

# **Family Sources of Educational Gender Inequality in Rural China: A Critical Assessment\***

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## **ABSTRACT**

Researchers studying gender in China often raise concerns about rural girls' educational opportunities. Analyzing a survey of 9 to 12 year-olds from rural Gansu, China, this study investigates family attitudes and practices related to girls' and boys' schooling. Strikingly, rural girls compare well to boys in parents' economic investments and provision of a learning environment, and in own achievement, industriousness, academic confidence, and alienation from school. Few mothers espoused overtly discriminatory beliefs about girls' abilities and rights. Girls and boys both had high aspirations, but boys' were significantly higher. Gender differences in children's aspirations were attributable in part to mothers' aspirations and chore allocation.

# Family Sources of Educational Gender Inequality in Rural China: A Critical Assessment

## INTRODUCTION

Educational gender differences in poor rural settings in China have long captured the interest of policy makers and researchers. Explanations for the gap usually cite traditional attitudes about girls' and women's abilities and roles or different expected returns to the family for educating sons and daughters. Families could expect different returns because they anticipate old age support from sons more than from daughters, or because they perceive a gender gap in the earnings outcomes of schooling. These attitudes or expectations may translate into differences in investments in children, based on their gender; differences in treatment may translate into differences in children's own educational performance. Eventually, some combination of these factors is thought to lead to differences in the educational attainment of boys and girls.

Survey research on gender differences in education in rural China has primarily focused on establishing the scope of the gap in enrollment and attainment. Field-based research has illuminated changing gender roles without systematically evaluating implications for investments in children's education. Collectively, these studies put forth three related contributors to educational disadvantages faced by rural girls: Parental perceptions of abilities and appropriate roles for girls and boys, parental concerns about old-age support, and parental perceptions of different labor market outcomes for girls' and boys' education. Five hypotheses can characterize the set of relationships that emerges from these studies:

*Hypothesis 1: Rural families think daughters are less capable or less worthy of investment.*

*Hypothesis 2: Rural families expect future support from sons more than from daughters.*

*Hypothesis 3: Rural families perceive that sons' returns to education will be better than daughters'.*

*Hypothesis 4: Rural families devote fewer resources to girls' than boys' education.*

*Hypothesis 5: As a consequence of the above, girls' educational outcomes suffer relative to boys'.*

This study tests these statements, using detailed survey data on rural family attitudes and practices related to education drawn from a survey of 2000 9 to 12 year-old children and families in rural Gansu, China.

The paper begins by presenting an overview of gender inequality trends in China, and then introduces the field site and study population. The paper then analyses mothers' attitudes toward girls' and boys' rights and opportunities, mothers' expectations of future support from children, family investments in children's education, and children's own educational performance. The paper concludes by discussing implications of results for further research on families, gender, and schooling in rural China.

## EDUCATIONAL GENDER INEQUALITY IN CHINA

The context of this study is one of long-term declines in gender inequality in China (e.g., Hannum and Xie 1994; Hannum 2002a; Zhou, Moen and Tuma 1998; Bauer et al 1992). However, progress temporarily slowed during the early years of market transition (Hannum 2002a). The slowdown is often attributed to girls' vulnerability to rising direct and opportunity costs of schooling in the early reform years. Fiscal decentralization of the education system raised the direct costs of schooling to families. Simultaneously, introduction of the household responsibility system of agriculture<sup>1</sup> returned the productive function to the household and thereby increased the economic value of child labor (Summerfield 1994).

While progress toward gender equality resumed in more recent years, the rising direct and opportunity costs of education, and the broader impact of market transition on gender roles, continue to raise questions about girls' relative educational opportunities. Studies in sociology and economics have examined patterns of gender differences in access to schooling at various time points in the reform period (Michelson and Parish 2000; Hannum 2002b, c; Brown and Park 2002; Connelly and Zheng 2000; Bouma 2000; Zheng, Niu and Xing 2002; Broaded and Liu 1996; Lavelly et al. 1990). These studies indicate that,

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<sup>1</sup> The household responsibility system is a method of agricultural organization in which farmland and resources are contracted to individual households whose earnings are linked to output.

by the 1990s, gender disparities in China were concentrated in poor rural areas, and among poor households, where children compete with more siblings for educational resources and the costs of education are a burden on families (Connelly and Zheng 2000; Hannum 2002a,b). In these settings, girls' schooling, more than boys' schooling, has been sensitive to costs, and girls need to show promise in order to remain in school (Hannum 2002a,b; Brown and Park 2002).

Girls who live in suburban villages and villages where there are more non-farm opportunities than farm opportunities stay in school longer (Michelson and Parish 2000). Fewer differences in enrollment or in other dimensions of basic education are found in urban areas, where schooling is better subsidized, where families are less resource constrained, on average, and where children compete with fewer (or no) siblings for resources. For example, one recent study of only children in urban China found no gender differences in parental spending on children's education, student achievement in math, and educational aspirations of the student (Tsui and Rich 2002).<sup>2</sup>

In rural areas, where the majority of the population resides and where the gender gap remains potentially problematic, little empirical research has emerged beyond studies documenting gaps in enrollment or attainment. Survey-based studies have primarily focused on investigating the scope of the gap in enrollment, and its relationship to household and community wealth. Other, field-based studies have emphasized in-depth understanding of gender roles, but have not directly investigated the scope of discovered attitudes, or whether or how they impact actual decisions about children's education. Neither line of research has investigated household mechanisms leading to educational disparities by gender, such as parental decisions about investments in schooling and children's attitudes themselves.

Despite the lack of empirical research, several common speculations have emerged in both survey and field studies about what factors contributed to observed enrollment and attainment gaps in poor rural

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<sup>2</sup> The authors attribute this finding in part to the one-child policy, which eliminates family incentives to discriminate against girls, once they are in the family.

settings in the 1980s and 1990s. These explanations can be classified into three related categories: overtly discriminatory attitudes about girls' and boys' essential academic and working abilities and rights, choices dictated by expectations of future co-residence, and choices dictated by perceptions of future labor market opportunities.

The first idea is that traditional attitudes that are overtly discriminatory toward girls persist, and harm girls' educational opportunities. These attitudes include perceptions about girls' essential abilities and rights in education and the workplace. Ethnographic studies and educational research from the 1980s suggested that families in rural China still believed that girls were less worthy of education or less capable than boys (Lo 1984; Rosen 1984; Honig and Hershatter 1988; Wolf 1985). As a result, scholars argued, restrictions were placed on the educational and workplace opportunities available to women (Wolf 1985). However, few studies in the ensuing years have investigated the prevalence or impact on schooling decisions of these traditional attitudes.

The other two possibilities relate gender disparities to economic considerations: family calculations about returns on educational investments. Ethnographic research suggests that economic incentives rooted in family structures, and the attitudes about the value of and costs associated with educating girls that arise from these incentives, may play an important role in educational decision-making (Jacka 1997; Andors 1990). One variant of this argument relates to traditional intergenerational co-residence patterns. In rural China, girls have typically married out of households, while boys remain with families of origin (Hooper 1991; Honig and Hershatter 1988). Moreover, Summerfield (1994) argued that the household responsibility system in rural China reinforced the value of male children, who were expected to contribute to the increasingly uncertain future family welfare. To the extent that the tradition of co-residence with sons holds, parents face strong incentives to invest in sons as long-term insurance (Greenhalgh 1994; Gilmartin et al. 1994; Wolf, 1985). The expected lack of access to the earnings of adult daughters provides a clear financial incentive, especially to poorer families, to forego the direct and opportunity costs associated with educating daughters, and to allow them to contribute to the household economy until departure to married

life (Lin 1993). However, whether these patterns and expectations are key to understanding educational choices remains an empirical question. For example, Jin, Li and Zhu's (2002) research suggests that parents invest more resources in sons' education than daughters', even when they expect daughters to remain in the natal home and bring in a husband.

The second variant of the economic argument is the possibility of perceived gender discrimination in the labor market. Scholars have argued that the concentration of rural women in agricultural occupations, while men were more likely to have access to higher-paying rural industrial jobs where educational credentials carried greater weight, also served as a disincentive to educate girls (Summerfield 1994; Wolf 1985). Similarly, in explaining girls' enrollment disadvantage, Michelson and Parish (2000) speculate that because women are perceived less able to contribute to family cash income due to their concentration in farm work, families may feel it unnecessary to educate girls and women at the same level as boys. However, empirical evidence about whether perceived labor market discrimination can be linked directly to educational decisions remains sparse.

## FRAMEWORK

Drawing a set of specific hypotheses from the arguments outlined above, this study begins to fill in the empirical gap with an investigation of gender attitudes and practices in the household and their implications for rural boys' and girls' educational differences. Figure 1 summarizes a framework for understanding gender inequalities in rural China, grounded in previous studies.

(Figure 1 about here.)

Box 1 represents parental attitudes about gender, and specifically three hypotheses:

*Hypothesis 1: Families think that daughters are less capable, or less worth investing in.*

*Hypothesis 2: Families expect future support from sons more than from daughters.*

*Hypothesis 3: Families expect that sons' returns to education will be better than daughters' in the labor market.*

These statements represent traditional attitudes about girls' abilities and rights (in the case of Hypothesis 1) and the expected returns to families arguments (in the cases of Hypotheses 2 and 3).

Box 2 represents the investment decisions that families might make differently for boys and girls, depending on the attitudes listed in Box 1. Investments include economic resources, such as education-related expenditures on children, and the provision of a learning environment, for example through providing books or helping with homework. The literature also suggests that gender differences in investments might occur through competition for time: choices about assignment of chores to girls or boys. For example, some scholars have argued that women's workload increased as production shifted from the commune back to the individual household (Jacka 1997). To handle this workload, scholars have suggested that women may shift domestic work to their daughters (Wang 1989; Hooper 1991). Finally, an important psychological investment in children lies in parental aspirations for them. These kinds of investment differences are often invoked in studies of attainment and enrollment, but have not been tested. We test these differences with Hypothesis 4:

*Hypothesis 4: Parents invest less in the education of girls than boys.*

Box 3 shows the next step, in which parental practices are linked to differences in children's educational performance. In a region where schooling is expensive to families and dropping out remains a serious problem, performance indicators need to encompass both academic achievement, measured by grades, and engagement with the schooling process, such as children's willingness to spend time doing homework, children's feelings of belonging at school, their educational aspirations, and their academic confidence. We test girls' performance disadvantage, and its link to parental attitudes and investments, in Hypothesis 5:

*Hypothesis 5: As a result of Hypotheses 1-4, girls have poorer educational performance than boys do.*

Finally, we note that Box 4 represents the final outcome: gender differences in enrollment and attainment. This study does not explicitly investigate this final piece of the puzzle. Instead, we take advantage of a data set of young children, for whom school-leaving is not yet a significant problem, in order

to illuminate processes commonly cited in earlier studies as causes of enrollment and attainment differences.

## DATA

We draw on a unique data set, The Gansu Survey of Children and Families (GSCF), a multi-level survey designed to increase understanding of children's schooling and welfare in the context of rural poverty. The GSCF, conducted in the summer of 2000, is a survey of 2000 children aged 9 to 12 and their families in rural areas of 20 counties in Gansu Province. Map 1 shows the location of Gansu province and the distribution of the sample across counties. The sample was drawn using a multi-stage, clustered design with random selection procedures employed at each stage (county, township, village, child). At the final stage, children were sampled from birth records for the full cohort of 9 to 12 year-old children in selected villages. Of these children, 98.9 percent were currently enrolled in school.

(Map 1 about here.)

This paper refers to data collected from the mother, household head, child and home-room teacher questionnaires. We employ variables tapping into each dimension of the framework in Figure 1. These variables are described below:

### Parental Attitudes

#### *Girls' Capabilities and Worthiness*

To address our research question regarding traditional parental attitudes, we considered beliefs held by parents regarding capabilities of girls and boys. Mothers were asked whether they disagreed, had no opinion or agreed with the following statements: *If they work hard, girls can do as well as boys in school* ( ); *Girls should enjoy the same opportunities for education as boys* ; *Given equal opportunities, women can*

*achieve the same things as men* ; and *Parents should encourage girls to think as independently as boys* .

### *Expectations of Future Support*

We next considered economic incentives related to future support. Parents were presented with two statements. The first statement asked about traditional beliefs about co-residence, and the second statement linked co-residence to attitudes about the value of educating girls. Mothers were asked if they disagreed, had no opinion or agreed with the following statements: *Parents should rely on sons for care-giving in their old age* ( ) and *Sending girls to school is useless since they will get married and leave home* ( ).

We then asked mothers a more concrete set of questions about their own expectations of future support. We asked whether they expected to receive a lot, some or very little economic support from children: *How much financial help do you think you will get from your children?* ( ) We then asked, *From which child do you expect to receive the most financial support from in the future?* ( ). Responses were a son or a daughter.

### *Perceived Returns to Girls' and Boys' Schooling*

Finally, we asked whether parents perceived different returns to schooling for their girl children and boy children. First, we asked mothers separate questions about the level of influence of additional education on sons' future income and daughters' future income. The question wording was, *Compared to primary school, what is the influence of junior high school on sons' (or daughter's) income?* ( ) *Compared to junior high school, what is the influence of senior high school on sons' (or daughter's) income?* ( ) We then included an explicit

question designed to tap into gender discrimination in the labor market: *Does education influence sons'*



Response categories were less than 1 hour, 1-2 hours, or 3 hours or more. To understand the child's feelings of *alienation from school*, we asked children to strongly disagree, disagree somewhat, agree somewhat, or strongly agree with the statement, *A lot of the time, I don't want to go to school.* ) To tap into children's confidence in school, we asked them asked about *self-concept as a student: Are you a good student?* (no, somewhat, yes). Finally, to tap into children's hopes for their educational future, we asked about *aspirations: What is the highest level of education you want to achieve?* ? (primary, junior high school, senior high school, college or higher).

### Control Variables

Finally, an additional set of variables was employed in order to avoid confounding by other factors correlated with attitudes, investments, and outcomes. We selected a standard set of family socio-economic and demographic variables thought to affect schooling outcomes. We control for wealth using *wealth quintiles* to allow for possible non-linear effects of extreme poverty. We control for parental education with two variables: total "human capital" in the household, measured as *parents' total years of schooling*, and the *gap in parents' total years of schooling*, calculated by subtracting mother's years from father's years. We also control for *child's age* at the time of the survey.

Finally, we control for numbers of siblings in the household. In research on the demography of schooling, siblings are thought to compete for household resources, and thus increasing the number of siblings tends to reduce educational attainments. In societies characterized by son preference, girls and boys may differently dilute resources. In societies characterized by extended families, older children may not dilute resources, but actually contribute to them, while younger children may especially dilute resources by requiring minding (Buchmann and Hannum 2001). For these reasons, we measure sibship as *numbers of older and younger sisters and brothers*.

### ANALYSIS

Applying bivariate and multivariate statistical tests, this section first investigates mothers' attitudes, and then explores their links to gender differences in educational investments and the educational outcomes of children.

### Parental Attitudes

To what extent do mothers hold attitudes about gender differences in worthiness and rights, have expectations of future support from sons, or perceive labor market discrimination against girls and women? We explore these attitudes as the backdrop of household educational decisions.

#### *Perceptions of the Capabilities and Worthiness of Girls and Boys*

We begin by considering the question of whether families exhibit “traditional” gender attitudes related to abilities and rights. Figure 2 lists mothers' responses to a series of statements about gender equality in basic abilities and opportunities for social advancement: “*Parents should encourage girls to think as independently as boys;*” “*Given equal opportunities, women can achieve the same things as men;*” “*Girls should enjoy the same opportunities for education as boys;*” “and “*If they work hard, girls can do as well as boys in school.*” Strikingly, across these questions, very few mothers—fewer than five percent—actively disagreed with an egalitarian position. The vast majority of mothers reported egalitarian views on these the questions. These results do not suggest that overtly discriminatory views about the essential capabilities or worthiness of girls per se are a widespread barrier to girls' educational opportunities in rural Gansu.

(Figure 2 about here.)

#### *Expectations of Future Support*

However, these findings do not speak to the question of whether parents see differences in the worthiness of girls from the perspective of a cost-benefit analysis for the household. Table 1 addresses this question, showing responses to a variety of questions related to mothers' expectations of future support and links between these expectations and their possible association to educational decisions. First, a

majority—57.2 percent of the sample—agreed with an abstract statement of the view that parents should rely on sons for old age support. When asked a more concrete question about own expectations for future support, only a few mothers in this sample, 15.4 percent, did not expect at least some economic support from children in the future. The majority of mothers expect some or a lot of support from children. Further, when asked which child would provide them with the most economic support, a sizeable majority of 81.2 percent of mothers expected it to come from sons.

(Table 1 about here.)

We then sought to understand whether differences in expectations of support were linked, in mothers' minds, to attitudes about educating girls. We found that a majority—68.4 percent of mothers—disagreed with the notion that educating girls was useless because girls marry out of the family (Table 1). Yet, a significant minority—18.3 percent of the mothers—agreed with the view that educating girls was a waste.

These results suggest that expectations of future support are skewed enough toward sons that cost-benefit analyses might significantly influence calculations about extending educational opportunities to children. While only a minority of mothers agreed with the rather extreme view that educating girls was useless, the rate of agreement with this perspective was almost one in five mothers. Further, mothers need not agree with the view that educating girls is useless in order to act on the strong incentives to privilege son's education offered by old-age support expectations.

### *Perceptions of Labor Markets*

Also potentially important in a cost-benefit analysis about children's schooling would be considerations about how much a child will be able to translate schooling into economic returns. Perceptions about the labor market outcomes of schooling are commonly cited as potentially important influences on parental demand for schooling, and if the perceptions are that gender discrimination prevents girls from translating education to good jobs, this may hurt parents' willingness to support girls' education.

(Figure 3 about here.)

Figure 3 shows mother's attitudes about the economic outcomes of schooling. Mothers thought education was important, in an absolute sense. The vast majority believe that junior and senior high school education influence earnings, for both boys and girls. Yet, almost half of mothers—45.6 percent—agreed that education influences sons' income more than daughters. With Table 1, results presented here suggest that household economic calculations could affect the incentives for educating girls, for a sizeable proportion of children.

### Parental Investments

To what extent do differences in incentives to families for educating girls and boys translate to different investments for girls and boys? This section investigates the scope of gender differences in parental investments, and their linkages to attitudes about co-residence and the labor market.

#### *Gender Differences in Investments*

Table 2 shows provision of resources by child's gender, along with statistical tests of differences by gender. Asterisks indicate significant gender differences by t-tests of mean differences in economic resources and number of books and by chi-square tests of independence for homework help, time competition, and aspirations. Table 2 shows no noteworthy gender differences for economic investments in children. The gender difference in provision of books averages to a difference of less than one, and the difference is only marginally significant. However, differences that are more striking emerge in the two categories of time competition and aspirations. Mothers report that they are significantly more likely to call on girls to do regular housework. About 17 percent of girls are never called upon to do housework, compared to about 31 percent of boys. Further, mothers had significantly different aspirations for girls' and boys' education, with higher aspirations for boys. About 25 percent of girls' mothers aspired to a college education for their girls, compared to about 29 percent of boys' mothers. Another 37 percent of girls' mothers and 46 percent of boys' mothers aspired to a senior high school education.

(Table 2 about here.)

Where gender differences do emerge, we need to ask whether they are stable once background factors are controlled. For example, families with girls might have more siblings, on average, and so have fewer resources per child.<sup>3</sup> This could produce a gender difference in aspirations that would be more accurately attributed to sibship size. Another possibility is that if girls were not achieving as well at school, this performance difference could feed into parents' choices about allocating chores and parents' aspirations. Table 3 tests the stability of the gender effect in the context of multivariate models controlling for family socio-economic status, sibship size and composition, and children's math and Chinese scores. Results from ordered logit models are presented.

(Table 3 about here.)

The first column of Table 3 shows the results for calling on children to do chores. Here, the gender coefficient is significant and negative, indicating boys' lower likelihood of being in the more frequent chore category. Indeed, with the exception of parents' education gap and child's age, gender is the only predictor that matters for chores. In contrast, the models for aspirations show that many factors are important. Wealth and parental education are positively related to aspirations. Consistent with the resource dilution hypothesis, mothers of children in higher sibships have lower expectations. Finally, mothers of children who are doing better in math have higher aspirations for them. However, while these factors matter for aspirations, they do not explain away the significant maternal aspirations advantage of boys. Of note, despite significant difference in mothers' aspirations for children, the majority of mothers of both boys and girls have aspirations that are higher than what the current school system is likely to provide.

#### *Linking Investment Differences to Attitudes*

Next, we consider whether observed differences by gender in mothers' reports of investments can be traced to households in which mothers favor co-residence with sons or perceive discrimination in the

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<sup>3</sup> On average, girls in the sample have 1.4 siblings, while boys have 1.2 (our calculations, not shown).

labor market. Table 4 investigates the degree to which mothers holding traditional attitudes also display large gender gaps in the two areas where significant gaps emerged in parental investments. Specifically, we ask whether gender differences in investments are concentrated in households where co-residence and future support expectations favor sons, or in households where perceptions of future labor market returns to schooling favor sons. To address this question, we split the sample by response to each attitude question, and then conducted chi-square tests of association between gender and investment measures (chores, mother's aspirations) for each subsample.

(Table 4 about here.)

Table 4 shows the percent of mothers who assigned no chores to children and the percent of mothers who aspired to a college education for their girls and boys for each subsample defined by future support attitudes and labor market attitudes. Asterisks denote subsamples for which the gender-by-investment relationship is significant. Results differ for chores and aspirations. Significant gender differences in mother's likelihood of calling on children to do chores emerged across almost all subgroups, and no systematic pattern of consistently stronger bias toward girls doing chores emerges in households with traditional co-residence attitudes or perceptions of discrimination in the labor market.

Looking at expectations of future support and perceptions of labor market inequalities, gender differences in association exist across many of these attitudes. Yet, the scope of gender gaps in mother's aspirations does appear stronger for some attitude subgroups. Looking first at general attitudes, among mothers who disagreed with or had no opinion about the statement, "*Sending girls to school is useless since they will get married and leave home*", 27 percent aspired to a college education for daughters, compared to 28 to 29 percent for sons. Among mothers who agreed with the statement, corresponding figures were 16 percent for girls and 29 percent for boys. Similarly, the gender gap in aspirations was somewhat greater among parents who agreed with the statement, *Parents should rely on sons for care-giving in their old-age*, than among those who had no opinion or disagreed. Although college aspirations showed a gender gap, the

overall gender gap in aspirations was not significant among mothers who expected to get future support from daughters, while it was significant among those who expected to gain support from sons. Finally, mothers who believed that education influences sons' income more than daughters' showed a gender gap in college aspirations, while mothers who did not believe this statement showed no such gap. Overall, however, gender differences were significant among mothers who espoused both perspectives.

In sum, while many investments are similar for girls and boys, there are two areas where investments differ: expected help with domestic chores and aspirations. The gender gap in mothers' expectation of chores is not linked to other attitudes. The gender gap in mothers' aspirations is also present across the spectrum of attitudes, but girls' disadvantage may be more pronounced when their mothers expect long-term support from sons, and perceive labor market discrimination against girls.

### Educational Performance

The final piece of the framework in Figure 1 that we consider is whether parental investment differences can be linked to gender differences in children's performance in school. We consider first where gender differences in educational performance emerge, then investigate the extent to which gender gaps can be linked to parental investment differences.

### *Gender Differences*

We begin by investigating bivariate gender differences in school performance in Table 5. Table 5 shows descriptive statistics for various dimensions of school performance categorized by gender. Asterisks indicate significant gender differences by t-tests of mean differences in math and language scores and by chi-square tests of independence for homework time, wanting to attend school, academic confidence, and aspirations. Table 5 shows that compared to boys, girls have lower aspirations, but they have similar or better achievement, similar levels of alienation, and more academic confidence.

(Table 5 about here.)

In summary, it is only in child's aspirations where a significant difference emerges that is unfavorable to girls. Significant gender differences in language achievement and in academic confidence also emerge, but these gaps actually favor girls. These results suggest that any factors that are producing gender disparities work through girls' realistic assessment of their future opportunities, more than through their efforts toward schooling, their assessment of their own innate abilities, or their performance.

#### *Linking the Performance Difference to Investments*

For aspirations, where a performance disadvantage for girls emerges, the next question is whether it can be linked to the two areas of parental investments where girls are disadvantaged, namely chores and mother's aspirations. Table 6 shows results from two ordered logit models of aspirations. Model 1 shows the same set of predictors as shown in Table 3. This model shows that parental education and school grades are significantly positively linked to aspirations, while numbers of brothers and being female are significantly negatively related to children's aspirations. When the two investment factors that favored boys, mother's aspirations and mother's frequency of asking children to do chores, were introduced in model 2, both significantly affected children's aspirations. Further, the gender gap became insignificant.

(Table 6 about here.)

Two important interpretations emerge from this table. First, the gender gap in child's aspirations is significantly linked to the areas of parental investments where gender differences emerged. Second, the fact that numbers of brothers matters, not numbers of sisters, suggests that children's own aspirations reflect boys' greater absorption of educational resources in the household.

#### Summary

Results show that at ages 9 to 12, rural girls in Gansu compare well to boys in terms of parental economic investments and provision of a learning environment, own achievement, industriousness, academic confidence, and alienation from school. A significant gap favoring boys emerges in mothers' calling on children for chores and in mothers' and children's own aspirations.

In explaining the gender gaps that do emerge, evidence suggests that few mothers think that girls are less capable or worthy of investment than boys. Gender gaps in mothers' aspirations are evident among mothers across the spectrum of attitudes about future co-residence and labor markets, but may be somewhat stronger in families that expect future support from sons and perceive gender differences in returns to education. In contrast, the gender bias in allocating chores is pervasive and unrelated to these considerations. Differences in mother's aspirations and in allocation of chores, in turn, partly explain gender differences in children's aspirations.

## DISCUSSION AND CONCLUSIONS

This paper began by laying out a framework based on common hypotheses employed to explain the gender gap in education in rural settings. In fact, analyses show that many aspects of this framework break down. By mother's reports, few rural families think daughters are less capable or less worthy of investment, contradicting Hypothesis 1.<sup>4</sup> By many important measures of parental investments, there is no gender gap, nor is there a gap favoring boys in many measures of children's own school performance, contradicting Hypotheses 4 and 5. Further, the one gap in children's performance, in aspirations, while important, should not mask the fact that aspirations among boys and girls are extraordinarily high. A full 46 percent of girls and 51 percent of boys aspire to a college education, in a setting where the average education of mothers is less than 5 years, and the average education of fathers is less than 7 years. Findings of egalitarianism in many aspects of educational investments and performance in one of China's poorest rural settings are strikingly similar to results from Tsui and Rich's (2002) findings in a much more developed urban setting.

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<sup>4</sup> There are some important caveats to these findings. The obvious criticism of the finding that most mothers express egalitarian ideas about the abilities and rights of girls is that this view is highly suspect to social desirability bias. A second criticism is that we have focused on mothers' attitudes, rather than fathers,' a choice necessitated for practical reasons during data collection. We acknowledge these caveats, but feel that results are still worth considering. One justification is that ideas regarding co-residence may similarly be perceived as being very traditional, and mothers were quite willing to express the traditional attitudes for these measures. Further, field visits and in-depth interviews conducted as part of this project have yielded results consistent with those reported here regarding a lack of overtly discriminatory views on the part of families.

Complicating the picture, however, findings also emerged that were consistent with traditional attitudes about family responsibilities and gender roles. Consistent with hypotheses 2 and 3, it remains true that rural families expect future support from sons more than from daughters, and many rural families perceive that sons' returns to education will be better than daughters'. These beliefs appear to be at least weakly linked to gender gaps in mothers' aspirations, which in turn contribute to girls' disadvantage in own aspirations. Calling on girls for chores also appears detrimental to their aspirations, and this practice appears pervasive.

The complexity of family gender attitudes is also evident in the strong premium on giving birth to sons. In Gansu, the sex ratio at birth, typically about 106 boys for every 100 girls, was an astounding 124.17 in 1997. This figure represented a dramatic increase from the already-high sex ratio at birth of 110.38 reported for the 1990 census (UNESCAP 2002). High sex ratios at birth are probably attributable to a combination of under-reporting of girl births and prenatal sex selection, with either strategy enabling families to continue to try for a boy. In our data, there is clear evidence that parents continue to bear children if earlier children are daughters, in order to have at least one son. Girls tend to have more siblings overall and are more likely than boys to have brothers, especially younger brothers.<sup>5</sup> This demographic pattern has educational significance. Our results clearly show that boys absorb more educational resources: the presence of brothers detracts from children's aspirations more than the presence of sisters.

Lower aspirations, as well as larger sibships and more boys, may become more salient as children age. School costs become much more burdensome to families as children enter junior high school, and girls' schooling, in the past, has been particularly susceptible to cost considerations (Rosen 1984; Bouma 2000). Whether the sanguine results presented here regarding differences in children's school performance will translate to equal persistence and performance in the future remains to be seen. The fact that the gap in children's performance emerges only in aspirations suggests that it is linked to practical concerns or

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<sup>5</sup> Half of girls in the sample have younger brothers, compared to less than one-fourth of boys (our calculations, not

attitudes about gendered family responsibilities, rather than to children's internalized views about self-worth as students. Such considerations may become much more critical as the family begins to struggle with the costs associated with junior high school, especially given girls' situation in larger sibships with more boys.

Overall, our findings suggest that rural families' attitudes toward their daughters' education in one of China's poorest rural settings are both more egalitarian and more complex than they are commonly portrayed. Perhaps rural parents' attitudes and practices toward girls have shifted dramatically away from many traditional views and practices considered detrimental to girls' education in the past. Changing attitudes toward girls' schooling would be consistent with the national trend of narrowing gender disparities in enrollment through the 1990s. On the other hand, perhaps these results represent a degree of continuity that has been poorly documented. A better understanding of the trajectory in rural family attitudes and practices related to sons' and daughters' educational opportunities, a critical element of shifting gender roles in China, awaits further empirical research.

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shown). See footnote 3 for overall numbers of siblings.

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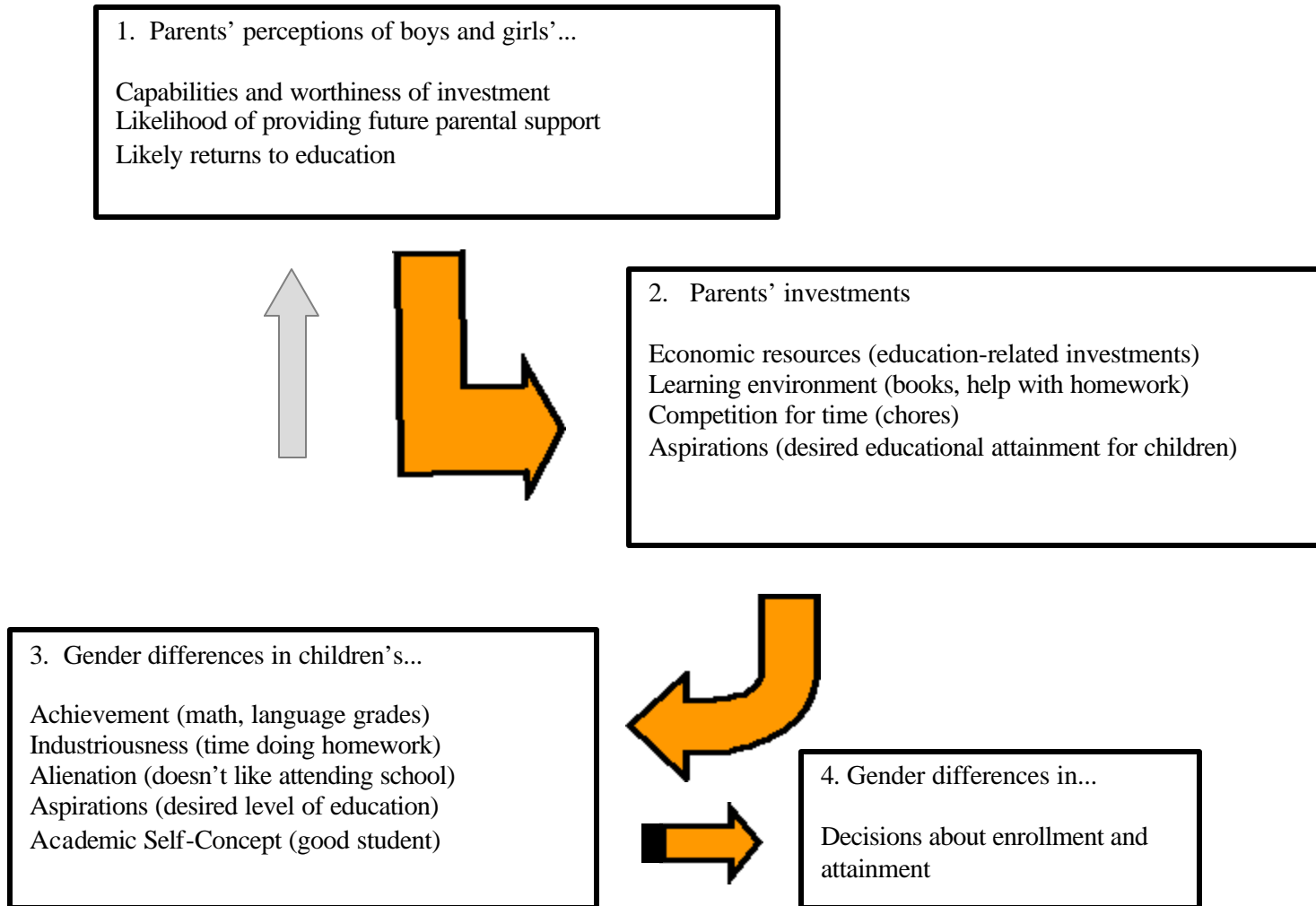
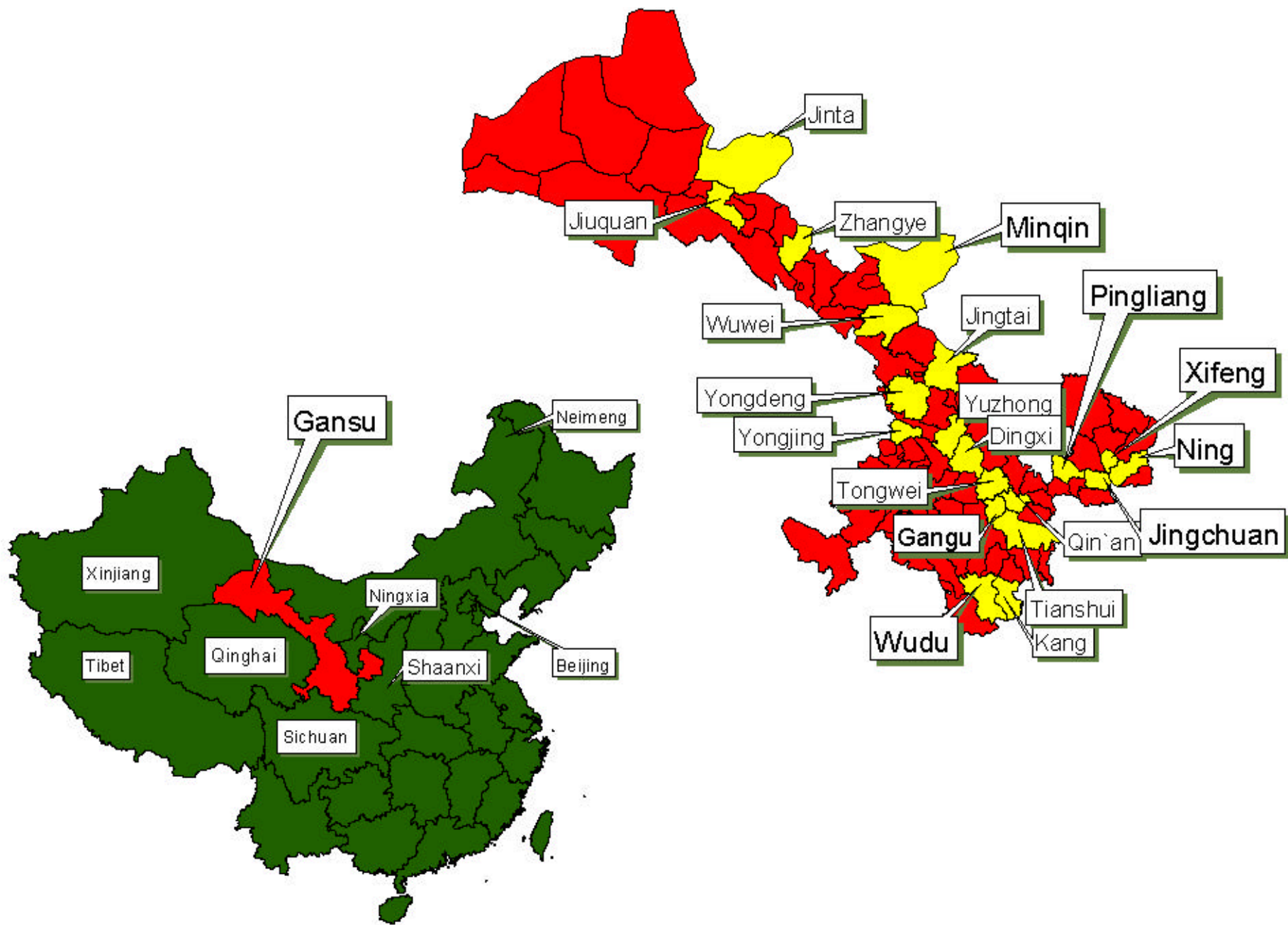


Figure 1. Framework



Map 1. Gansu Province, Survey Counties Marked

Figure 2: Mother's Attitudes about Abilities and Opportunities

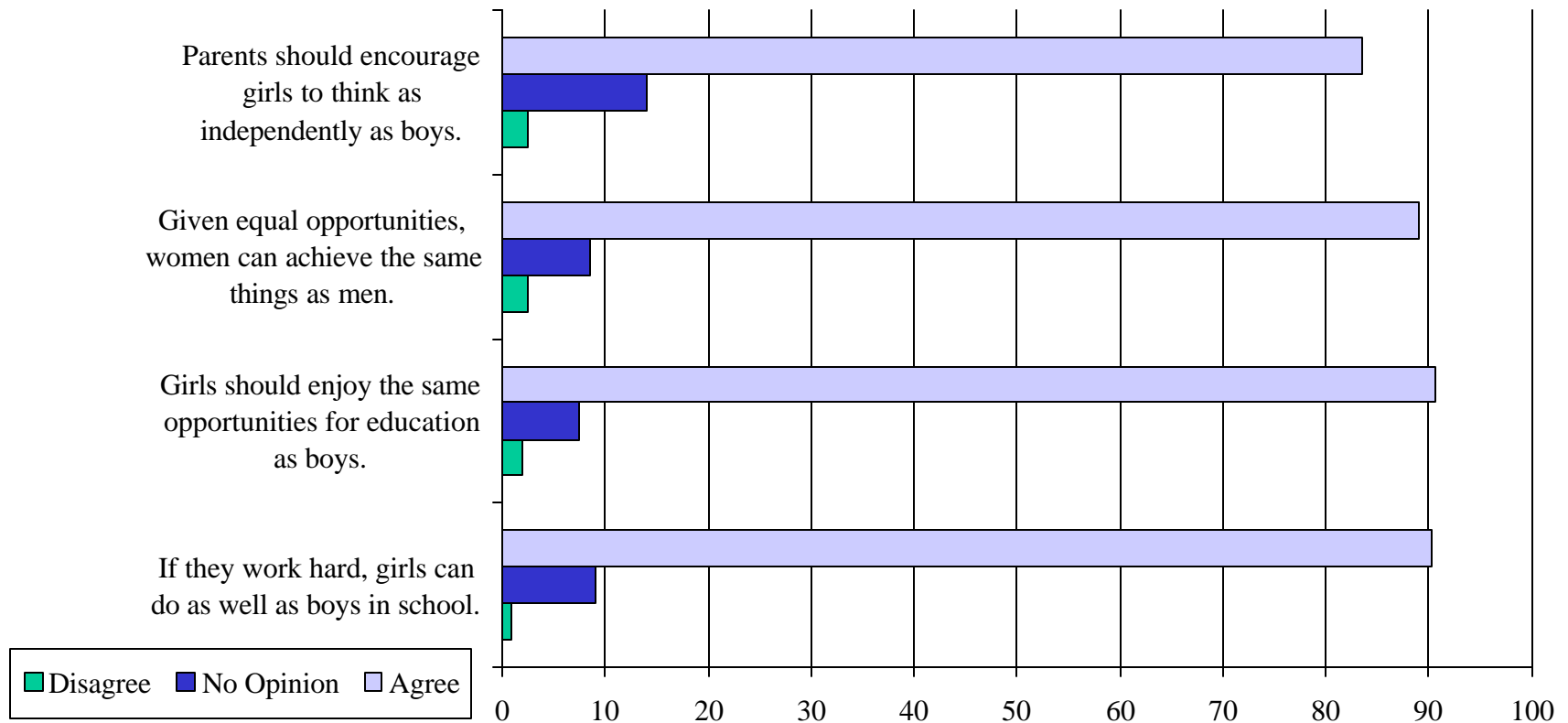


Table 1. Mother's Attitudes and Expectations about Co-Residence and Future Support (in Percent)

<i>Attitudes and Expectations</i>	<i>Disagree</i>	<i>No Opinion</i>	<i>Agree</i>
Parents should rely on sons for old age support. (N=1,989)	22.9	19.9	57.2
Schooling is useless for girls since they marry and leave home. (N=1,997)	68.4	13.7	17.9
	<i>Very Little/None</i>	<i>Some</i>	<i>A Lot</i>
How much financial help do you think you will get from your children? (N=1,953)	15.4	66.3	18.3
	<i>Son</i>	<i>Daughter</i>	
Which child will give the most financial help in the future? (N=1,907)	81.2	18.8	

Figure 3. Mother's Perceptions of Returns to Schooling

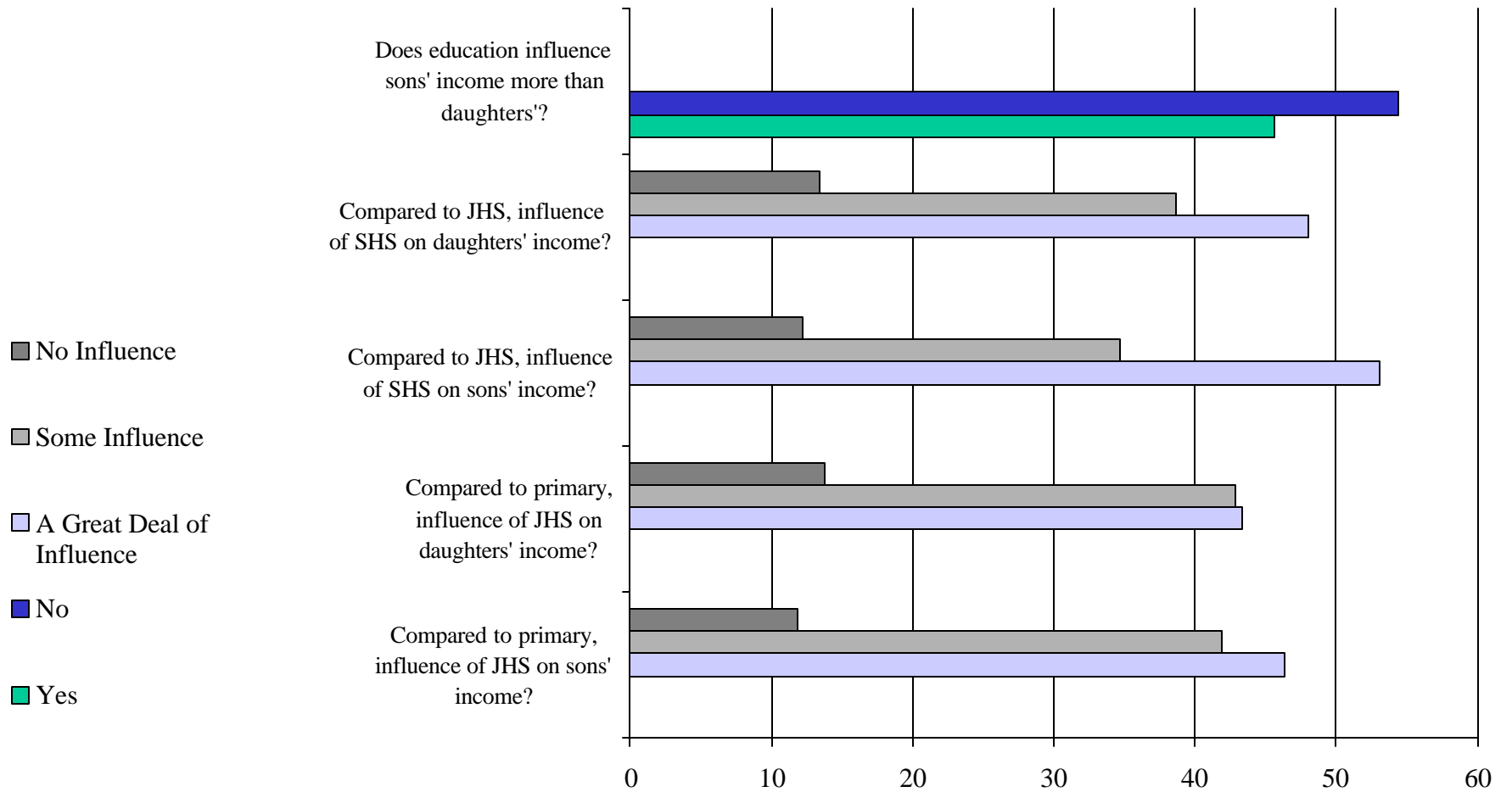


Table 2. Resource Provision by Child's Gender

<i>Resource Provision</i>		<i>Girls</i>	<i>Boys</i>
<b>Economic resources</b>			
Educational expenditures last semester (N=1,928)	(Mean)	141.9	142.3
<b>Learning environment</b>			
Number of books owned by child (N=1775)	(Mean)	14.8	15.7*
Helping child with homework (N=1,985)	Never	15.6	14.0
	Occasionally	50.1	49.4
	Often	34.3	36.6
<b>Competition for time</b>			
Frequency child does regular chores (N=1,998)	Never	17.3	30.6***
	Occasionally	64.1	57.6
	Often	18.7	11.8
<b>Aspirations</b>			
Highest level of education child can achieve (N=1,956)	Primary	5.9	3.2***
	Junior	31.2	21.8
	Senior	37.0	45.7
	College	24.9	28.6
	Other	1.0	0.8

NOTE: Asterisks denote significant results by Chi-Squared or T-test:

\*p<.1. \*\*p<.05. \*\*\*p<.01.

Table 3. Ordered Logit Models, Chores and Mother's Aspirations

<i>Variable</i>	<i>(1) Chores</i>	<i>(2) Mother's Aspirations</i>
Wealth (Ref.=Bottom Quintile)		
Second Quintile	0.091 (0.63)	0.194 (1.41)
Third Quintile	0.035 (0.24)	0.210 (1.52)
Fourth Quintile	-0.113 (0.76)	0.331 (2.40)*
Fifth Quintile	-0.189 (1.26)	0.383 (2.71)**
Total Years Parental Education	-0.003 (0.34)	0.026 (3.27)**
Parental Education Gap	-0.027 (2.29)**	-0.011 (1.07)
Child's Age	0.334 (7.77)***	0.062 (1.58)
Older Sisters	0.076 (1.00)	-0.184 (2.63)**
Younger Sisters	0.086 (0.84)	-0.379 (3.94)**
Older Brothers	0.043 (0.38)	-0.244 (2.33)*
Younger Brothers	-0.182 (1.63)	-0.248 (2.37)*
Math Score	0.006 (1.04)	0.022 (4.46)**
Language Score	-0.004 (0.64)	0.007 (1.22)
Gender (Ref.=Fem.)	-0.707 (7.03)***	0.312 (3.36)**
Observations	1947	1924

NOTE: Absolute value of z statistics in parentheses. Cutpoints not shown.

\*p<.1. \*\*p<.05. \*\*\*p<.01.

Table 4. Mother's Chore Assignment and College Aspirations by Attitudes about Co-Residence and the Labor Market

Variable	(1)				(2)			
	Girls	Boys	N		Girls	Boys	N	
Sending girls to school is useless since they will get married and leave home.								
Disagree	17	30	(1,365)	***	27	29	(1,340)	***
No Opinion	18	23	( 272)		27	28	( 267)	
Agree	18	39	( 358)	***	16	29	( 348)	**
Parents should rely on sons for care-giving when they get old.								
Disagree	16	26	( 456)	**	28	30	( 452)	***
No Opinion	20	31	( 395)	***	31	33	( 387)	*
Agree	17	32	(1,136)	***	21	26	(1,108)	***
Which child will give the most financial help in the future?								
Son	18	31	(1,549)	***	24	28	(1,527)	***
Daughter	16	31	( 356)	**	26	32	( 347)	
Does education influence the income of sons more than daughters?								
Yes	17	32	( 872)	***	22	29	( 859)	***
No	17	29	(1,043)	***	28	28	(1,023)	***

NOTE: Asterisks denote significant results from Chi-Square tests of association between chores and gender (for columns marked 1) or between aspirations and gender (for columns marked 2), within subsamples defined by categories in the left-most column.

\*p<.1. \*\*p<.05. \*\*\*p<.01.

Table 5. Educational Performance by Gender

<i>Variable</i>		<i>Girls</i>	<i>Boys</i>
<b>School Achievement</b>			
Math Score (N=1,957)		74.3	73.7
Language Score (N=1,951)		73.9	71.5***
<b>Industriousness</b>			
Every day, how much time is spent doing homework? (N=1,984)	Less than 1 hour	43.6	45.6
	1-2 hours	39.0	39.6
	3 hours or more	17.4	14.8
<b>Alienation</b>			
Usually I do not want to go to school. (N=1,986)	Totally disagree	48.1	47.6
	Somewhat disagree	29.9	31.0
	Somewhat agree	10.8	11.0
	Totally agree	11.3	10.4
<b>Academic Confidence</b>			
Are you a good student? (N=1,985)	No	10.5	14.1***
	Somewhat	44.0	46.6
	Yes	45.4	39.4
<b>Aspirations</b>			
Highest level of education you want to achieve (N=1,983)	Primary	5.8	3.8**
	Junior	10.3	9.2
	Senior	19.4	15.1
	Junior trade	9.4	9.7
	Senior trade	9.2	11.3
	College	45.8	50.8

NOTE: Asterisks denote significant results by Chi-Squared or T-test:

\*p<.1. \*\*p<.05. \*\*\*p<.01.

Table 6. Ordered Logit Models, Child's Aspirations

<i>Variable</i>	<i>(1)</i>	<i>(2)</i>
Wealth (Ref.=Bottom Quintile)		
Second Quintile	0.033 (0.24)	0.002 (0.02)
Third Quintile	0.156 (1.07)	0.112 (0.76)
Fourth Quintile	0.149 (1.00)	0.068 (0.45)
Top Quintile	0.197 (1.30)	0.115 (0.74)
Total Years Parental Education	0.033 (3.92)***	0.029 (3.38)**
Parental Education Gap	0.004 (0.38)	0.005 (0.45)
Child's Age	-0.007 (0.18)	-0.001 (0.02)
Older Sisters	-0.034 (0.45)	-0.015 (0.20)
Younger Sisters	0.024 (0.23)	0.102 (0.98)
Older Brothers	-0.312 (2.84)***	-0.297 (2.68)**
Younger Brothers	-0.226 (2.03)**	-0.192 (1.69)
Math Score	0.016 (3.10)***	0.014 (2.50)*
Language Score	0.011 (1.91)*	0.011 (1.82)
Gender (Ref.=Fem.)	0.220 (2.24)**	0.134 (1.32)
Child Frequency Does Chores (Ref.=Never)		
Sometimes		-0.228 (1.98)*
Often		-0.026 (0.16)
Mother's Aspirations (Ref.=Primary)		
Junior		0.435 (1.97)*
Senior		0.901 (4.10)**
College		1.047 (4.58)**
Other		0.703 (1.40)
Observations	1942	1918

NOTE: Absolute value of z statistics in parentheses. Cutpoints not shown.

\*p&lt;.1. \*\*p&lt;.05. \*\*\*p&lt;.01.