



## **Segmented Schooling: Inequalities in Primary Education**

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**India Human Development Survey  
Working Paper No. 6**

**IHDS**



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# Segmented Schooling: Inequalities in Primary Education

by

Sonalde Desai, Cecily Darden Adams and Amaresh Dubey

## Abstract

Indian society has long been stratified along the axes of caste, ethnicity and religion. A large number of studies report inequalities in various outcomes along the caste, ethnicity and religion. Not surprisingly, this inequality is reflected in educational attainment too. However, the precise mechanisms through which inequality in educational attainments manifests itself remains open to debate with a variety of hypotheses being advanced such as poverty, child labor, lack of access to schools, teacher discrimination and lack of parental interest in education.

Unfortunately, there is little empirical research examining these hypotheses. Nor are the processes through which social disadvantages manifest themselves, clearly articulated. This paper utilizes a newly collected nationally representative survey data from over 41,550 households to examine social inequality in children's educational outcomes. The focus is on 8 to 11 year old children's reading and mathematical skills.

As expected, the paper documents substantial differences in reading and arithmetic skills between children from different caste, ethnic and religious backgrounds in India. However, these differences persist even after controlling for current school enrollment, grade completion and parental socio-economic status. This suggests that the differences in educational attainment between people of different social strata are not simply due to difference in enrollment rates. Even when children from disadvantaged groups attend school, they fail to learn as much as their peers. These findings have important policy implications. Much of the current discourse has focused on the importance of constructing schools or encouraging parents to send their children to school. Very little attention has been directed towards what happens in schools. Our results suggest that even holding school enrollment and grade attainment constant, children from disadvantaged backgrounds are likely to attain lower levels of reading and arithmetic skills. Since low performance at primary levels is likely to result in lower academic performance at subsequent levels, improving school quality and reducing discrimination may be the next challenge facing Indian educational policy.

## Introduction:

India is a predominantly Hindu nation with substantial religious diversity. According to the 2001 census, Muslims form about 13 percent of the nation with other religious minorities such as Christians, Sikhs and Jains forming another 3 percent. However, the remaining population is also highly differentiated. About 8 percent of the population identifies itself as being *adivasi* (the original inhabitants of

the land) or tribal, located outside the Hindu caste system. Another 16 percent of the population is considered *dalit*, belonging to the lowest castes that were considered impure by high caste Hindus. Adivasis and dalits are officially listed in a schedule appended to the Indian constitution and called scheduled tribe (ST) and scheduled caste (SC), respectively.

While a variety of affirmative action programs are in place to bridge educational, occupational and income disparities between the dalits (Scheduled Caste), adivasis (Scheduled Tribe) and general populations, substantial educational disparities persist. Table 1, based on our past research (Desai and Kulkarni, forthcoming), shows that the dalits and adivasis as well as Muslims tend to lag behind Hindus and other religious groups. We have also found that a great deal of this inequality emerges in primary school with children from the marginalized groups dropping out before completing primary school. In fact, if these children manage to complete primary school, their likelihood of completing middle school is much closer to that of the other groups (Desai and Kulkarni, forthcoming). This suggests that primary school is an important site for the creation of educational inequality.

### **Sources of Educational Inequalities:**

Racial and ethnic educational inequalities around the world have received a lot of research attention with different lines of research emphasizing different factors. Research on developing countries has tended to focus on two sets of factors: (1) Lack of access to schools. Since marginalized communities often live in distant locations they may lack access to schools within a reasonable commuting distance. (2) Family factors including poverty, lack of parental motivation or labor demands on children (for a review of this literature, see Shavit and Blossfeld 1993). This has led to a strong policy emphasis on building schools and motivating parents to get children into schools. But in a rush to get children into schools, the functioning of schools themselves has received little attention.

Research on industrial societies has tended to go beyond access and family factors to look at the role of the schools and communities in facilitating or inhibiting learning outcomes. In the United States, research has sought to clarify the individual, family and school compositional causes of racial, ethnic and class educational inequality. At the individual level, poor academic performance, retention, lack of teacher support and guidance, disliking school or teachers, and taking on adult responsibilities such as work and childcare have been found to contribute to lower achievement and dropping out of school. (Barro 1987, Croninger and Lee 2001, Jimerson 1999, Rumberger 1995) Parental educational attainment, parental involvement, household income and household wealth have informed family contributions to educational attainment (Rumberger 1987, 1995; Hauser et al 2000) Analyses of school and neighborhood composition have found that urbanicity, socioeconomic composition of the school significantly predict academic achievement. (Rumberger and Palardy 2005; Okpala et al 2001) Specifically, Rumberger and Palardy found

school SES has as much effect on educational attainment as the individual socioeconomic status of the student, regardless of race, social class or prior academic achievement, although high teacher expectations and positive academic climate eliminate the school-level effect of socioeconomic composition. (2005) Disaggregate data often find that the effect of these factors varies across racial, ethnic and socioeconomic measures. (Rumberger 1995) Thus, the U.S. literature suggests that an interaction of individual and environmental factors contribute to educational attainment at the intersection with race, ethnicity and socioeconomic status.

While qualitative literature in developing countries has also highlighted the role of schools and teachers in creating educational inequalities, much of this evidence tends to be anecdotal. For India, qualitative research paints a stark picture of the indignities suffered by dalit and adivasi children. There are reported instances of dalit children suffering from discrimination by teachers and other students. Eighty percent of the dalit students at a college in Aurangabad said that they were made to sit outside the classroom in primary school. In another study, a dalit school teacher recalled, 'We were asked to sit separately. Our copy or slates were not touched by the teachers' (The Probe Team 1999). Dalit homes are located outside of the main village and consequently farther from schools. It was observed in a village in Tamil Nadu that "None of the Scheduled Castes were even allowed to walk through the residential areas of the dominant castes or through the village's main street running through the residential areas of the dominant castes. They had to walk a long way along the periphery of the village to reach their huts" (Nambissan and Sedwal 2002). Teacher behavior often tends to humiliate dalit students. Upper caste teachers have low expectations of dalit pupils and consider them as 'dull' and 'uneducable' (The Probe Team 1999).

Adivasis, in addition to suffering from the same low expectations, face a different set of issues. They often live in hilly regions or forests that are relatively inaccessible. Demographically, tribal habitations are small and sparsely populated and hence, lack many infrastructure facilities including schools and roads. Even when schools are within walking distance for pupils, during monsoons it is not unusual for the roads to become impassable and for the teachers, who often live in larger towns, to surreptitiously close the school. These factors are particularly constraining for tribal children who live in isolated communities. Language poses another major challenge for tribal education. Tribals normally speak local dialects rather than the main state language. Consequently, tribal students feel further alienated when the teachers are not well trained to communicate in the tribal dialects (Sujatha 2002).

Muslim students suffer from similar disadvantages. Many Muslims would like to see education take place in Urdu, their mother tongue but few schools accommodate this. Children often face harassment and ridicule and rising religious tensions lead to children's alienation from the school. Some Muslim students

get primary education at madrasa, the religious school, which makes mainstreaming for secondary schooling often difficult.

Poor quality of schooling and teacher discrimination seems to play an important role in school drop out. A survey of 226 never-enrolled children found that 32 percent of the boys and 23 percent of the girls were never enrolled because the child was not interested. Among 106 drop-outs in the same survey, it was observed that 35 percent of the boys and 16 percent of the girls dropped out because the child did not wish to continue (The Probe Team, 1999).

We expect that a less than congenial environment and learning difficulties may play an important role in child's lack of interest. Thus, children's achievements are both important as measurements of quality of education and markers of drop-out potential.

### **Conceptual Framework and Research Questions:**

Much of the literature has focused on access to schooling – with the debate ranging between what is more important, supply of schools or parental demand for education manifested in school enrollment. This would imply that once schools are available to all children and parents can be persuaded to send children to school, there is little reason to expect inequalities in school outcomes between children of various social and ethnic groups.

We argue that above and beyond school enrollment, children's educational outcomes are a function of school interactions with children from privileged sections of society faring better than children from marginalized communities. Poor learning outcomes lead to higher drop-out rates among these children.

In order to examine this avenue of educational inequalities, we focus on reading and arithmetic attainment of children aged 8-11 from different strata of Indian society. Specifically we address the following questions:

1. Do reading and arithmetic skill levels for children differ by caste, ethnicity and religion?
2. Does this relationship persist after we control for school attendance, as measured by current enrollment level and grade completed?
3. How much of this inequality can be attributed to parental socioeconomic factors?

### **Data:**

In 2004-2005, University of Maryland and National Council of Applied Economic Research designed and fielded a survey of 41,550 households. This survey, India Human Development Survey 2005 (IHDS), contained questions about, health, education, employment, income, and gender empowerment. The survey was conducted all over India – in 25 states and Union Territories – and included urban as well

rural areas. This data collection was funded by grants from the National Institute of Health to the University of Maryland.

A major innovation of this survey was to conduct short assessments of reading, writing and arithmetic skills for children aged 8-11. Conducting educational assessment in developing countries – particularly India -- is difficult for a variety of reasons: children’s ability varies tremendously and an instrument must capture children at both ends of the distribution; tests must be translated in many different languages with similar difficulty levels; the instrument must be simple and intuitive so that interviewers can administer it easily and it would not frighten children who are not used to standardized tests. Luckily, we were able to work with *Pratham*, a voluntary organization that has worked in the field of elementary education for many years. They have developed simple assessment tools to measure the effectiveness of their training programs. These tools have been pretested on more than 250,000 children. Working in collaboration with Pratham, we were able to develop simple tests to measure whether a child is not able to read at all, or is able to read letters, words, sentences, paragraphs or stories. Simple addition, subtraction, multiplication and division problems were also developed. Children were asked to write simple sentences and were considered able to write if they could write a simple sentence such as “I like blue color” with zero or one mistakes.

Interviewers were trained extensively by Pratham volunteers using specially developed films so that they could differentiate between a child’s shyness and inability to read. They were also taught how to develop rapport with children. Tests were developed in a variety of Indian languages as well as English and children were asked to take the test in whichever language they were most comfortable in.

As a result, we have access to a survey that contains unique child assessment data as well as a wealth of household socioeconomic information. Children are classified according to their ability to read in one of the five categories: (1) Can not read at all; (2) Can read letters but not form words; (3) Can put letters together to read words but not read whole sentences; (4) Can read a short paragraph for 2-3 sentences but not fluent enough to read a whole page; (5) Can read a one page short story.

Children’s mathematical skills are classified in four categories: (1) Can not read numbers above 10; (2) Can read numbers between 10 & 99 but not able to do more complex number manipulation; (3) Can subtract a two digit number from another; (4) Can divide a number between 100 and 999 by another number between 1 and 9. Note that we focus on 2 digit numbers to avoid calculations on fingertips and to get a better estimate of true understanding of subtraction and division. Also, given the Indian system of expecting children to memorize multiplication tables from 1 to 20, we chose to test children on division rather than multiplication skills.

The primary independent variable of interest is social group, defined using a combination of caste, ethnicity and religion. Higher caste groups, 20 percent of the sample, form the omitted category. The rest of the sample is divided between: dalits, the lowest caste or the Scheduled Castes (23%), adivasi or the Scheduled Tribes (7%), Other Backward Castes (OBC) – castes located between dalits and high caste Hindus—(36%), Muslim (13%) and other religious groups including Christians, Jains and Sikhs (2%). These are mutually exclusive categories.

In addition to the social group of the respondent, we included several other independent variables in our models (summary statistics of these variables is reported in table 2). The learning tests were administered to children aged 8 to 11 years old. The average age was nine and a half years, with 25% of the sample aged 8, 22% aged 9, 34% aged 10, and 19% of the sample being 11 year olds. Forty seven percent of the sample was female. Educational standard completion is measured from no standards completed (0) to five or more standards (5+). The respondents averaged completion of the third standard, with 5% completing no standards, 13% one, 20% two, 23% three, and 20% four, and 18% completing five standards. Current enrollment is a self-reported measure of the child's current enrollment status. Eighty-nine percent of the children tested were currently enrolled in school.

Several household level variables were also included in the analysis. Twenty-five percent of the children resided in households in urban areas, with the remainder living in rural locations. Household assets were measured on a scale of 30 household consumer goods and housing assets, and reported in quintiles for the survey sample. The highest standard completed by an adult in the household was also measured. The average standard completed was 7<sup>th</sup>, or less than the completion of middle school. Eighteen percent of the households in the sample reported not having a literate adult in the household.

Each model also included controls for the state of residence, measured by a series of dummy variables.

## **Results:**

Since this is possibly the first all India survey of reading and mathematical achievement using a household rather than school sample, descriptive results are of interest in themselves.

Tables 3 and 4 show reading and mathematical ability levels for children 8-11 by grade completed and current enrollment status. As might be expected, currently enrolled students score higher on both outcomes than those currently not in school and skill level improves with grades completed. However, even among children who have completed 3 or more grades, reading skills remain low. Among kids with completed education of 3 or more grades, about 4 percent can not recognize any letters, about 9 percent can recognize letters but can not combine them to form words, a further 16 percent can read words but can not put them together to read a paragraph of 2-3 simple sentences.



Mathematical skills show a worse distribution. Among children who have completed 3rd or higher grade, 11 percent can not read numbers between 10 and 99, and 28 percent can read numbers but can not subtract two digit numbers.

Tables 5 and 6 show the basic distribution of these skills for urban and rural children and children of various social groups separately. Not surprisingly, reading and mathematical skills are higher for urban than for rural children. Social group differences are also clearly evident in these descriptive statistics. Even among children at the same grade level, children from upper castes and religious groups like Christian, Sikh and Jains do far better in their educational attainment than the four other groups, OBC or the middle castes, dalits, adivasis and Muslims.

While these descriptive statistics are of interest, they do not control for such factors as urban/rural residence, state of residence and age and gender of the child. Hence, we next turn to multivariate analyses. Since our outcome variables are ordinal, they are modeled using ordinal logit regression which takes the following form:

$$y_i^* = x_i \beta + \varepsilon_i$$

$$y_i = m \text{ if } \tau_{m-1} \leq y_i^* < \tau_m \quad \text{for } m = 1 \text{ to } J$$

Ordinal logit models are particularly suited to phenomena that contain measurement errors. In this case, our interviewers were specifically trained to distinguish between students at varying levels of reading and mathematical ability but nonetheless, the same student may well be classified by one interviewer as being able read letters and not words and by another interviewer as being able to put the letters together in words. So the outcome variable is better classified as a propensity to read rather than a specific skill level. Observed reading levels are tied to this latent variable by the measurement model underlying the ordinal logit regression:

$$y_i = 1 \text{ (does not read)} \quad \text{if } \tau_0 = -\infty \leq y_i^* < \tau_1$$

$$y_i = 2 \text{ (letter)} \quad \text{if } \tau_1 \leq y_i^* < \tau_2$$

$$y_i = 3 \text{ (word)} \quad \text{if } \tau_2 \leq y_i^* < \tau_3$$

$$y_i = 4 \text{ (paragraph)} \quad \text{if } \tau_3 \leq y_i^* < \tau_4$$

$$y_i = 5 \text{ (story)} \quad \text{if } \tau_4 \leq y_i^* < \tau_5 = \infty$$

Tables 7 and 8 show the effect of covariates of interest on reading and arithmetic skill levels of children in our sample using from these ordinal logit models. Each model contains dummy variables for state of residence. In order to simplify the discussion, these coefficients are not included in the discussion.

Model 1 of Table 7 shows the impact of basic demographic variables and social group on the reading skills of children aged 8-11. The results show that children's skill level improves as they get older. Females have lower reading levels than males – a finding that contrasts with most of the U.S. literature

where girls have slightly higher reading scores than boys. The impact of social stratification on reading level is very large for this model. Other backward castes are about half as likely to attain any given reading level as upper castes, dalits are slightly more than one-third as likely (0.36 times as likely) and adivasis are only .32 times as likely.

Model 2 controls for current enrollment and completed education. As can be expected, the differences between different social groups diminish suggesting that at least some of the achievement differences are mediated through school enrollment and grade promotion between various groups. But surprisingly, this dampens inter-group differences at only a modest level. Muslims are 0.39 times as likely as upper caste Hindus to attain a given reading level in Model 1; after controlling for current enrollment and grade completed Muslim children are only about 0.47 times as likely to attain a reading level as upper caste Hindu children.

Models 3 and 4 add two basic socio-economic factors, urban residence and household economic status measured by the household ownership of consumer durables and housing assets. These two factors, particularly the household assets variable, dampen the relationship between social group and reading achievement substantially. But even so, dalits are only about 0.58 times as likely to achieve a given reading level as upper caste Hindus. Similar differences persist for other social groups.

The two variables controlling for adult education in Model 5 further reduce this relationship, although surprisingly this reduction is not very large. The number of years of completed education for the most educated adult in the household, and a dummy variable for literate adult in the household shows that higher level of household education helps diminish the negative impact of caste, ethnicity and religion on children's reading achievements. However, even after all these controls are added, other backward caste children are 0.87 times as likely as upper caste children to attain higher reading scores and comparable proportions for dalits, adivasi and Muslims are 0.63, 0.79 and 0.64, respectively. It is important to note that even with these controls the negative effect of caste, ethnicity and religion persists.

We note that many of the variables that are included in our final model, Model 5, are themselves affected by caste, ethnicity and religion. Educational attainment in parental generation is also a function of social stratification. Additionally, the same school factors that result lower skill attainment for children may also affect their progression from one grade to another. So controlling for these factors, underestimates the impact of caste, ethnicity and religion on children's skill attainment. But even so, substantial differences between children from different social backgrounds are obvious in the result we present.

Results for arithmetic skills in Table 8 are similar, although the differences between different social groups are even wider. It is important to note that ordinal logit models assume that the slope coefficients are identical across different levels of outcome variables. This proportional odds assumption can be tested

using Wald test. While an omnibus likelihood ratio test for our model rejects the assumption that all coefficients, particularly the coefficients for state dummies, are identical across different levels of outcome variables, the Wald test for specific coefficients associated with social groups confirms for at least for these variables of interest, the odds ratios are more or less similar across different levels of reading and arithmetic skills.

### **Discussion:**

The results presented in this paper document substantial differences in reading and arithmetic skills between children from different caste, ethnic and religious backgrounds in India. These differences persist even after controlling for current school enrollment, grade completion and parental socio-economic status.

This suggests that the differences in educational attainment between people of different social strata are not simply due to difference in enrollment rates nor are they solely due to parental lack of education and resources. Even when children from disadvantaged groups attend school, they fail to learn as much as their peers. Qualitative research and anecdotal evidence provides a variety of explanations for these findings. Teachers typically come from higher castes and have very low expectations for children from marginalized groups. They are also more predisposed to seeing the behavior of these children as being problematic than that of higher caste children. In our survey, we also asked children if the teacher treats them nicely. We found that children were extremely reluctant to say that the teacher did not treat them nicely but even so, while 76 percent of the upper caste children responded that their teacher treated them nicely, only 66 percent of the dalit and 65 percent of the Muslim children felt that way.

Parental inability to negotiate the school system may be another mechanism through which social differences operate. In another paper using data from the same survey (Vanneman et al. 2006), we find that upper caste households have substantially greater social networks than lower caste households. With increased social contacts within formal systems, individuals are increasingly more likely to be able to negotiate these systems and become their children's advocates when children experience difficulties in school. Thus, teachers' discriminatory behavior combined with parental lack of social capital, increases the likelihood that school experiences of marginalized children are far more negative than those of upper caste children, resulting in lower levels of academic skill acquisition.

Our results also point to a need to better understand the diversity across different marginalized groups. Much of the disadvantage of other backward castes seems to be associated with lower income and lower parental education. But once we control for these factors the OBC disadvantage is smaller and not statistically significant in acquisition of reading skills. Adivasis have the lowest performance in both reading and arithmetic skills but a substantial part of their disadvantage is associated with lack of enrollment and

lower parental socio-economic resources. In final models, controlling for all these factors, dalits and Muslims appear to be the most disadvantaged groups.

These findings have important policy implications. Much of the current discourse has focused on the importance of constructing schools or encouraging parents to send their children to school. Very little attention has been directed towards what happens in schools. Our results suggest that even holding school enrollment and grade attainment constant, children from disadvantaged backgrounds are likely to attain lower levels of reading and arithmetic skills. Since low performance at primary levels is likely to result in lower academic performance at subsequent levels, improving school quality and reducing discrimination may be the next challenge facing Indian educational policy.

## References

- Barro, Stephen M. 1987. *Who Drops Out of School and Why? Findings From High School and Beyond*. NCE87397. Washington, DC: National Center for Education Statistics.
- Croninger, Robert G. and Valerie E. Lee. 2001. "Social Capital and Dropping Out of High School: Benefits to At-Risk Students of Teachers' Support and Guidance." *Teachers College Record* 103(4): 548-81.
- Desai, Sonalde and Veena Kulkarni. Forthcoming. "Changing Educational Inequalities in India in the Context of Affirmative Action" *Demography*.
- Hauser, Robert M. and David L. Featherman. 1976. "Equality of Schooling: Trends and Prospects." *Sociology of Education* 49(2): 99-120.
- Hauser, Robert M., Solon J. Simmons, and Devah I. Pager. 2000. *High School Dropout, Race-Ethnicity, and Social Background From the 1970s to the 1990s*. New York, NY: Russell Sage Foundation.
- Jimerson, Shane R. 1999. "On the Failure of Failure: Examining the Association Between Early Grade Retention and Education and Employment Outcomes During Late Adolescence." *Journal of School*
- Nambissan, Geetha B. and Mona Sedwal. 2002. "Education for All: The Situation of Dalit Children in India." *India Education Report*, R. Govinda. New Delhi: Oxford University Press.
- Okpala, Comfort O., Amon O. Okpala, and Frederick E. Smith. 2001. "Parental Involvement, Instructional Expenditures, Family Socioeconomic Attributes, and Student Achievement." *The Journal of Educational Research* 95(2): 110-115.
- Rumberger, Russell W. 1995. "Dropping Out of Middle School: A Multilevel Analysis of Students and Schools." *American Educational Research Journal* 32(3): 583-625.
- Rumberger, Russell W. 1987. "High School Dropouts: A Review of Issues and Evidence." *Review of Educational Research* 57(2): 101-12.
- Rumberger, Russell W. and Gregory J. Palardy. 2005. "Does Segregation Still Matter? The Impact of

Student Composition on Academic Achievement." *Teachers College Record* 107(9): 1999-2045.

Shavit, Yossi and Hans-Peter Blossfeld. 1993. *Changing Educational Attainment in Thirteen Countries*. Boulder, Colorado: Westview Pres

Sujatha, K. 2002. "Education Among Scheduled Tribes." *India Education Report.*, R. Govinda. New Delhi: Oxford University Press.

The Probe Team. 1999. *Public Report on Basic Education in India*. New Delhi: Oxford University Press.

Vanneman, Reeve, James Noon, Sonalde Desai, Mitali Sen and Abusaleh Shariff. 2006. *Social Capital in India: Caste, Tribe and Religious Variation in Social Networks*. Paper presented at the PAA Meetings, Los Angeles.

**Table 1: Educational Attainment and Transition Probabilities at Various Educational Level, (Survey Year 1999-2000, NSS 55<sup>th</sup> round)**

	<b>Educational Attainment</b>	<b>Transition Probability</b>
<b><i>Upper Caste Hindu &amp; Other Religion</i></b>		
Illiterate & Below Primary	30.40	
Primary	17.45	0.70
Middle	23.88	0.82
Secondary	22.82	0.66
College	5.45	0.34
	100.00	
<b><i>Dalit</i></b>		
Illiterate & Below Primary	50.45	
Primary	17.88	0.50
Middle	18.49	0.71
Secondary	11.61	0.52
College	1.57	0.22
	100.00	
<b><i>Adivasi</i></b>		
Illiterate & Below Primary	57.29	
Primary	15.08	0.43
Middle	16.58	0.72
Secondary	9.57	0.52
College	1.48	0.25
	100.00	
<b><i>Muslim</i></b>		
Illiterate & Below Primary	48.05	
Primary	17.95	0.52
Middle	19.53	0.71
Secondary	12.56	0.52
College	1.91	0.25
	100.00	

\* Only people who completed the previous level and are of appropriate age at included in calculating transition probabilities

**Table 2: Summary Descriptives**

Variable	Mean	Standard Deviation	Minimum	Maximum
Reading Learning Test Score	2.55	1.35	0	4
Math Learn Test Score	1.53	1.03	0	3
Age	9.47	1.07	8	11
Gender (Male=0, Female=1)	0.47	0.50	0	1
Other Forward Castes	0.19	0.40	0	1
Other Backward Castes	0.36	0.48	0	1
Scheduled Caste/Dalit	0.23	0.42	0	1
Scheduled Tribe/Adivasi	0.07	0.25	0	1
Muslim	0.13	0.34	0	1
Christian, Sikh, Jain	0.02	0.13	0	1
Standard Completed (0-5+)	2.95	1.46	0	5
Currently Enrolled (Not enrolled=0, Enrolled=1)	0.89	0.32	0	1
Residence (Rural=0, Urban=1)	0.25	0.43	0	1
Assets Quintile	2.87	1.35	1	5
Highest Standard Completed, Adults in Household	6.55	1.55	0	15
Literate Adult in Household	0.98	0.45	0	1
	Observations	12,302		

Source: Special tabulations by the authors using unit record level IHDS 2005 Survey data

**Table 3: Reading Ability by Enrollment Status and Highest Standard Completed for 8 to 11 Year Olds**

Not Enrolled					
Standard Completed	Does not read	Letter	Word	Paragraph	Story
0	72.11	11.58	12.55	2.19	1.58
1	31.1	15.33	31.21	13.3	9.06
2	15.67	16.67	22.4	21.05	24.22
3	8.05	12.04	16.43	36.4	27.08
4	4.05	5.2	18.27	30.75	41.73
5	7.36	5.61	9.61	22.02	55.4
Total	19.07	10.81	17.98	23.44	28.71
Currently Enrolled					
Standard Completed	Does not read	Letter	Word	Paragraph	Story
0	37.99	29.41	22.68	5.55	4.38
1	19.93	24.79	31.62	11.25	12.42
2	10.96	17.57	27.58	22.19	21.7
3	5.85	12.7	22.44	25.49	33.51
4	3.16	8.68	15.28	26.04	46.85
5	3.56	5.96	10.76	22.42	57.31
Total	9.2	13.94	21.05	21.6	34.21

**Table 4: Mathematics Ability by Enrollment Status and Highest Standard Completed for 8 to 11 Year Olds**

Not Enrolled				
Standard Completed	Does not read numbers >10	Number	Subtraction	Division
0	78.42	18.44	2.57	0.58
1	43.35	40.17	12.73	3.75
2	30.02	39.26	17.12	13.6
3	18.57	29.96	29.77	21.7
4	9.62	29.89	30.06	30.43
5	10.87	18.71	30.17	40.25
Total	27.89	29.69	22.24	20.18
Currently Enrolled				
Standard Completed	Does not read numbers >10	Number	Subtraction	Division
0	51.01	41.28	5.78	1.93
1	31.02	45.34	17.1	6.54
2	22.88	39.13	25.81	12.18
3	13.06	35.76	31.58	19.6
4	7.89	27.7	29.79	34.61
5	7.08	20.14	30.49	42.3
Total	16.94	33.38	26.81	22.88



**Table 5a: Reading Ability by Residence and Standard Completed for 8 to 11 Year Olds**

<b>Rural</b>					
Standard Completed	Does not read	Letter	Word	Paragraph	Story
0	50.02	24.13	18.8	4.36	2.68
1	23	24.43	32.82	9.58	10.17
2	12.98	18.28	28.4	20.64	19.7
3	7.08	14.27	22.67	26	29.98
4	3.64	9.13	16.92	26.82	43.48
5	4.59	6.53	12.04	22.21	54.62
Total	11.87	14.68	21.98	20.92	30.56
<b>Urban</b>					
Standard Completed	Does not read	Letter	Word	Paragraph	Story
0	32.49	27.54	25.73	6.09	8.15
1	12.39	22.09	26.57	18.93	20.02
2	6.61	14.83	22.53	26.69	29.34
3	3.15	7.81	19.33	28.45	41.26
4	2.19	5.74	11.95	26	54.12
5	2.11	4.43	7.17	22.83	63.46
Total	5.49	10.24	16.78	24.55	42.95

**Table 5b: Reading Ability by Social Background for 8 to 11 Year Olds**

<b>All</b>					
Standard Completed	Does not read	Letter	Word	Paragraph	Story
Other Forward Castes	4.37	8.49	15.46	25.1	46.57
Other Backward Castes	10.53	12.92	20.09	21.52	34.95
Scheduled Caste/Dalit	12.64	17.26	23.02	19.78	27.29
Scheduled Tribe/Adivasi	13.15	15.32	26.25	23.16	22.12
Muslim	14	16.75	24.26	20.75	24.24
Christian, Sikh, Jain	2.36	5.16	13.24	20.76	58.48
Total	10.31	13.59	20.71	21.81	33.6
<b>Rural</b>					
Other Forward Castes	5.35	9.73	17.34	24.85	42.73
Other Backward Castes	12.13	13.95	21.02	20.62	32.28
Scheduled Caste/Dalit	14.2	18.05	24.14	18.2	25.4
Scheduled Tribe/Adivasi	13.7	15.63	26.42	22.72	21.53
Muslim	15.7	17.92	25.11	20.78	20.5
Christian, Sikh, Jain	1.74	3.58	15.12	20.55	59.01
Total	11.87	14.68	21.98	20.92	30.56
<b>Urban</b>					
Other Forward Castes	2.54	6.18	11.96	25.56	53.76
Other Backward Castes	4.42	9	16.51	24.94	45.14
Scheduled Caste/Dalit	6.18	13.96	18.41	26.33	35.11
Scheduled Tribe/Adivasi	7.92	12.4	24.59	27.36	27.73
Muslim	10.84	14.56	22.67	20.7	31.23
Christian, Sikh, Jain	3.55	8.23	9.61	21.15	57.47
Total	5.49	10.24	16.78	24.55	42.95

**Table 6a: Arithmetic Ability by Residence and Standard Completed for 8 to 11 Year Olds**

<b>Rural</b>				
Standard Completed	Does not read numbers >10	Number	Subtraction	Division
0	60.99	34	3.94	1.07
1	34.86	45	14.34	5.8
2	26.29	40.12	22.52	11.07
3	15.78	38.56	28.57	17.09
4	8.6	31.45	28.41	31.54
5	8.72	22.52	29.67	39.1
Total	20.54	35.27	24.12	20.08
<b>Urban</b>				
Standard Completed	Does not read numbers >10	Number	Subtraction	Division
0	45.09	41.35	9.61	3.95
1	20.9	44.44	26.36	8.31
2	15.11	35.97	32.47	16.45
3	7.33	25.15	39.69	27.83
4	6.67	17.98	33.89	41.46
5	4.12	13.72	32.46	49.7
Total	10.87	25.89	32.99	30.25

**Table 6b: Arithmetic Ability by Social Background for 8 to 11 Year Olds**

<b>All</b>				
Standard Completed	Does not read numbers >10	Number	Subtraction	Division
Other Forward Castes	8.97	26.79	27.35	36.89
Other Backward Castes	17.9	32.42	26.85	22.83
Scheduled Caste/Dalit	22.6	36.76	24.66	15.99
Scheduled Tribe/Adivasi	26.78	36.82	23.77	12.63
Muslim	22.3	36.89	24.78	16.03
Christian, Sikh, Jain	3.72	18.38	45.28	32.62
Total	18.17	32.96	26.3	22.58
<b>Rural</b>				
Other Forward Castes	11.02	32.06	23.22	33.71
Other Backward Castes	20.25	34.34	25	20.4
Scheduled Caste/Dalit	24.68	37.67	23.17	14.48
Scheduled Tribe/Adivasi	27.98	37.87	22.29	11.86
Muslim	23.76	38.3	23.01	14.93
Christian, Sikh, Jain	2.65	18.31	44.7	34.34
Total	20.54	35.26	24.12	20.08
<b>Urban</b>				
Other Forward Castes	5.14	16.97	35.05	42.84
Other Backward Castes	8.93	25.09	33.89	32.08
Scheduled Caste/Dalit	13.94	32.99	30.82	22.25
Scheduled Tribe/Adivasi	15.42	26.86	37.77	19.94
Muslim	19.56	34.26	28.08	18.09
Christian, Sikh, Jain	5.78	18.53	46.39	29.31
Total	10.87	25.89	32.99	30.25

**Table 7: Reading Ability Ordinal Logistic Regression, Odds Ratios**

	<b>Model (1)</b>	<b>Model (2)</b>	<b>Model (3)</b>	<b>Model (4)</b>	<b>Model (5)</b>
<b>Age</b>	1.494** (0.033)	1.046 (0.027)	1.057* (0.027)	1.100** (0.029)	1.129** (0.030)
<b>Gender</b>	0.848** (0.04)	0.842** (0.04)	0.837** (0.04)	0.835** (0.04)	0.824** (0.04)
<b>OBC</b>	0.561** (0.038)	0.623** (0.043)	0.671** (0.046)	0.819** (0.058)	0.87 (0.062)
<b>Scheduled Caste/Dalit</b>	0.362** (0.027)	0.397** (0.03)	0.426** (0.032)	0.581** (0.047)	0.629** (0.052)
<b>Scheduled Tribe/Adivasi</b>	0.319** (0.029)	0.379** (0.034)	0.436** (0.04)	0.699** (0.068)	0.785* (0.077)
<b>Muslim</b>	0.385** (0.031)	0.473** (0.039)	0.456** (0.038)	0.556** (0.047)	0.643** (0.056)
<b>Christian, Sikh, Jain</b>	0.937 (0.146)	1.081 (0.171)	1.072 (0.173)	1.055 (0.17)	1.099 (0.177)
<b>Standard Completed</b>		1.816** (0.04)	1.818** (0.04)	1.745** (0.039)	1.697** (0.038)
<b>Currently Enrolled</b>		1.345** (0.123)	1.366** (0.125)	1.382** (0.125)	1.307** (0.119)
<b>Urban Residence</b>			1.834** (0.085)	1.160** (0.065)	1.162* (0.066)
<b>Assets Quintile</b>				1.466** (0.036)	1.303** (0.035)
<b>Highest Standard Completed by Adult in Household</b>					1.059** (0.007)
<b>Literate Adult in Household</b>					4.051** (0.825)
<b>Observations</b>	12271	12271	12271	12271	12271

# highest standard of the adult in the household

Robust standard errors in parentheses

\* significant at 5%; \*\* significant at 1%

Source: As in table 2.

**Table 8: Mathematics Ability Ordinal Logistic Regression, Odds Ratios**

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
<b>Age</b>	1.496** (0.033)	1.056* (0.028)	1.070* (0.029)	1.118** (0.031)	1.144** (0.031)
<b>Gender</b>	0.736** (0.035)	0.718** (0.036)	0.709** (0.035)	0.703** (0.035)	0.690** (0.035)
<b>OBC</b>	0.506** (0.035)	0.553** (0.039)	0.610** (0.043)	0.760** (0.055)	0.815* (0.061)
<b>Scheduled Caste/Dalit</b>	0.308** (0.023)	0.327** (0.026)	0.358** (0.029)	0.505** (0.043)	0.555** (0.048)
<b>Scheduled Tribe/Adivasi</b>	0.272** (0.026)	0.314** (0.03)	0.374** (0.036)	0.631** (0.064)	0.716** (0.075)
<b>Muslim</b>	0.328** (0.029)	0.393** (0.036)	0.375** (0.035)	0.470** (0.044)	0.549** (0.053)
<b>Christian, Sikh, Jain</b>	0.856 (0.107)	0.962 (0.121)	0.959 (0.126)	0.966 (0.13)	1.004 (0.135)
<b>Standard Completed</b>		1.781** (0.04)	1.787** (0.041)	1.718** (0.039)	1.680** (0.039)
<b>Currently Enrolled</b>		1.298** (0.114)	1.321** (0.118)	1.325** (0.116)	1.284** (0.111)
<b>Urban Residence</b>			2.076** (0.097)	1.234** (0.071)	1.234** (0.072)
<b>Assets Quintile</b>				1.550** (0.04)	1.361** (0.039)
<b>Highest Standard Completed by Adult in Household</b>					1.067** (0.007)
<b>Literate Adult in Household</b>					2.997** (6.07)
<b>Observations</b>	12271	12271	12271	12271	12271

# highest standard of the adult in the household

Robust standard errors in parentheses

\* significant at 5%; \*\* significant at 1%

Source: As in table 2.