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Jennifer Adams
Stanford University

Emily C. Hannum
University of Pennsylvania, hannumem@soc.upenn.edu

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Abstract

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Drawing on comparative and China-specific literature on gender and exclusion, we investigate several questions. First, do gender gaps favoring boys exist in enrollment, children's educational aspirations, and parental expectations? Second, are gender gaps in enrollment, aspirations, and parental expectations worse among the poorest children and families? Third, are girls' educational outcomes more sensitive to prior performance? Fourth, do characteristics of early homeroom teachers and early classroom experiences have different effects on outcomes for girls and boys? Our findings suggest that girls do not face substantially greater access barriers to basic education than do boys in much of rural Gansu.

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Girls in Gansu, China: Expectations and aspirations for secondary schooling

Emily Hannum and Jennifer Adams

Gender stratification in education is declining in China, but some recent research suggests that girls' schooling is still vulnerable in poor rural areas. This chapter investigates girls' educational vulnerability in Gansu, one of China's poorest provinces. Specifically, it analyzes the Gansu Survey of Children and Families, a multisite survey that interviewed 2,000 rural children, along with their families, teachers, principals, and community leaders, in 2000 (when children were 9–12) and 2004 (when children were 13–16).

Drawing on comparative and China-specific literature on gender and exclusion, we investigate several questions. First, do gender gaps favoring boys exist in enrollment, children's educational aspirations, and parental expectations? Second, are gender gaps in enrollment, aspirations, and parental expectations worse among the poorest children and families? Third, are girls' educational outcomes more sensitive to prior performance? Fourth, do characteristics of early homeroom teachers and early classroom experiences have different effects on outcomes for girls and boys? Our findings suggest that girls do not face substantially greater access barriers to basic education than do boys in much of rural Gansu.

Girls, boys, and educational access in China: historical context

Gender inequality in China has declined over the long term (Hannum and Xie 1994; Hannum 2005; Zhou, Moen, and Tuma 1998). Recent estimates from the China Health and Nutrition Survey on 12- to 18-year-olds in five provinces show substantial improvement in enrollment rates for both girls and boys between 1989 and 2000. In 1989, 58 percent of girls and 61 percent of boys were enrolled, and the gender gap was statistically significant. In 2000, 74 percent of girls and 76 percent of boys were enrolled, and the difference was not statistically significant (Hannum and others forthcoming).

Recent sociology and economic studies have examined patterns of gender difference in access to schooling (Michelson and Parish 2000; Hannum 2003, 2005; Brown and Park 2002; Connelly and Zheng 2003; Lavelly and others 1990). These studies suggest that by the 1990s gender disparities in China were concentrated in poor rural areas and among poor households, where the costs of education burden families, and children compete with siblings for educational resources (Connelly and Zheng 2003; Hannum 2003, 2005). In analyses of a multiprovince survey, Michelson and Parish (2000) show that girls living in suburban villages and villages with more nonfarm opportunities tend to stay in school longer. One study of only children in urban China finds no female disadvantage in parental spending on education, student achievement in math, and student educational aspirations (Tsui and Rich 2002).

But in rural settings evidence from the 1990s suggests that girls' schooling—more than boys' schooling—was sensitive to poverty, and that girls in poor areas need to show promise to remain in school (Brown and Park 2002; Hannum 2005). Recent evidence is mixed on whether girls remain at heightened risk in the most impoverished households. Among 12- to 18-year-olds in five provinces in the 2000 China Health and Nutrition Survey, striking disparities in enrollment are apparent by quartile on a scale of consumer items in the household—a 36 percentage point gap between average enrollment of girls in the lowest and highest quartiles. For boys the corresponding figure was 21 percentage points (Hannum and others forthcoming). The gender gap in enrollment was significant only among children in the poorest quartile. Moreover, while there was a significant years-of-schooling advantage for the wealthier 12- to 18-year-olds, there was no advantage for boys, overall or in any consumer item quartile.

A 2004 survey of more than 1,000 school-age children in a multiethnic county in Yunnan Province also paints a complex portrait of the community and family conditions that promote girls' schooling in rural areas (Davis and others 2007). Evidence from this study indicates that girls are more likely than boys of the same age to be in school, particularly after age 13. However, when children are placed in the context of their communities and households in the multivariate models, boys have a statistically significant advantage. The authors use the interaction of household and community variables with gender to explain why the social inclination to favor boys' enrollment

has been overcome in practice in this county. They find that household wealth matters more for girls than for boys. For girls a father with above-average education and past membership in the Communist Youth League facilitates enrollment, independent of household wealth. Girls and boys who live in more economically developed villages (as measured by the presence of a store or firm) are also more likely to be enrolled in school. In sum, these results suggest that when girls live with better educated fathers in wealthier households and communities, they are likely to stay in school.

Why do gender disparities exist? Social science theories

What factors explain gender differences in education, or the lack thereof, in rural China? Many of the issues commonly raised as barriers to girls' schooling in China have parallels elsewhere. In this section, we discuss theories of gender and educational attainment and consider how these theories may apply to China. We first consider theories about families and educational choices, then discuss the potential role of schools.

Families and educational choices

Both economic and cultural reasons have been used to explain why parents might choose to invest differently in sons and daughters. The most common approach to educational research in developing countries has been a family economy framework: Parents make decisions about schooling primarily or exclusively based on expectations of future returns to the household (for articulations of this view from anthropology and economics, see Mahmud and Amin 2006; Papanek 1985). In this framework parents treat education as an investment in their old-age security. Gender gaps (or the lack thereof) depend on whether social institutions create incentives for decisions that, while economically rational, discriminate against girls.

In this framework parental perceptions that girls are unlikely to succeed in the labor market can drive gender gaps. Some scholars have argued that reforms in China during the market transition of the 1980s and 1990s caused a "feminization of agriculture." Rural women were increasingly concentrated in agricultural occupations while men were more likely to have access to higher-paying rural industrial jobs, where educational credentials carried greater weight (Summerfield 1994; Wolf 1985). This lowered incentives to educate girls beyond a certain level. Michelson and Parish (2000) speculate that, because women are perceived as less able to contribute to family income (due to their concentration in farm work), families may not feel compelled to educate girls to the same level as boys.

That parents perceive worse employment prospects for rural girls than for their male counterparts is increasingly debatable, given the dramatic rise in migration to urban areas by young women and men seeking informal work. Li and Tsang (2005) suggest that the implications of migration for girls' education are mixed. Many

privately owned urban enterprises in the manufacturing and service sectors in coastal areas, as well as smaller factories and enterprises in townships and villages, have hired young female workers with limited education in recent years. However, both employers and young women often perceive this type of employment as temporary (before marriage). The possibility of labor migration may increase the perceived opportunity cost of educating daughters. At the same time, it also shifts incentives for parents, as girls' potential wages before marriage give rural households a return from their daughters.

A second important reason why parents may face rational incentives to give priority to sons' education occurs even in the absence of labor market segmentation—when marriage norms dictate that parents live with sons, making sons the primary source of old-age support. This situation is common in rural Asia (Mahmud and Amin 2006). In rural China girls typically marry out of households, while boys remain with their families (Li and Tsang 2005). As long as the tradition of coresidence with sons holds, parents face strong incentives to invest in sons as long-term insurance. Poverty may exacerbate incentives to invest differently in boys and girls. Research in a rural county in Yunnan Province indicates that expectations of support from sons are more pronounced among mothers in poorer, more remote rural areas (Li and Lavelly 2003).

Of course, parents in developing country settings are not motivated only by economic considerations. In rural Bangladesh Mahmud and Amin (2006) argue that marriage, more than a job, is the desired outcome of girls' education—parents are increasingly willing to invest in girls' education to secure a good marriage, despite the lack of direct economic returns to the household (Mahmud and Amin 2006; see also chapter 7 of this volume). Rothchild's (2006) fieldwork among families and teachers in a rural Nepalese village reveals that parents often speak of girls' education "in terms of their presumed current and future roles as daughters, wives, others, and daughters-in-law, rather than as a source of individual opportunity and empowerment." (Rothchild 2006, 106). In China, Li and Tsang (2005) suggest that, because a good marriage is more important than a good job for rural girls' long-term welfare, some parents may think more about maximizing the chances of a good marriage than about investing in long-term career options. These examples suggest the unsurprising conclusion that parental educational decisions go beyond a simple framework of family survival to include gender-specific considerations about how best to aid the child's life.

These examples also suggest that cultural norms—not just economic incentives—lead to different socialization of boys and girls. Research on determinants of educational attainment in the United States, without a prevalent norm of children as the main source of old-age support, views parental socialization as critical. One of the most widely cited models in sociology, the Wisconsin model of status attainment, emphasizes the crucial role of parents as socializing agents (Haller and Portes 1973). While tests of the Wisconsin model initially focused on males, later research traced

the role of parental and child aspirations for girls as well as boys (Wilson, Peterson, and Wilson 1993).

In this framework, parents' differing views about boys and girls and their job prospects color aspirations for and investments in boys and girls directly—not because parents expect more support from sons than daughters. One explanation for gender gaps is that culture leads directly to parents' discriminatory attitudes and practices, regardless of rationality. Investment and socialization decisions made by parents, and even the choices of children, are affected by cultural perspectives about essential gender abilities, rights, and roles. These cultural perspectives become reified in different educational choices.

This notion has been applied in educational studies in rural or isolated communities in the United States, where traditional family structures persist. Research in rural Appalachia the 1970s and 1980s suggests that the gender division of labor among adults shaped parental socialization and aspirations for children from an early age, leading to worse educational and occupational trajectories for girls (Hennon and Photiadis 1979; Wilson, Peterson, and Wilson 1993).

In rural China a traditional culture of son preference may still color parental decisions about the value of girls and their worthiness for educational investment. Ethnographic and demographic studies suggest that families retain a strong preference for sons (Banister 2004; Croll 2000). One recent study ties son preference in mothers directly to traditional culture. Analyzing a 1994 survey of women in a rural county in southwest China who bore children between 1991 and 1994, Li and Lavelly (2003) show that women in households that practice traditional ancestor worship express a stronger preference for sons. However, a preference for sons—undeniably still present—does not necessarily mean a strong preference for educating sons more than daughters. Recent studies attesting to son preference have used mainly demographic data, such as increasing gender ratios at birth and excess female mortality in early childhood (Banister 2004; Croll 2000). The daughter discrimination evident in demographic data is not mirrored in recent national education data.

To close this discussion of family choices and gender inequality in education, we highlight three important points. First, the economic and cultural sources of daughter discrimination are difficult to separate. Societies where parents find discrimination against girls economically rational tend to be societies with a culture of traditional gender norms. Culture plays a role even in the economic explanations for discrimination against girls. In theory a distinction can be made about whether parents choose to invest differently in boys and girls primarily because of the incentives they face or because they hold discriminatory attitudes. In practice parents may not know whether economic or normative forces affect their choices. Second, at least some parents in rural Asian settings, including rural China, still face both cultural and economic imperatives to invest in sons more than daughters. Whether parents continue to act on these old imperatives in their educational decisions in rural China is an open question.

Third, in a context where most children now have access to basic-level schooling (as in China), cultural biases or economic incentives may play out only (or primarily) among the poor, for whom economic circumstances dictate choices for children. Yet some of the most recent evidence calls into question the scope of girls' disadvantage even among the poor.

The role of schools

Children's experiences at school have been little studied in China, or in developing societies more broadly, as potential influences on persistence in school. Where the direct and opportunity costs of education are high and school access is not universal, a focus on the important role of parents in decisions about schooling is warranted. Yet interpreting schooling outcomes solely as the product of parental cost-benefit calculations may not tell the whole story. Studies in China, Ghana, and Kenya indicate that substantial numbers of school-leavers report disaffection or boredom with schooling as a significant contributor to their decision to leave (Blunch 2006; Buchmann 2000; Hannum and Adams 2006).

What experiences might lead children to leave? One potential factor is poor school performance. Performance may be linked to subsequent attainment directly, through high-stakes exams, or indirectly, by influencing parental decisions about investing in children's continued education or children's willingness to stay in school. Studies in rural China suggest that showing promise early may be particularly important for rural girls (Brown and Park 2002; Zhang, Kao, and Hannum 2007).

The environment at school may also matter for enrollment decisions. Lloyd, Mensch, and their colleagues consider the environment at school as a predictor of subsequent enrollment in Egypt and Kenya (Lloyd and Mensch 2000; Lloyd and others 2003; Mensch and Lloyd 1998; Mensch and others 2001). In Egypt their results show that the school environment is associated with the probability of school exit and grade attainment. The elements of school environment that matter include measures of school quality, such as time to learn, material resources, and teacher quality. Also important are aspects of school and classroom dynamics, particularly teacher treatment and attitudes (Lloyd and others 2003).

Lloyd and Mensch show that in Kenya girls' retention is linked to teacher gender attitudes, gender gaps in support given to students, and disciplinary climates permitting the harassment of girls (Lloyd and Mensch 2000). Reflecting on results in both Egypt and Kenya, the authors conclude that school attributes that matter for educational outcomes are context specific and may work differently for girls and boys (Lloyd and others 2003).

Little attention has been paid to how school experiences may matter for continued enrollment—particularly for girls. Findings from existing research suggest that this is a significant gap in our understanding of determinants of educational attainment in developing societies.

Does gender still matter for access to basic education?

To assess the effect gender has on access to basic education, we examine data from Gansu Province, the poorest province in China's poorest region (box 3.1). Drawing on comparative and China-specific research, we pose four sets of questions about the nature and sources of gender disparities in schooling:

1. Do gender gaps favoring boys exist in enrollment, children's aspirations, and parental expectations?
2. Are gender gaps in enrollment, child aspirations, and parental expectations concentrated in the poorest children and families? That is, do interactions with poverty exacerbate gender gaps in outcomes among the poorest children?
3. Are the educational outcomes of enrollment, child aspirations, and parental expectations more sensitive to prior performance for girls? That is, do girls need to show promise early to stay in school—to want to stay and to maintain support for staying from significant others?
4. Do teacher characteristics and classroom experiences affect enrollment and aspirations for girls and boys differently? Research in other countries suggests that girls and boys may have different sensitivities to negative aspects of school climate, such as disciplinary problems and teacher support. Are there gender interactions between variables measuring children's relationships with teachers and classroom disciplinary problems, on the one hand, and subsequent enrollment or the desire to stay in school, on the other? Do teacher background and education have different effects on boys and girls?

Measuring gender disparities and their sources

Our analysis includes education indicators, child aspirations, child and family background characteristics, family wealth, child age, child school performance, teacher characteristics, the teacher-child relationship, teacher expectations for the child, and the classroom environment (table 3.1). First, we examine whether the children enrolled in school in 2000 remained enrolled in school in 2004. We find that 87 percent of the students enrolled in 2000 were also enrolled in 2004.

Next we explore child aspirations. The aspirations measure specifies the highest level of schooling the child wants to complete (in years). The average desired schooling for the children in our sample who were enrolled in school in 2004 was high—14.4 years.

Because previous research suggests that parental attitudes play an important role in shaping both children's educational aspirations and schooling decisions, we

Box 3.1. The Gansu survey of children and families

Our analyses draw on a unique data set, the Gansu Survey of Children and Families. This multilevel survey was designed to increase understanding of rural children's schooling and welfare in the context of poverty. In China, poverty remains heavily concentrated in rural areas, and rural poverty is much more prevalent in the interior and western provinces than in the coastal provinces (Wang 2004). Gansu Province is one of China's poorest. In 2001 Gansu was ranked second-to-last among provinces in per capita GDP, at only 55 percent of the national average (Woo and Bao 2003). By China's official estimates, the poverty rate in Gansu was three times the national average, and Gansu was home to 6.6 percent of China's poor rural population (Wang 2004). Gansu stretches across parts of the Gobi desert, mountainous and hilly areas, and vast grasslands. Much of Gansu is mountainous or highland plateau, with an elevation of more than 1,000 meters. In 2000 Gansu Province had a population of 25.6 million, with 76 percent residing in rural areas (UNESCAP 2005).

Rural residents in Gansu work predominantly in subsistence farming or animal husbandry, earning an average annual per capita income only 63 percent of the national average in 2000 (Gansu Socioeconomic Development Report 2001). Gansu's rural poverty and illiteracy rates are among the highest in China (UNESCAP 2005; World Bank 2000).

Conducted in the summers of 2000 and 2004, the Gansu Survey of Children and Families surveyed 2,000 children 9 to 12 years old (in wave 1) in rural areas of 20 counties in Gansu Province, along with their families, teachers, principals, and village leaders (see map 1). The sample was drawn using a multistage, clustered design with random selection procedures employed at each stage (county, township, village, and child). At the final stage, children were sampled from birth records for the full cohort of 9- to 12-year-old children in 100 selected villages. The sample included only rural villages, not cities or townships. In China the urban-rural designation is official, clearly defined, and consequential for access to services. Drawing a sample of rural villages was therefore clear-cut. Our sample is broadly representative of rural Gansu in incomes: the per capita incomes of 46 percent of the households in our sample (920 households) were above the provincial average. The remaining 54 percent of households (1,080 households) had incomes below the provincial average (Gansu Statistics Bureau n.d.).

Map 1. Gansu Province, sample counties labeled

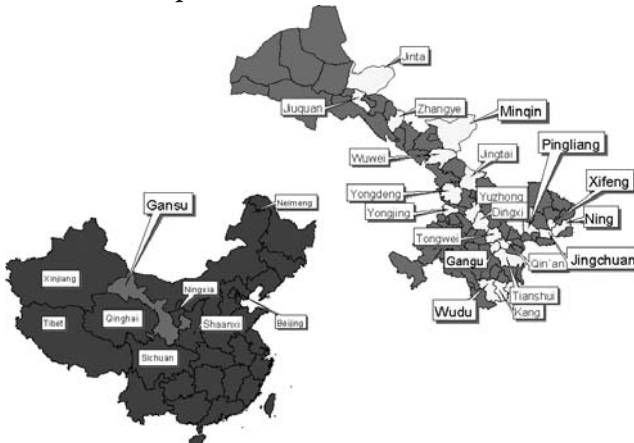


Table 3.1. Descriptive statistics for variables used in the analysis

Variable	Mean	Standard deviation	Number of observations
<i>Educational indicators 2004</i>			
Percentage of students enrolled in 2000 still enrolled	86.70	0.34	1,918
Child's aspirations for educational attainment (years of schooling)	14.40	2.43	1,761
Mother's expectations for child's educational attainment (years of schooling)	13.11	2.93	1,668
Father's expectations for child's educational attainment (years of schooling)	12.86	3.16	1,749
<i>Child characteristics, 2000</i>			
Gender (0 = female, 1 = male)	0.53	0.50	1,918
Log of family wealth (log of yuan)	9.18	0.94	1,918
Child's age in years (2004)			1,918
13	0.19	0.39	
14	0.29	0.46	
15	0.28	0.45	
16	0.22	0.42	
Prior mathematics grade	73.89	14.65	1,880
<i>Parental characteristics, 2000</i>			
Mother's education (years of schooling)	4.12	3.49	1,916
Father's education (years of schooling)	6.95	3.52	1,917
Mother's expectations for child's educational attainment (years of schooling)	11.99	2.88	1,862
<i>Child reports of teacher closeness, 2000</i>			
Teacher pays attention to me			1,918
Totally disagree	0.10	0.30	
Disagree	0.24	0.43	
Agree	0.39	0.49	
Totally agree	0.26	0.44	
Teacher likes me			1,918
Totally disagree	0.05	0.22	
Disagree	0.15	0.35	
Agree	0.49	0.50	
Totally agree	0.31	0.46	

(continued)

Table 3.1. Descriptive statistics for variables used in the analysis (continued)

Variable	Mean	Standard deviation	Number of observations
<i>Classroom teacher characteristics, 2000</i>			
Teacher's gender (0 = female, 1 = male)	0.65	0.48	1,884
Local teacher (native to the village) (0 = no, 1 = yes)	0.39	0.49	1,918
Teacher's education (0 = not a university graduate, 1 = university graduate)	0.23	0.43	1,918
Teacher's expectations for child's educational attainment (years of schooling)	11.13	2.92	1,898
<i>Classroom environment, 2000</i>			
Disruptive environment scale 2000 (1–3)	1.89	0.45	1,822

Source: Gansu Survey of Children and Families (2000, 2004).

investigate whether there are differences by child's gender in parental expectations (for mothers and fathers) for the highest level of schooling they think the child can complete (in years).¹ In 2000 our sample mean for mothers' expectations was 13.1 years, while the mean for fathers' expectations was 12.9 years. We also consider child and family background characteristics. We include child gender to investigate whether there are differences between girls and boys in the educational indicators described above.

We include family wealth because prior research connects financial resources in the home to schooling in rural China (Brown and Park 2002; Bray, Ding, and Huang 2004). The sample average value for the log of family wealth is 9.18, with a standard deviation of 0.94. We also use mothers' and fathers' education to control for human capital in the home. We use mothers' expectations in 2000 to examine whether these attitudes condition subsequent student enrollment. We also include a categorical control variable for child's age to allow for potential nonlinearity.

Because school performance may link directly and indirectly to subsequent educational outcomes, we also control for prior grades in mathematics. This variable is included because research on rural China suggests that academic performance is associated with school retention (Brown and Park 2002).

While teacher effects on student outcomes have been the subject of controversy in the academic literature, previous research indicates that some teacher characteristics matter for student achievement (Goldhaber and Brewer 1999; Ferguson and Ladd 1996). On average, students with better teachers score higher on standardized

¹ This item measures parental expectations for schooling. A different question asked them about wishes or aspirations for schooling for their child.

tests. Rivkin and others (1998) conclude that teacher quality is the most important determinant of school quality.

While researchers generally agree that teachers matter, empirical findings have not clearly identified the specific characteristics that affect student achievement. In our analyses, we investigate teacher characteristics that may be important in rural China.

We also describe characteristics of the child's classroom teacher. In our sample 39 percent of students have a classroom teacher native to the village. Having a native teacher may promote a positive student-teacher relationship in the classroom, or it may be a proxy for stability.

Because previous research suggests that teacher education sometimes matters (Murnane 1975), we control for teacher education (completion of university). In addition, we include the classroom teacher's gender in the analyses. In our sample 65 percent of students are taught by male teachers.

Research by Lloyd and others (2003) suggests that teacher treatment and attitudes may matter for subsequent enrollment. We include two direct measures of the child-teacher relationship from the child's perspective: teacher attention and teacher friendliness. Both measures are categorical variables that record the child's perception of whether "the teacher pays attention to me" and "the teacher likes me." Many students do not feel that they have a positive relationship with their teachers: 34 percent disagree with the statement "the teacher pays attention to me," while 20 percent disagree with the statement "the teacher likes me." We also examine whether teacher expectations—the number of years of schooling that teachers anticipate children will complete—matter for subsequent outcomes.

Research in diverse settings has linked school environment to many educational outcomes, including academic engagement, achievement, and student behavior (As-tor and others 1999; Noguera 1995; Goyette and Conchas 2002; Parcel and Dufur 2001). To measure this effect, a classroom environment scale, ranging from 1 to 3, was constructed by summing student responses to five questions on cheating, teasing, fighting, and general disruption in their classroom environment and dividing by the number of questions. For each of the questions, respondents could answer 1 (never), 2 (sometimes), and 3 (often). The internal consistency of the scale is satisfactory (Cronbach's alpha = 0.71) (see annex for details). We focus on disruption because recent work highlights classroom disruption as a key impediment to learning (Baker and LeTendre 2005). There have been no attempts to quantify classroom climate in the literature on schooling in China.

How different are girls' and boys' outcomes in rural Gansu?

In 2000 almost all children surveyed were enrolled in school; by 2004 about 87 percent were still enrolled (84 percent of girls and 89 percent of boys). Among children enrolled in school, a slightly greater percentage of boys aspire to complete postsecondary

Table 3.2. Educational indicators in Gansu Province, China by gender, 2000 and 2004

Item	Female (percent)	Male (percent)	χ^2
<i>Enrollment rate, 2000</i>			
Enrolled	98.1	99.5	10.54***
Not enrolled	1.9	0.5	
<i>Enrollment rate, 2004</i>			
Enrolled	84.4	88.8	7.85***
Not enrolled	15.6	11.2	
<i>Child's aspirations for educational attainment, 2004 (years of schooling)</i>			
6 years	2.5	1.0	15.87***
9 years	6.0	7.2	
11 years	4.3	2.5	
12 years	15.0	14.9	
14 years	8.2	9.4	
16 years	64.0	65.4	
<i>Mother's expectations of child's educational attainment, 2004 (years of schooling)</i>			
6 years	0.8	0.6	11.74**
9 years	18.4	12.8	
12 years	39.9	40.0	
16 years	40.1	45.6	
<i>Father's expectations of child's educational attainment, 2004 (years of schooling)</i>			
6 years	3.7	1.5	25.54***
9 years	18.6	17.6	
12 years	39.8	33.6	
16 years	36.6	46.6	

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

Source: Gansu Survey of Children and Families (2000, 2004).

schooling. Although these gender differences in aspirations are statistically significant, they are very absolutely small (table 3.2).

Mothers have higher expectations of boys: about 46 percent of mothers of boys and 40 percent of mothers of girls expect their children to achieve higher education (16 years), while about 18 percent of mothers of girls and 13 percent of mothers of boys expect their children to stop schooling after middle school. Fathers also have higher educational expectations for boys, with the percentage of fathers who expect their sons to

Table 3.3. Educational indicators in Gansu Province, China, by gender and wealth quintiles, 2004

Item	Poorest quintile family wealth			Top four quintiles of family wealth		
	Female (percent)	Male (percent)	χ^2	Female (percent)	Male (percent)	χ^2
Enrollment rate	81.0	83.7	0.47	85.3	89.8	7.66***
Number enrolled	158	159		597	743	
Number not enrolled	37	31		103	84	
<i>Child's aspirations for educational attainment (years of schooling)</i>						
6 years	6.3	1.8	11.05*	1.4	0.4	14.32**
9 years	5.7	11.8		6.2	6.2	
11 years	1.7	3.5		5.1	2.3	
12 years	17.6	14.7		14.4	4.9	
14 years	10.8	7.1		7.4	9.9	
16 years	58.0	61.2		65.6	66.3	
<i>Mother's expectations for child's educational attainment (years of schooling)</i>						
6 years	1.9	1.3	9.60**	0.5	0.5	4.93
9 years	30.3	15.9		15.5	12.3	
12 years	40.0	51.7		40.2	38.1	
16 years	27.8	31.1		43.8	49.1	
<i>Father's expectations for child's educational attainment (years of schooling)</i>						
6 years	9.1	3.6	7.40*	2.4	1.0	15.15***
9 years	24.3	23.2		17.4	16.6	
12 years	43.0	39.3		39.6	32.6	
16 years	23.6	33.9		40.6	49.8	

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

Source: Gansu Survey of Children and Families (2004).

complete university 10 percentage points higher than the percentage who expect their daughters to do so. So, on our first research question, gender gaps in enrollment are modest and gaps in aspirations small. Gender gaps in parental expectations are more pronounced, but parents hold high educational expectations for both girls and boys.

We next consider whether gender disparities are more pronounced under conditions of extreme poverty. In 2004 about 84 percent of the poorest boys and 90 percent of all other boys in the survey were enrolled in school (table 3.3). About 81 percent of the poorest girls and 85 percent of all other girls were enrolled. Poor girls are the most

disadvantaged. However, contrary to expectations, the gender gap in enrollment is not worse among the poorest children.² For children's aspirations, gender differences are marginally significant for the poorest children and conventionally significant for the larger sample of other children. Only for the poorest do mothers' expectations vary significantly by child gender. Fathers' expectations differ by gender of child marginally among the poorest and significantly among other groups. On our second research question, our bivariate findings suggest that the story is mixed regarding whether girls' disadvantage is more pronounced among the poorest children. For maternal expectations the answer appears to be yes, but our findings are inconsistent for other outcomes.

What factors affect girls' and boys' educational outcomes?

To address the remaining research questions and confirm the descriptive findings in a multivariate context, we turn to models of student outcomes in 2004, using year-2000 predictors. First, we conduct multivariate analyses of enrollment. Next, for those enrolled, we model children's aspirations and parents' expectations in 2004. All models include child's age, as reported in 2004, and gender. We also include a series of predictors from 2000. All models include measures of logged family wealth, mother's educational background (or father's educational background, in the case of models of father's expectations), child's math performance, and measures of the homeroom teacher's gender, educational background, local status, and educational expectations for the child (expected years of schooling). In models of aspirations and enrollment, we also include reports on whether children think that the teacher likes and pays attention to them, as well as the teacher's and mother's educational plans (expected years of schooling) for the child. In models of enrollment, we also add the scale of disciplinary disruptions in the classroom. Across outcomes, we show results with and without fixed effects for villages. For each outcome, we investigate research questions 2–4 by looking for gender interactions with wealth, prior performance, and teacher and classroom characteristics.

Enrollment. We predict enrollment using a series of variables measuring the child's age and gender; logged household wealth; the mother's educational attainment and educational expectations for the child; the teacher's educational background, local versus nonlocal status, gender, and educational expectations for the child; the child-reported relationship with the teacher and the child-reported classroom environment; and, in a final specification, village fixed effects (table 3.4). We then test for gender interactions with wealth, prior performance (measured as math performance), classroom climate, and teacher characteristics.

A standard main effects model, model 1 includes only background characteristics of the child (including prior performance) and teacher. This model shows that being younger, wealthier, male, from a family with a more educated mother, and better at math are associated with higher enrollment. This model confirms a significant

² This result is consistent with the findings for Bangladesh presented in chapter 7.

enrollment disadvantage for girls: the odds ratio associated with being male is 1.42, meaning that boys are 42 percent more likely than girls to be enrolled in school, other things equal. None of the teacher characteristics is significant in this specification.

Model 2 is a different main effects specification that adds measures of attitudes and expectations not typically included in economic models of school outcomes (though some of these concepts are common in sociological models of status attainment). These additions set up the model for gender interactions that test our hypotheses. This model shows that older children, poorer children, and children with less educated mothers are less likely to be in school. Having a mother or a teacher with higher expectations in 2000 also significantly predicts enrollment. Net of these factors, there are marginally significant positive effects for being male and scoring better in math.

To test our second research question, model 3 adds to model 2 an interaction between gender and logged wealth. This addition significantly improves model fit ($\Delta - 2LL = 3.872$, d.f. = 1, $p < .05$), and shows that it is consistent with the descriptive tables but counter to our prior expectations: boys' enrollment is more sensitive than girls' enrollment to wealth.

Models 4–6 test for gender interactions with prior performance, classroom climate, and teacher factors—none of these significantly improves model fit. In other words, our evidence suggests that these factors do not have different effects on girls' and boys' subsequent enrollment.³ Model 7 adds village fixed effects to the preferred specification (model 3, the wealth interaction model). However, because there are villages where all children are enrolled, the estimation sample includes only the 84 villages with variability in enrollment. Re-estimating model 3 using this estimation sample reveals that the addition of villages significantly improves model fit ($\Delta - 2LL = 116.99$, d.f. = 82, $p < .01$).

Incorporating village fixed effects does not change the story from model 3, except that the wealth and gender interaction becomes only marginally significant. The only changes in model 7 are that classroom climate is a significant predictor of enrollment in villages with variability in enrollment, and math performance changes from marginally to conventionally significant.

Child aspirations. For the remainder of the outcomes considered here, we face a selection problem: observations are present only for children who remained enrolled. We bear this problem in mind in interpreting our results.

Model 1, the standard main effects model, shows that for enrolled children in 2004, math performance and mothers' education are the significant predictors (table 3.5). Logged wealth is only marginally significant. There is no advantage for boys.

3 Other analyses of the Gansu data using different specifications and separating the sample by sex show that prior math achievement is significant in models of persistence only in the girls' subsample, though effect magnitudes are similar in the girl and boy samples (Zhang, Kao, and Hannum 2007). That analysis also showed a number of other factors that mattered only in one of the two sex-specific subsamples.

Table 3.4. Estimates of enrollment in Gansu Province, 2004

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Independent variable	Standard main effects	Main effects	Poverty	Show promise	Class-room environment	Teacher-child relationship	Village fixed effects
Constant	-0.12 (0.87)	-0.39 (1.06)	0.91 (1.26)	-0.75 (1.11)	-0.50 (1.11)	-0.52 (1.15)	-1.12 (1.63)
Age 14	-0.84** (0.37)	-0.85** (0.37)	-0.83* (0.37)	-0.86** (0.37)	-0.84** (0.37)	-0.84** (0.38)	-0.86** (0.40)
Age 15	-1.98*** (0.35)	-1.96*** (0.35)	-1.96** (0.35)	-1.96*** (0.35)	-1.95*** (0.35)	-1.97*** (0.35)	-2.13*** (0.38)
Age 16	-2.56*** (0.34)	-2.63*** (0.35)	-2.64** (0.35)	-2.64*** (0.35)	-2.63*** (0.35)	-2.65*** (0.35)	-2.97*** (0.38)
Child is male	0.35** (0.15)	0.29 (0.16)	-2.60* (1.48)	1.07 (0.74)	0.51 (0.69)	0.45 (0.99)	-2.56 (1.67)
Log wealth	0.23*** (0.08)	0.19** (0.09)	0.04 (0.12)	0.19** (0.09)	0.19** (0.09)	0.20** (0.09)	0.08 (0.14)
Mother's years of schooling	0.06** (0.02)	0.05* (0.02)	0.05** (0.02)	0.05** (0.02)	0.05** (0.02)	0.05** (0.02)	0.03 (0.03)
Mother's expectations for child's schooling, 2000		0.09** (0.03)	0.09*** (0.03)	0.09*** (0.03)	0.09*** (0.03)	0.09*** (0.03)	0.12*** (0.04)
Child's math achievement, 2000	0.02*** (0.01)	0.01* (0.01)	0.01* (0.01)	0.02** (0.01)	0.01* (0.01)	0.01* (0.01)	0.02** (0.01)
Classroom environment, 2000		-0.29 (0.18)	-0.28 (0.18)	-0.28 (0.18)	-0.23 (0.24)	-0.30* (0.18)	-0.56** (0.22)
Teacher is male	-0.08 (0.17)	-0.07 (0.17)	-0.07 (0.17)	-0.07 (0.17)	-0.06 (0.17)	-0.10 (0.24)	-0.15 (0.23)
Teacher is local	-0.27* (0.16)	-0.26 (0.17)	-0.27 (0.17)	-0.26 (0.17)	-0.26 (0.17)	-0.20 (0.22)	-0.13 (0.23)
Teacher's expectations for child's schooling, 2000		0.07** (0.03)	0.08** (0.03)	0.08** (0.03)	0.07** (0.03)	0.06 (0.04)	0.11*** (0.04)
Teacher is university graduate	-0.28 (0.18)	-0.29 (0.18)	-0.29 (0.18)	-0.28 (0.18)	-0.29 (0.18)	-0.29 (0.18)	-0.38* (0.23)
<i>Teacher likes me</i>							
Disagree		0.32 (0.37)	0.36 (0.37)	0.30 (0.37)	0.32 (0.37)	0.06 (0.50)	0.30 (0.44)
Agree		0.26 (0.333)	0.29 (0.334)	0.26 (0.33)	0.26 (0.33)	0.43 (0.45)	0.24 (0.40)
Totally agree		0.20 (0.35)	0.21 (0.35)	0.20 (0.35)	0.21 (0.35)	0.36 (0.46)	0.31 (0.41)
<i>Teacher pays attention to me</i>							
Disagree		-0.01 (0.31)	-0.01 (0.31)	-0.03 (0.31)	-0.01 (0.30)	0.23 (0.40)	0.13 (0.34)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Independent variable	Standard main effects	Main effects	Poverty	Show promise	Class-room environment	Teacher-child relationship	Village fixed effects
Agree		-0.26 (0.28)	-0.25 (0.28)	-0.28 (0.28)	-0.26 (0.28)	-0.11 (0.38)	-0.28 (0.32)
Totally agree		0.04 (0.30)	0.05 (0.30)	0.02 (0.30)	0.05 (0.30)	-0.01 (0.40)	0.07 (0.35)
Log wealth × child's gender			0.32** (0.16)				0.33* (0.18)
Math × child's gender				-0.01 (0.01)			
Class environment × child's gender					-0.11 (0.35)		
<i>Teacher likes me</i>							
Disagree × child's gender						0.60 (0.77)	
Agree × child's gender						-0.44 (0.68)	
Totally agree × child's gender						-0.42 (0.70)	
<i>Teacher pays attention to me</i>							
Disagree × child's gender						-0.59 (0.63)	
Agree × child's gender						-0.35 (0.58)	
Totally agree × child's gender						0.07 (0.62)	
Teacher's expectations × child's gender						0.03 (0.05)	
Teacher gender × child's gender						0.08 (0.35)	
Teacher local × child's gender						-0.08 (0.33)	
Village fixed effects	No	No	No	No	No	No	Yes**
Neg 2 log likelihood	1,178.9	1,151.1	1,147.2	1,149.9	1,151.0	1,143.2	956.0
Pseudo R ²	.13	.15	.16	.16	.15	.16	.25

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

Note: Number of observations for all models except model 7 = 1,817. Number of observations for model 7 = 1,509. Figures in parentheses are standard errors.

Source: Gansu Survey of Children and Families (2000, 2004).

Table 3.5. Estimates of educational aspirations in Gansu Province, 2004

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Independent variable	Standard main effects	Main effects	Poverty	Show promise	Teacher-child relationship	Preferred model	Village fixed effects
Constant	11.07*** (0.67)	10.94*** (0.75)	10.99*** (0.98)	10.71*** (0.82)	11.10*** (0.85)	11.30*** (0.75)	11.21*** (0.81)
Age 14	0.11 (0.16)	0.10 (0.16)	0.10 (0.16)	0.10 (0.16)	0.10 (0.16)	0.10 (0.16)	0.09 (0.16)
Age 15	0.07 (0.17)	0.07 (0.17)	0.07 (0.17)	0.07 (0.17)	0.09 (0.17)	0.08 (0.17)	-0.03 (0.17)
Age 16	0.07 (0.18)	0.03 (0.18)	0.03 (0.18)	0.02 (0.18)	0.04 (0.18)	0.03 (0.18)	0.01 (0.19)
Child is male	0.16 (0.12)	0.12 (0.12)	0.03 (1.17)	0.54 (0.62)	0.08 (0.75)	-0.38* (0.20)	-0.32 (0.20)
Log wealth	0.13* (0.07)	0.10 (0.07)	0.10 (0.10)	0.10 (0.07)	0.09 (0.07)	0.09 (0.07)	0.09 (0.08)
Mother's years of schooling	0.05*** (0.02)	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)	0.04** (0.02)	0.01 (0.02)
Mother's expectations for child's schooling, 2000		0.05** (0.02)	0.05** (0.02)	0.05** (0.02)	0.04* (0.02)	0.04** (0.02)	0.04* (0.02)
Child's math achievement, 2000	0.02*** (0.00)	0.02*** (0.01)	0.02*** (0.01)	0.02*** (0.01)	0.02*** (0.01)	0.02*** (0.01)	0.02*** (0.01)
Teacher is male	0.23* (0.13)	0.22* (0.13)	0.22* (0.13)	0.22* (0.13)	-0.19 (0.19)	-0.20 (0.18)	-0.01 (0.20)
Teacher is local	-0.05 (0.13)	-0.02 (0.13)	-0.02 (0.13)	-0.02 (0.13)	-0.11 (0.18)	-0.02 (0.13)	-0.06 (0.15)
Teacher's expectations for child's schooling, 2000		0.06*** (0.02)	0.06*** (0.02)	0.06*** (0.02)	0.09*** (0.03)	0.06*** (0.02)	0.07*** (0.03)
Teacher is university graduate	0.11 (0.15)	0.12 (0.15)	0.12 (0.15)	0.11 (0.15)	0.13 (0.20)	0.12 (0.15)	0.18 (0.16)
<i>Teacher likes me</i>							
Disagree		0.19 (0.29)	0.19 (0.29)	0.19 (0.29)	0.03 (0.45)	0.19 (0.29)	0.21 (0.29)
Agree		-0.04 (0.26)	-0.04 (0.26)	-0.04 (0.26)	-0.30 (0.41)	-0.06 (0.26)	0.00 (0.26)
Totally agree		-0.07 (0.27)	-0.07 (0.27)	-0.08 (0.27)	-0.17 (0.41)	-0.09 (0.27)	-0.05 (0.27)
<i>Teacher pays attention to me</i>							
Disagree		-0.30 (0.22)	-0.30 (0.22)	-0.30 (0.22)	-0.34 (0.32)	-0.29 (0.22)	-0.19 (0.22)
Agree		-0.26 (0.21)	-0.26 (0.21)	-0.26 (0.21)	-0.06 (0.30)	-0.25 (0.21)	-0.18 (0.21)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Independent variable	Standard main effects	Main effects	Poverty	Show promise	Teacher-child relationship	Preferred model	Village fixed effects
Totally agree		-0.11 (0.22)	-0.11 (0.22)	-0.12 (0.22)	0.09 (0.32)	-0.12 (0.22)	-0.15 (0.22)
Log wealth × child's gender			0.01 (0.13)				
Math × child's gender				-0.01 (0.01)			
Teacher gender × child's gender					0.77*** (0.25)	0.77*** (0.24)	0.66*** (0.24)
Teacher local × child's gender					0.17 (0.25)		
Teacher's expectations × child's gender					-0.05 (0.04)		
Teacher's education × child's gender					-0.01 (0.28)		
<i>Teacher likes me</i>							
Disagree × child's gender					0.29 (0.59)		
Agree × child's gender					0.43 (0.54)		
Totally agree × child's gender					0.10 (0.55)		
<i>Teacher pays attention to me</i>							
Disagree × child's gender					0.08 (0.44)		
Agree × child's gender					-0.38 (0.41)		
Totally agree × child's gender					-0.39 (0.43)		
Village fixed effects	No	No	No	No	No	No	Yes***
R ²	.04	.05	.05	.05	.06	.05	.18

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

Note: Number of observations for all models = 1,680. Figures in parentheses are standard errors.

Source: Gansu Survey of Children and Families (2000, 2004).

The lack of a gender effect, and the marginal wealth effect, may be linked to the selection issue—the most vulnerable children are already out of school and thus do not contribute to the model.

Model 2, the extended main effects model, shows that the same variables—mothers' education and math scores—still matter, but that mothers' expectations and teachers' expectations in 2000 matter for children's aspirations in 2004, net of performance and other factors in the model. The coefficients imply that an additional year of mother or teacher expectations is about as beneficial as an additional year of mother education. This finding suggests that children benefit from having significant others with high expectations. We acknowledge, however, that the expectations measures could be partly based on unmeasured, additional information about student capabilities.

Having a male teacher has a marginally significant positive effect. Subsequent models testing interactions show only one significant result: a significant positive effect for males paired with male teachers. This interaction is robust to the inclusion of village fixed effects in model 7; the addition of village fixed effects substantially improves the explanatory power of the model ($R^2 = .18$, compared with $R^2 = .05$ for model 5, without fixed effects). With fixed effects incorporated, mothers' education becomes insignificant and mothers' expectations become marginal.

Parental expectations. What factors influence the educational plans of parents—important decisionmakers in the theoretical frameworks described above? We begin with mothers (table 3.6). The standard main effects model (model 1) includes measures of age, gender, logged wealth, mother's education, math performance, and teacher's gender, local status, and education. It shows that math performance, mothers' education, wealth, and gender predict mothers' expectations. Older children who remain in school also have mothers with higher expectations, though this effect may be an artifact of selection.

Model 2 adds teacher's expectations for the child in 2000. It shows that mothers of children whose teachers had high expectations for them in 2000 have significantly higher expectations for their children in 2004. Among the gender interactions tested, only wealth is marginally significant. The wealth interaction suggests that expectations for boys' education may be less susceptible to wealth than expectations for girls. This result is consistent with prior expectations about the nature of gender-poverty interactions. Tests of other gender interactions—with achievement and with relationships with teachers—have no significant findings. In the final fixed effects specification the gender-wealth interaction is statistically significant at conventional levels.

We estimate parallel models for fathers' expectations (table 3.7). The same caveat as above applies here: these results pertain to parents whose children were still in school. A slightly different picture emerges in the main effects specification (model 1).

Table 3.6. Estimates of mothers' expectations for children's educational attainment, Gansu Province, 2004

Independent variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	Standard main effects	Main effects	Poverty	Show promise	Teacher-child relationship	Village fixed effects
Constant	6.73*** (0.80)	6.61*** (0.80)	5.20*** (1.09)	6.99*** (0.90)	6.59*** (0.87)	6.70*** (1.12)
Age 14	0.13 (0.19)	0.12 (0.19)	0.11 (0.19)	0.12 (0.19)	0.12 (0.19)	0.10 (0.19)
Age 15	0.17 (0.20)	0.15 (0.20)	0.15 (0.20)	0.15 (0.20)	0.16 (0.20)	0.26 (0.20)
Age 16	0.53** (0.22)	0.48** (0.22)	0.48** (0.22)	0.49** (0.22)	0.49** (0.22)	0.55** (0.21)
Child is male	0.34** (0.14)	0.31** (0.14)	2.95** (1.40)	-0.36 (0.75)	0.43 (0.59)	3.10** (1.35)
Log wealth	0.27*** (0.08)	0.26*** (0.08)	0.41*** (0.11)	0.26*** (0.08)	0.25*** (0.08)	0.35*** (0.12)
Mother's education (years)	0.08*** (0.02)	0.08*** (0.02)	0.08*** (0.02)	0.08*** (0.02)	0.07*** (0.02)	0.03 (0.02)
Child's math achievement, 2000	0.04*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.02*** (0.01)
Teacher is male	0.15 (0.15)	0.14 (0.15)	0.15 (0.15)	0.14 (0.15)	-0.08 (0.22)	0.21 (0.17)
Teacher is local	-0.13 (0.15)	-0.13 (0.15)	-0.13 (0.15)	-0.13 (0.15)	-0.10 (0.22)	0.13 (0.17)
Teacher's expectations of child's schooling, 2000		0.10*** (0.03)	0.10*** (0.03)	0.10*** (0.03)	0.11*** (0.04)	0.12*** (0.03)
Teacher is university graduate	0.12 (0.17)	0.13 (0.17)	0.12 (0.17)	0.13 (0.17)	0.23 (0.24)	-0.20 (0.19)
Log wealth × child's gender			-0.29* (0.15)			-0.31* -0.15
Math × child's gender				0.01 (0.01)		
Teacher's gender × child's gender					0.41 (0.30)	
Teacher local × child's gender					-0.08 (0.30)	

(continued)

Table 3.6. Estimates of mothers' expectations for children's educational attainment, Gansu Province, 2004 (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Independent variable	Standard main effects	Main effects	Poverty	Show promise	Teacher-child relationship	Village fixed effects
Teacher's expectations × child's gender					-0.03 (0.05)	
Teacher's education × child's gender					-0.20 (0.34)	
Village fixed effects	No	No	No	No	No	Yes**
R ²	0.08	0.09	0.09	0.09	0.09	0.26

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

Note: Number of observations for all models = 1,629. Figures in parentheses are standard errors.

Source: Gansu Survey of Children and Families (2000, 2004).

As in the case of mothers, fathers with higher expectations are better educated, wealthier, and more likely to have sons than daughters. Additionally, model 2 shows that fathers of children whose teachers had high expectations for them in 2000 also have higher expectations for their children in 2004. Unlike for mothers, age is associated with reduced expectations for fathers. Fathers whose child's earlier teacher was a local also have lower expectations. One possible interpretation is that father's expectations are sensitive to perceptions of school quality—and that fathers associate local teachers with poor quality.

And unlike for mothers there is no wealth interaction with child gender for fathers. There are significant interactions with earlier math performance and teacher gender, suggesting that father's expectations respond more strongly to sons' math performance than to daughters'. Both of these findings are robust to the inclusion of village fixed effects in model 7—an addition that substantially improves model explanatory power. One possible explanation for the unexpected gender-performance interaction finding is that fathers of boys who are not performing well in school prefer them to work. This interpretation may hold if the opportunity costs for girls are perceived to be low. Fathers may respond more favorably to pairing sons with male teachers because they believe that male teachers provide role models for boys or because they perceive male teachers as higher quality. One anomalous finding occurs in model 7: having a university-educated teacher has a significant negative effect on fathers' expectations. This anomaly requires further scrutiny.

Table 3.7. Estimates of fathers' expectations of children's educational attainment, Gansu Province, 2004

Independent variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
	Standard main effects	Main effects	Poverty	Show promise	Teacher	Preferred model	Village fixed effects
Constant	5.01*** (0.80)	4.80*** (0.80)	5.26*** (1.10)	5.73*** (0.89)	5.58*** (0.86)	6.12*** (0.90)	8.52*** (0.95)
Age 14	-0.33 (0.21)	-0.35* (0.21)	-0.35* (0.21)	-0.34* (0.21)	-0.36* (0.21)	-0.34 (0.21)	-0.37* (0.20)
Age 15	-0.61*** (0.21)	-0.64*** (0.21)	-0.64*** (0.21)	-0.64*** (0.21)	-0.62*** (0.21)	-0.62*** (0.21)	-0.59*** (0.20)
Age 16	-0.49** (0.22)	-0.53** (0.22)	-0.530** (0.22)	-0.53** (0.22)	-0.51** (0.22)	-0.51** (0.22)	-0.52** (0.21)
Child is male	0.54*** (0.14)	0.51*** (0.14)	-0.33 (1.41)	-1.16 (0.72)	-0.77 (0.59)	-1.78** (0.76)	-1.28* (0.72)
Log wealth	0.45*** (0.08)	0.42*** (0.08)	0.37*** (0.11)	0.42*** (0.08)	0.41*** (0.08)	0.41*** (0.08)	0.20** (0.09)
Father's education (years)	0.98*** (0.02)	0.09*** (0.02)	0.09*** (0.02)	0.09*** (0.02)	0.09*** (0.02)	0.08*** (0.02)	0.05** (0.02)
Child's math achievement, 2000	0.05*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.02* (0.01)	0.03*** (0.01)	0.02* (0.01)	0.01 (0.01)
Teacher is male	0.14 (0.16)	0.13 (0.15)	0.13 (0.15)	0.13 (0.15)	-0.27 (0.23)	-0.31 (0.22)	0.06 (0.23)
Teacher is local	-0.43*** (0.16)	-0.43*** (0.15)	-0.43*** (0.15)	-0.42*** (0.15)	-0.54** (0.22)	-0.42*** (0.15)	0.06 (0.18)
Teacher's expectations of child's schooling, 2000		0.17*** (0.03)	0.17*** (0.03)	0.17*** (0.03)	0.13*** (0.04)	0.17*** (0.03)	0.16*** (0.03)
Teacher is university graduate	-0.25 (0.18)	-0.25 (0.17)	-0.25 (0.17)	-0.24 (0.17)	-0.14 (0.25)	-0.24 (0.17)	-0.48*** (0.18)
Log wealth × child's gender			0.09 (0.15)				
Math × child's gender				0.02** (0.01)		0.02** (0.01)	0.02** (0.01)
Teacher's gender × child's gender					0.73** (0.31)	0.82*** (0.30)	0.63** (0.29)
Teacher local × child's gender					0.23 (0.30)		

(continued)

Table 3.7. Estimates of fathers' expectations of children's educational attainment, Gansu Province, 2004 (continued)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Independent variable	Standard main effects	Main effects	Poverty	Show promise	Teacher	Preferred model	Village fixed effects
Teacher's expectations × child's gender					0.07 (0.05)		
Teacher's education × child's gender					-0.21 (0.34)		
Village fixed effects	No	No	No	No	No	No	Yes**
<i>R</i> ²	.11	.13	.13	.13	.14	.14	.30

* Significant at the 10 percent level.

** Significant at the 5 percent level.

*** Significant at the 1 percent level.

Note: Number of observations for all models = 1,692. Figures in parentheses are standard errors.

Source: Gansu Survey of Children and Families (2000, 2004).

Conclusions and implications

Findings in rural Gansu suggest that boys retain a modest enrollment advantage. Among enrolled students in 2004, boys' advantage in educational aspirations is very small. The boys' advantage is larger in parental educational expectations, but the gap pales next to the high absolute expectations for both girls and boys.

Many of the factors that might differentiate educational opportunities and aspirations of girls and boys and the expectations of their parents do not operate as expected. Tests of the interactions between gender and wealth, gender and prior performance, and gender and teacher characteristics did not yield compelling, consistent insights about factors that affect the education of girls and boys differently.

Some of the more interesting results can be found in the main effects specifications—factors that matter for outcomes across the board. Key predictors of enrollment are age, socioeconomic status, and performance. Net of these factors, boys enjoy an enrollment advantage. Boys' advantage declines when we take into account earlier expectations of mothers and teachers, significant across most specifications. Students' perceptions that the teacher pays attention to them and likes them have no impact on enrollment or gender gaps in enrollment. However, another set of variables reflecting social support early in schooling—mothers' and teachers' expectations—does matter. To the extent that these variables do not simply reflect unmeasured

information on student ability, they suggest the importance of early support from significant others in sustaining educational attainment.

Expectations of mothers and teachers, along with mothers' education (in most specifications) and children's prior math performance, also predict students' aspirations for schooling. For mothers' educational expectations, child gender and maternal education (in most specifications), household wealth, children's school performance, and prior teacher expectations matter. Educational expectations were higher among fathers of sons, wealthier fathers, more educated fathers, and fathers of children whose teachers were not local in 2000 (perhaps reflecting higher quality).

These findings suggest that parental calculations about investing in children's education may be much more complex than often portrayed. Both enrollment and parental expectations depend on how children are doing in school and the gender of the child. This finding is consistent with the family economic models discussed earlier, given that both variables relate to the likely return to investments in schooling. Less expected are the findings that earlier expectations by the child's primary teachers matter for outcomes in 2004, net of many controls. To the extent that these findings can be taken at face value, they suggest that parents' educational planning may be responsive not only to objective signals of performance quality but also to the degree of support and optimism offered by early teachers.

Our findings suggest that girls do not face substantially greater access barriers to basic education than do boys in much of rural Gansu. We cannot generalize from rural Gansu to other parts of rural China or to minority groups. However, we have reason to believe that our findings in Gansu are a conservative perspective on the closing of the gender gap. Recent analyses of national data from the 2000 census show that significant gender gaps at junior high school transition exist only among rural populations in a few provinces (Connelly and Zheng 2007b). One of these provinces was Gansu. More broadly, Connelly and Zheng's work shows that the gender gap in enrollment among children and youth—urban and rural, for majority and minority ethnic groups—is closing across China (Connelly and Zheng 2007a, b). This conclusion is consistent with findings from a detailed analysis of enrollment patterns in China's rural southwest, based on a sample that includes ethnic majority and minority groups (Davis and others 2007).

By 2004 the majority of children in rural Gansu who had entered school—girls and boys, wealthy and poor—were still in school at ages 13–16. Most of these children—both girls and boys—had high educational aspirations, aspirations not likely to be fulfilled due to the high cost of post-compulsory schooling. Parents' expectations for their children's future education are shaped much more by their own wealth than by the gender of the child. Given the rising inequality in China, addressing socioeconomic disparities in education may prove much more daunting than addressing gender disparities.

Annex to Chapter 3

Table 3A.1. Disruptive environment scale

Variable	Mean	Standard deviation	Cronbach's alpha
Disruptive environment scale	1.89	0.45	0.71
Students cheat on tests	1.89	0.45	0.66
Students copy others' homework	1.63	0.66	0.63
Some students disrupt class	1.90	0.67	0.67
There are fights between students	1.92	0.64	0.65
Some students tease others	2.01	0.61	0.68

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