance relative to two biological parents						
	All models control for child's gender and age, other children living in the household, place of residence, parental education, and household wealth					
				Children with living fathers		
Country	**All children with absent fathers**	**Children with living fathers**		**sole mother**	**mother & stepfather**	**mother with absent partner**
Pakistan	0.868***	0.961***		0.351	0.842*	1.029***
Tajikistan	0.507	0.644		0.357	no estimate	0.731
Southeast Asia						
Cambodia	-0.115	0.024		0.093	-1.084***	0.830
Indonesia	0.001	0.059		-0.021	-0.137	0.256
Timor-Leste	-0.011	-0.021		-0.068	-0.449	0.053
Vietnam	0.046	0.127		0.173	-1.536*	no estimate
Europe						
Moldova	0.264	0.137		-1.002*	no estimate	1.387
Ukraine	-0.087	-0.085		-0.447	no estimate	no estimate
Albania	0.746	0.658		-0.154	no estimate	0.590
two biological parent advantage	4	4		6	11	1
two biological parent disadvantage	16	20		6	3	18
difference not significant	37	33		44	36	34
no estimate				1	7	4
	* p < .05, ** p < .01, *** p < .001 levels; two-tailed tests					

Table 3: Effects of living with adults other than parent/stepparent					
Logistic coefficients for school attendance relative to two biological parents					
	All estimates control for child's gender and age, other children living in the household, place of residence, parental education, and household wealth				
Country	**sole mother, no other adults**	**mother & stepfather, no other adults**	**mother with absent partner, no other adults**	**father absent x other adults**	**main effect of other adults in household**
Northern Africa					
Egypt	-0.111	-2.055**	0.992	0.298	-0.417***
Western Africa					
Benin	0.644***	-0.375*	0.992***	-0.395*	0.051
Burkina Faso	0.177	-0.216	-0.037	0.024	0.024
Côte d'Ivoire	0.687*	0.003	1.038***	-0.592*	0.237**
Ghana	-0.077	0.135	0.730*	-0.040	-0.307*
Guinea	0.363	0.151	0.645***	-0.657**	0.044
Liberia	0.292	0.376	0.317	0.008	0.033
Mali	-0.349	-0.425	-0.219	0.240	-0.181***
Niger	-0.046	-0.515	0.269**	-0.101	0.351***
Nigeria	1.054***	0.189	1.453***	-0.291	0.245***
Senegal	0.011	-0.166	0.103	0.203	-0.463***
Sierra Leone	-0.087	-0.239	-0.169	0.189	0.216*
Eastern Africa					
Burundi	-0.538*	-0.782*	0.283	0.292	0.022
Ethiopia	-0.032	-0.012	-0.049	0.322*	0.064
Kenya	0.089	1.516	0.196	0.352	-0.075
Madagascar	-0.031	-0.329*	-0.032	-0.332*	0.169*
Malawi	-0.045	-0.392**	0.191	0.067	-0.040
Mozambique	-0.073	-0.257*	0.594***	0.166	0.045
Rwanda	-0.533**	-0.375	0.079	-0.386	0.195
Tanzania	0.233	0.013	0.283	-0.274	-0.042
Uganda	0.954***	-0.077	0.502**	-0.715**	0.295
Zambia	0.260	0.127	0.061	-0.223	-0.058
Zimbabwe	0.169	0.399	0.375	0.533	0.089
Middle Africa					
Cameroon	0.508	0.140	0.968*	-0.236	0.151
Chad	0.224	-0.548	0.165	-0.143	0.071
Congo-Brazzaville	0.605	-0.159	-0.492	-0.183	0.127
Congo Dem. Republic	0.182	-0.063	0.158	-0.079	-0.113

Table 3: Effects of living with adults other than parent/stepparent					
Logistic coefficients for school attendance relative to two biological parents					
	All estimates control for child's gender and age, other children living in the household, place of residence, parental education, and household wealth				
Country	**sole mother, no other adults**	**mother & stepfather, no other adults**	**mother with absent partner, no other adults**	**father absent x other adults**	**main effect of other adults in household**
Gabon	1.738**	1.193*	1.779**	-1.421*	-0.018
Sao Tome & Principe	-0.440	-0.815*	-0.170	0.793	-0.493
Southern Africa					
Lesotho	0.444	0.565*	0.392	-0.720	0.402
Namibia	0.495	-0.761**	1.068**	0.206	0.231
Swaziland	0.805	-0.104	0.912**	-0.371	0.136
Central America					
Honduras	0.361**	0.356*	0.509**	-0.063	-0.036
Nicaragua	0.132	-0.161	0.192	-0.087	0.001
Caribbean					
Dominican Republic	0.040	-0.249*	0.015	-0.449**	0.133
Haiti	-0.173	-0.350	0.223	-0.098	0.274
South America					
Bolivia	0.239	-0.049	0.892*	0.179	0.153
Colombia	-0.154	-0.083	0.041	-0.391**	0.205*
Guyana	0.140	-0.209	0.951	-0.435	0.489
Peru	-0.027	-0.146	-0.278	0.212	-0.299**
Western Asia					
Armenia	no estimate	no estimate	12.630	-12.479	-1.361
Azerbaijan	-0.867	-1.351	-0.086	-0.328	0.187
Jordan	0.803	no estimate	0.870	-0.624	0.081
Turkey	0.303	0.345	no estimate	-0.852	-0.324**
South Central Asia					
India	-0.335**	-0.249	0.433***	0.227*	0.023
Kyrgyz Republic	13.213	no estimate	no estimate	-13.876	0.650
Maldives	-0.537	0.127	0.228	-0.025	0.498
Nepal	0.368	0.159	1.315***	-0.311	0.392**
Pakistan	0.494	0.935*	1.113***	-0.138	-0.109*
Tajikistan	0.758	no estimate	1.174	-0.490	-0.268
Southeast Asia					
Cambodia	-0.013	-1.183***	0.724	0.216	-0.175

Table 3: Effects of living with adults other than parent/stepparent					
Logistic coefficients for school attendance relative to two biological parents					
	All estimates control for child's gender and age, other children living in the household, place of residence, parental education, and household wealth				
Country	**sole mother, no other adults**	**mother & stepfather, no other adults**	**mother with absent partner, no other adults**	**father absent x other adults**	**main effect of other adults in household**
Indonesia	0.206	0.011	0.453	-0.357	0.072
Timor-Leste	-0.664	-0.647	-0.277	0.753	-0.066
Vietnam	0.138	-1.674*	no estimate	0.352	-0.329
Europe					
Moldova	-0.390	no estimate	1.898	-0.894	-0.061
Ukraine	-1.208	no estimate	no estimate	1.760	-0.850
Albania	0.468	no estimate	0.285	0.789	0.054
two biological parent advantage	3	11	0		
two biological parent disadvantage	6	4	17		
difference not significant	47	35	36		
no estimate	1	7	4		
	* p < .05, ** p < .01, *** p < .001 levels; two-tailed tests				

Table 4: Multilevel models			
Logistic coefficients for school attendance relative to two biological parents			
All estimates employ the same individual-level controls as previous models; community-level controls are proportion of women completing primary school, proportion of husbands employed in agriculture, and average household wealth			
	Children with living fathers		
Country	**sole mother**	**mother & stepfather**	**mother with absent partner**
Northern Africa			
Egypt	-0.073	-2.283**	0.970*
Western Africa			
Benin	0.110	-0.988***	0.463***
Burkina Faso	0.549	-0.108	0.284*
Côte d'Ivoire	-0.032	-0.477	0.442**
Ghana	-0.507	0.617	0.459
Guinea	-0.543	-0.494	0.000
Liberia	0.332	0.538*	0.183
Mali	-0.473	-0.114	0.111
Niger	-0.059	-0.944*	0.161
Nigeria	-0.012	-0.351	0.515***
Senegal	0.064	0.137	0.641***
Sierra Leone	0.030	-0.210	-0.239
Eastern Africa			
Burundi	-0.400	-0.844*	0.127
Ethiopia	-0.073	0.100	0.106
Kenya	-0.312	1.711	0.056
Madagascar	-0.280**	-0.557***	-0.115
Malawi	-0.128	-0.469***	0.185
Mozambique	-0.223	-0.299*	0.316*
Rwanda	-0.698***	-0.760	-0.046
Tanzania	-0.055	0.017	0.087
Uganda	-0.012	-0.746	0.298
Zambia	0.083	-0.079	-0.024
Zimbabwe	0.360	0.555	0.674*
Middle Africa			
Cameroon	-0.218	-0.568	0.375
Chad	0.123	-0.466	0.173
Congo-Brazzaville	0.207	-0.599	-1.014**

Table 4: Multilevel models			
Logistic coefficients for school attendance relative to two biological parents			
All estimates employ the same individual-level controls as previous models; community-level controls are proportion of women completing primary school, proportion of husbands employed in agriculture, and average household wealth			
	Children with living fathers		
Country	**sole mother**	**mother & stepfather**	**mother with absent partner**
Congo Dem. Republic	-0.001	-0.009	-0.021
Gabon	0.488	0.291	0.582
Sao Tome & Principe	-0.361	-0.585	-0.086
Southern Africa			
Lesotho	-0.161	0.072	-0.142
Namibia	0.245	-0.916**	0.881*
Swaziland	0.707	-1.026	1.128**
Central America			
Honduras	0.291**	0.301*	0.376*
Nicaragua	0.074	-0.246	0.097
Caribbean			
Dominican Republic	-0.224	-0.354*	-0.340
Haiti	-0.364	-0.496	0.102
South America			
Bolivia	0.309	-0.126	0.860*
Colombia	-0.359**	-0.247	-0.196
Guyana	-0.092	-0.438	0.726
Peru	-0.160	-0.259	-0.220
Western Asia			
Armenia	no estimate	no estimate	no estimate
Azerbaijan	-0.987	-1.778	-0.150
Jordan	0.250	13.371	0.720
Turkey	-0.506	-0.300	20.105
South Central Asia			
India	-0.323**	-0.048	0.431***
Kyrgyz Republic	0.508	17.988	17.902
Maldives	-0.471	0.049	0.300
Nepal	-0.332	0.407	1.171***
Pakistan	0.111	0.346	0.644***
Tajikistan	0.000	17.052	0.620

Table 4: Multilevel models

Logistic coefficients for school attendance relative to two biological parents

All estimates employ the same individual-level controls as previous models; community-level controls are proportion of women completing primary school, proportion of husbands employed in agriculture, and average household wealth

	Children with living fathers		
Country	**sole mother**	**mother & stepfather**	**mother with absent partner**
Southeast Asia			
Cambodia	-0.087	-1.391***	0.630
Indonesia	-0.126	-0.142	0.179
Timor-Leste	-0.051	-0.644	0.167
Vietnam	0.066	-1.668*	21.100
Europe			
Moldova	-1.325**	19.584	1.656
Ukraine	no estimate	no estimate	no estimate
Albania	0.096	14.137	0.498
difference not significant	49	42	39
no estimate	2	2	2
two biological parent advantage	5	11	1
two biological parent disadvantage	1	2	15

* p < .05, ** p < .01, *** p < .001 levels; two-tailed tests

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Appendix: Selecting DHS-interviewed mother does not affect estimated difference in school attendance between children living with two biological parents and those living with only their biological mother (all differences between columns 3 & 4 not significant)

Logistic coefficients for school attendance relative to two biological parents

All estimates control for child's gender and age, other children living in the household, place of residence, parental education, and household wealth

Country	lives with one biological parent	lives with father only	lives with mother only	lives with mother only & mother completed DHS individual interview
Northern Africa				
Egypt	0.270*	-0.325	0.430***	0.525***
Western Africa				
Benin	0.085	-0.249***	0.392***	0.377***
Burkina Faso	-0.078	-0.291***	0.114	-0.032
Côte d'Ivoire	0.182**	0.019	0.321***	0.261**
Ghana	0.293***	0.006	0.427***	0.351*
Guinea	-0.048	-0.172*	0.043	0.074
Liberia	0.123	-0.158	0.350***	0.401***
Mali	-0.074	-0.029	-0.100	-0.140
Niger	-0.005	-0.183***	0.095	0.135
Nigeria	0.621***	0.174***	1.089***	1.166***
Senegal	0.138***	-0.051	0.173*	0.148
Sierra Leone	-0.157*	-0.154	-0.160	-0.043
Eastern Africa				
Burundi	-0.265***	-0.551***	-0.183*	-0.116
Ethiopia	-0.088	-0.275***	-0.028	0.004
Kenya	0.233*	-0.271	0.335***	0.485***
Madagascar	-.319***	-0.479***	-0.242***	-0.230***
Malawi	-0.120	-0.100	-0.122	-0.071
Mozambique	0.044	-0.107	0.071	0.229***
Rwanda	-0.493***	-0.934***	-0.421***	-0.378**
Tanzania	-0.072	-0.122	-0.052	0.066
Uganda	0.165	0.301	0.130	0.341**
Zambia	-0.028	-0.214	0.027	0.146
Zimbabwe	0.090	0.115	0.084	0.354

Middle Africa				
Cameroon	0.418***	0.043	0.698***	0.737***
Chad	0.088	0.151	0.066	0.110
Congo-Brazzaville	-0.045	0.172	-0.127	-0.097
Congo Dem. Republic	-0.052	-0.164	-0.001	0.039
Gabon	0.038	-0.016	0.055	0.345
Sao Tome and Principe	-0.351	-0.915**	-0.258	-0.288
Southern Africa				
Lesotho	0.045	-0.078	0.079	0.060
Namibia	0.447***	0.712**	0.392**	0.556***
Swaziland	0.257	-0.214	0.410*	0.599*
Central America				
Honduras	0.137*	-0.446***	0.231***	0.217**
Nicaragua	-0.172**	-0.798***	-0.057	-0.073
Caribbean				
Dominican Republic	-0.292***	-0.273*	-0.297***	-0.280***
Haiti	-0.230*	-0.363*	-0.188	-0.174
South America				
Bolivia	0.030	-0.001	0.038	0.184
Colombia	-.450***	-0.782***	-0.391***	-0.390***
Guyana	-0.353	-0.590	-0.311	-0.142
Peru	-0.069	-0.097	-0.062	-0.009
Western Asia				
Armenia	0.165	no estimate	0.111	0.086
Azerbaijan	-0.451	-0.358	-0.461	-0.383
Jordan	0.069	-0.563	0.319	0.238
Turkey	0.333	-0.388	0.513*	0.462
South Central Asia				
India	-0.002	-0.625***	0.146***	0.185***
Kyrgyz Republic	0.012	-0.718	0.331	0.563
Maldives	-0.353	-1.343**	-0.180	0.003
Nepal	0.735***	-0.453*	0.994***	1.056***
Pakistan	0.514***	-0.751***	0.772***	0.868***
Tajikistan	0.183	-1.096*	0.456	0.507
Southeast Asia				
Cambodia	-0.185*	-0.572**	-0.095	-0.115
Indonesia	-0.075	-0.326*	0.020	0.001

Timor-Leste	-0.200*	-0.426***	-0.088	-0.011
Vietnam	0.145	0.123	0.151	0.046
Europe				
Moldova	0.102	-0.044	0.167	0.264
Ukraine	-0.265	no estimate	-0.346	-0.087
Albania	0.582	-0.040	0.690	0.746
Totals				
two biological parent advantage	10	22	5	4
two biological parent disadvantage	11	2	16	16
difference not significant	36	31	36	37
no estimate		2		
* p < .05, ** p < .01, *** p < .001 levels; two-tailed tests				

Figure 1: School attendance for children living with biological mother but not (still alive) biological father compared to living with both biological parents, with individual-level controls

black=advantage associated with father absence
dark grey=disadvantage associated with father absence
light grey=no significant difference in school attendance

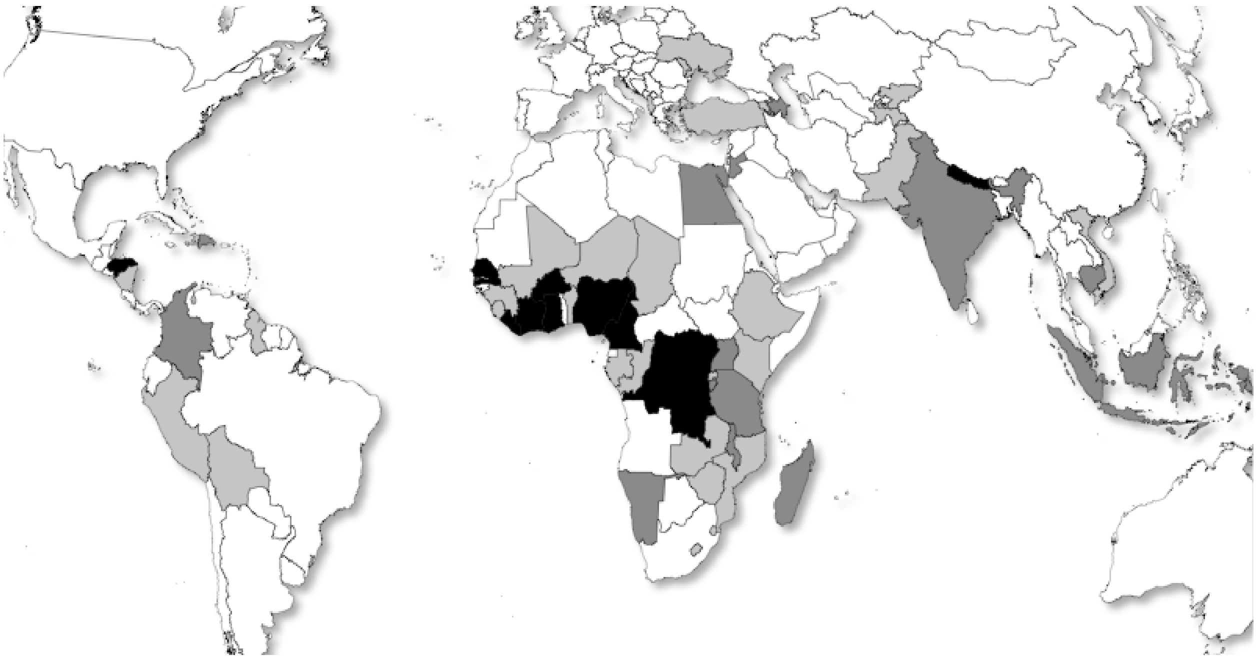

Figure 2: School attendance for children living with **sole mother** (when biological father is alive) compared to living with both biological parents, with individual-level controls

black=advantage associated with father absence
dark grey=disadvantage associated with father absence
light grey=no significant difference in school attendance

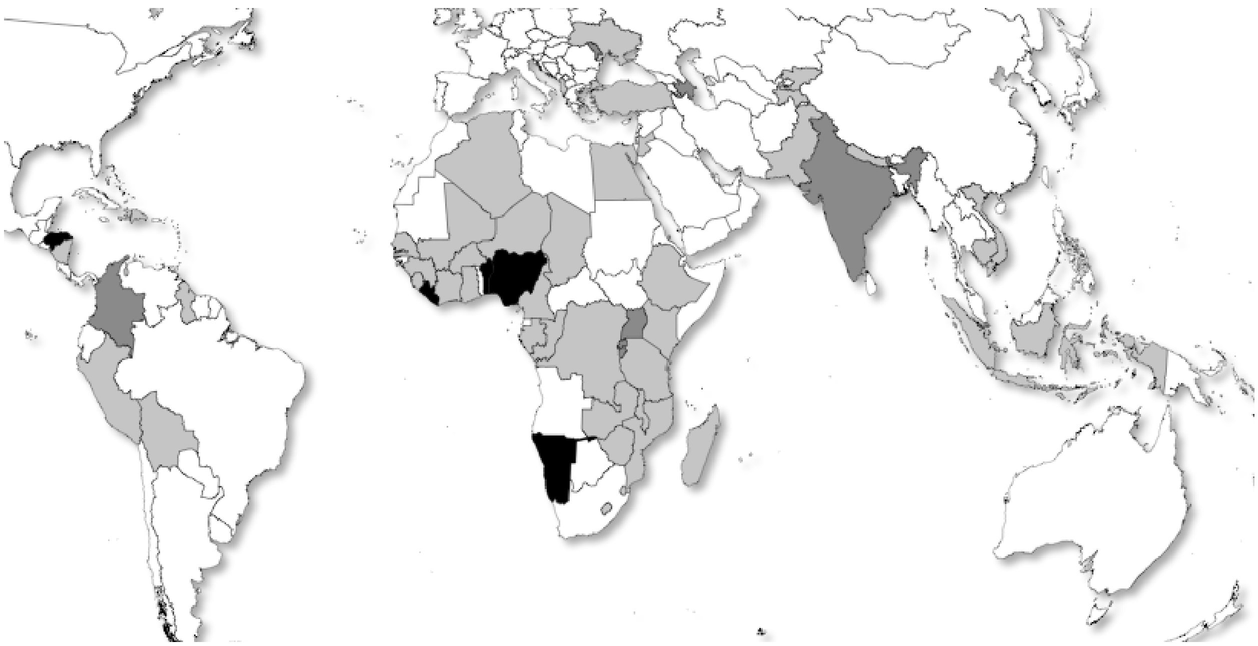

Figure 3: School attendance for children living with **mother & stepfather** (when biological father is alive) compared to living with both biological parents, with individual-level controls

black=advantage associated with father absence
dark grey=disadvantage associated with father absence
light grey=no significant difference in school attendance

Figure 4: School attendance for children living with **mother with absent partner** compared to living with both biological parents, with individual-level controls

black=advantage associated with father absence
dark grey=disadvantage associated with father absence
light grey=no significant difference in school attendance

Endnotes

[i] Evidence on actual effects of extended family in the household on schooling is mixed with positive effects in China (Falbo 1991, Zeng and Xie 2011), Malaysia (Mahaarcha and Kittisuksahit 2009), and Japan (Shirahase and Raymo 2013), but negative effects in Mexico (Binder 1995) and other parts of Latin America (De Vos 2000), and mixed evidence from South Africa (Argeseanu 2006, Anderson et al. 2001).

[ii] Kenya 2008-09 and Indonesia 2012 did not have information on the biological parents in the household roster, so I used earlier surveys.

[iii] 72% of children whose mothers had noncoresident partners had a mother who was in first union and the child was born during that union. Other noncoresident partners may also be biological fathers, i.e., children whose parents entered into union after their birth and children born to unions other than the first (dates of subsequent unions are not given in most DHS data). In preliminary analysis I compared the effects of absent fathers who were likely to be biological fathers and other absent fathers, and the differences were not statistically significant except in Mali and Timor-Leste, two of the four countries where having a noncoresident father/stepfather was associated decreased likelihood of school attendance; it was much more often associated with greater likelihood of school attendance.

[iv] I exclude children who are themselves not usual members of the household because who else is present may not be relevant for them. I also drop the 1030 children (0.13%) where the variable identifying the biological parent's line number on the household roster is missing.

[v] 1=poor floor, poor drinking water, and poor toilet

2=2 of the following (poor floor, poor drinking water, and poor toilet)

3=1 of the following (poor floor, poor drinking water, and poor toilet)

4=0 or 1 of the following (poor floor, poor drinking water, and poor toilet) and a radio

5=0 or 1 of the following (poor floor, poor drinking water, and poor toilet) and electricity

6=0 or 1 of the following (poor floor, poor drinking water, and poor toilet) and a television

7=0 or 1 of the following (poor floor, poor drinking water, and poor toilet) and a refrigerator

8=0 or 1 of the following (poor floor, poor drinking water, and poor toilet) and a car