

Title: Academic Resilience among Children from Disadvantaged Social Groups in India

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***Abstract***

There has been significant progress in literacy and schooling in India since its independence. Yet the achievements are low in comparison to countries in similar stages of development. The situation is worse among groups who have a history of social exclusion. Children from these groups have lower enrollment and higher dropout rates than national averages. Yet some of them are able to overcome these limitations and show academic resilience.

The main purpose of our study is to examine the different child, household and school level factors that result in academic resilience among these children. Using data from the Indian Human Development Survey (2005), we find that the role of factors vary across different groups. We also examine the extent of the indirect effect of group membership mediated through those factors to examine the mechanism through which group membership affects resilience. The results from the decomposition analysis show that the group facing stronger impact through structural factors have fewer protective factors, particularly at the school level. However, in all cases, the child level and household level factors play an important role, though their importance varies. The results highlight the need for educational policies, which addresses the importance of schools as drivers and determinants of academic resilience.

Keywords: academic resilience, social exclusion, education, schools, India

## *Introduction*

There has been significant increase in educational attainment in India in the fifty years since the formation of the union in the middle of the 20th century. For example, adult literacy rate rose from 18 percent of the population in the 1951 census to 65 percent in 2001. Yet, the change was not uniform across all social groups. Adult educational attainments of some of the social groups remain low.

The proportion of adults who were never enrolled was almost double among the Scheduled Castes (SC) compared to the Caste Hindus (CH) in 2000. The proportion among the Scheduled Tribes (ST) were worse while that among the Muslim community were slightly better. Secondary completion rates among ST men in 2000 were almost half that of CH, the rates were slightly better for SC and Muslim community but still lower than CH. The situation among ST women was even worse with the proportion being close to a third (Desai and Kulkarni (2008) using data from 55th round of the National Sample Survey (NSS)). Deolalikar (2010) using the same data found that though the average school completion rates for SCs and STs have improved over time, the difference between Muslim men and HC have remained at the same level for most of the 20th century.

This group-based inequality is also present among school age children. While about 6.94 percentage of all children in the 6-13 years age group are out of school in 2005, the percentages are 8.17 for SC, 9.54 for ST and 9.97 for Muslim children (Govinda 2008). Asadullah et al. (2013) using the NSS data over 1983 – 2004 on enrollment among 6-18 years and completion among 10-21 years old found significant gaps even after netting out differences in household and socioeconomic characteristics. Though they have narrowed over time, they remain significant for Muslim children. Desai and Kulkarni (2008) using the same data (NSS 1983-2004) found that the gap in the transition from primary to secondary levels between CH and Muslim continued and even widened over the period while there was a modest decline in the case of the SC/ST.

These three groups combined constituted more than a third of the population of India in 2001. The proportion of SCs was 16%, while that of the STs was 8% and the Muslims constituted 13% of the total population in India. Though these particular groups are quite different among each

other (as well as constituted of heterogeneous groups themselves<sup>1</sup>), there is an important commonality in their identity. All are products of significant exclusion in different aspects of social and economic life in India<sup>2</sup>.

The SC or the Dalit (oppressed) constitute those outside the caste system of the predominant Hindu religious group. They are a product of a long history of occupational segregation in low-status jobs and ritualistic and symbolic restrictions in social life. The ST or the Adivasi (original inhabitants) constitute the indigenous people from remote areas and are systematically deprived in terms of access to public goods and have lesser opportunities for participation in mainstream economic, social and political systems. The Muslim community is a product mainly of invasion and conversion over a period of close to a thousand years of Muslim rule in India. During the partition of the British India in 1947, a majority of the middle-class Muslim migrated to the newly formed state of Pakistan. Those left behind were mainly from the lowest socioeconomic status. However, the partition of the country based on religion resulted in an atmosphere of distrust and is often attributed to a sense of alienation among the Muslim community.

Exclusion and discrimination in the labor market as well as in markets for the factor of production (e.g. land, inputs, credit) is usually associated with their being in poverty (Basant and Shariff 2010; Bhagat 2013; Deshpande 2011; Thorat and Neuman 2012; Zacharias and Vakulabharanam 2011). Labor force participation rates are high among all socially excluded groups yet they are in occupations characterized by low wage and productivity and use usually employed in the informal sector. The SCs are typically restricted to the caste-based occupation while the STs are involved in subsistence farming (Das 2006). The proportion of poor among working population is also high among the Muslims as most are engaged in petty trades and other self-employment activities (Unni 2009). Though several studies (Borooah 2010; Das 2010) show that the SCs and STs face lesser discrimination compared to the Muslims in regular employment, they also find that earning differentials are mainly due to pre-market inequalities (e.g. in educational attainment). However, occupational discrimination is stronger than wage discrimination even in urban areas (Madheswaran and Attewell 2010).

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<sup>1</sup> The SCs include 1108 different castes, STs include close to 744 different tribes, and Muslims are generally of three broad groups based on their ancestry, though there are substantial regional variations of sub-groups.

<sup>2</sup> An extensive discussion on the origins and the current state of these groups is beyond the scope of this paper. Interested readers may refer to Beteille (1969) and Gupta and Madan (1992) for SC, Ghurye (1980) and Xaxa (2008) for ST, and Sachar et al. (2006) and Basant and Shariff (2010) for additional information.

Since early 1980s, several affirmative action policies were introduced which reserved certain proportion of jobs in public sector for the SCs and STs<sup>3</sup>. However Howard and Prakash (2012) using data from NSS 1983-2000 found limited effect of reservation in public sector employment on the SC and the STs for low and middle skilled employment. For high skilled employment, public sector quotas have significant positive effect for SCs and negative effect on ST occupational choice. Das (2006) argues that reservation of job may have created an oversupply and resulted in rationing of jobs while the absence of reservation in the private sector makes it difficult for them to compete in that market. In the absence of salaried jobs, casual labor remains their main fall back option. Ethnographic studies also indicate that while reserved jobs remain a primary articulation of aspiration, in general, most parents and children had a clear secondary list of vocations and occupations that they thought to be more realistic for them to gain access (Balagopalan and Subrahmanian 2003).

Childhood socioeconomic status (SES) plays an important role in educational attainment through intra-uterine growth, early childhood anthropometrics, and cognitive and non-cognitive development. An extensive literature in economics (Cunha and Heckman 2008; Todd and Wolpin 2003), sociology (Brooks-Gunn and Duncan 1997; Duncan et al. 1998) and psychology (Ripple and Luthar 2000; Schoon et al. 2002) links low SES with poor educational attainment. In addition to these direct effects, Boudon (1974) argues that there is also a secondary effect as a result of choices made by both the child and their parents under resources constraints that are characteristics of their class position (Breen and Goldthorpe 1997; Jonsson and Erikson 2000). Yet, several studies in areas of developmental psychology find that some are able to overcome and flourish in the face of adversity (Prince-Embury 2013). Specifically in the case of education, despite coming from low SES, some children perform adequately in school and show all sign of healthy development (Taylor 1994). This ability to rebound is called resilience and is usually viewed as a dynamic developmental process that involves protective qualities associated with individual students (internal protective factors) and their environments (external protective factors) (Lerner 2006; Luthar et al. 2000). In this area, studies have looked into the importance of family structure, cohesion, structure, emotional support, etc. (Garmezy 1991; Luthar and Zigler 1991; Masten and Coatsworth 1998). Others have looked into how school affects through “orderly” environment, resources, peers, caring and supportive teachers (Benard 1991; M Rutter

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<sup>3</sup> There is no explicit reservations based on religion except for a few states. However, some in the Muslim community are eligible for reservation through their Other Backward Class (OBC) status introduced since 2006.

1987; Henderson and Milstein 2003; Brooks 2006). An important area of focus in resilience studies has been on risk due to poor socioeconomic status. Werner and Smith (1992, 2001)'s work was among the first in areas of socioeconomic disadvantages. However, now there are several studies in this area e.g. by Borman and Overman (2004), Graves (2014), Gizir and Aydin (2009) and others.

A better understanding of these circumstances that weaken the effect of risks on outcomes has an important appeal as a candidate for public policy interventions. This is more sustainable as it involves strengthening already existing mechanism, which are grounded in the context of a particular social group. Therefore, it is important to understand the contextual nature of these protective factors due to the possible differences in how the risk of social exclusion manifests in each case. The study finds that specific protective factors differ among groups. This is possibly due to the nature of the exclusion, but it is also due to the differences in distribution of the protective factor across the groups. However, schools which are known to play very important role for children from households who economically disadvantaged, plays rather insignificant role for those who are strongly affected by poverty as well as those who face discrimination most. This highlights the need for contextual policies.

### ***Research questions***

The main purpose of this study is to identify factors, which enable the children, from socially excluded groups, to be academically resilient. We study children in the 8-11 years age group. There are a couple of reasons to focus on this group. An extensive literature indicates that differences in cognitive abilities that appear at early ages often persists over the lives of the children (Cunha and Heckman 2008). In addition, in a case of India, Desai and Kulkarni (2008) finds the majority of educational inequality emerges at the primary school level. Academic attainment for those who transition to post-primary levels is not significantly different across social groups. Here we focus on cognitive development measured by performance in reading and arithmetic tests. One of the major problems faced by children from socially excluded groups in India is the quality of their education that they can get access to (Pratham 2005). Their inability to learn at their level is also associated with their losing interest in schools and eventually dropping out (Bhatty 1998; PROBE Team 1999).

Our primary aim is to first identify protective factors associated with the cognitive development of children from the different socially excluded groups. Cross-cultural studies show that factors that are protective in one context may have different effects in others (Noltemeyer and Bush 2013; Ungar 2008). Further, because of the differences in the nature of the disadvantages faced by different groups, we are also interested in understanding the association of group membership with the protective factors. Social exclusion, poverty, and related factors may also imply that those from such backgrounds are likely to have less of those factors associated with academic resilience. So we further examine the extent to which belonging to these social groups is associated with these specific set of factors. If the protective factors differ between the groups, accounting for this association becomes important in designing inclusive education policy. Thus, we examine the following two questions:

- i) Do academic protective factors differ across different social groups even when they are from the same country? Borman and Overman (2004) observes that they are usually fewer for non-whites from low SES backgrounds, but usually they are similar across different groups of color.
- ii) Does group membership affect outcome differently through these factors? Understanding the role of group membership on the protective factors are important for fully understanding the contextual nature of risk and resilience.

### ***Data and methods***

In this study, I use the first wave of the India Human Development Survey (IHDS) 2005 (Desai et al. 2009), conducted by the University of Maryland and National Council of Applied Economic Research, New Delhi. It is a nationally representative sample of 41,550 households in 1,503 villages and 971 urban neighborhoods from 25 states and union territories. The survey covered topics on health, education, employment, economic status, marriage, fertility, gender relations, and social capital. The main reason for using this survey is that it also included a short assessment test in reading, writing, and arithmetic skills for children aged 8-11 years. Approximately 12,300 children were tested for their reading and arithmetic skills. IHDS developed these tests in collaboration with Pratham, a non-governmental organization in the field

of elementary education in India. Pratham was also involved in training the interviewers to be responsive to children.

Two studies have already explored the implications of social group membership on test performance using this data. Desai et al. (2010) found significant differences between reading and arithmetic skills by social groups, which remain even after controlling for current enrollment status, grade completion, and parental socioeconomic status. Borooah (2012) using the same data set but with a wider selection of controls (school hours, homework hours and private tuition hours per week, days absent in the last month and school type (private, government and others)), also found significant effects of social groups. Their decomposition analysis further probed the extent of disadvantages faced by the social groups.

The main contribution of this research will be to revisit this issue from the perspective of resilience. This would essentially require identifying factors that are protective in the face of disadvantages. In addition, we also plan to undertake a decomposition analysis. However unlike in Borooah (2012) where the main focus was to identify the magnitude of discrimination, here we focus on the extent to which the attributes are associated with group affiliations for a better understanding of the mechanism of resilience among these groups.

For analytical purpose, we conceptualize cognitive abilities as a function of learning efficiency and educational inputs following Glewwe (2002). Learning efficiency include various factors like innate abilities, child and parental motivation, parental involvement and school quality. Educational inputs include factors like expenditure on education, time spent in learning, school infrastructure. For a preliminary understanding of these relations in the Indian context, I use the following reduced form specification

$$Prob(\text{Success}) = \alpha + \beta_0 X_0 + \beta_c X_c + \beta_h X_h + \beta_s X_s + \beta_{sg} X_{sg} + \beta_z X_z + \epsilon \quad (1)$$

The assessment of reading skills classified the children into those who can read a one-page story, a short paragraph, words, letters or not at all. The assessment of arithmetic skills classified children into those who can divide a three-digit number by a one-digit number, can subtract a two-digit number from another, can read a two-digit number, and cannot read a two-digit number. We consider a binary variable indicating the ability to read whole sentences or not and a

binary variable indicating the ability to do subtraction or division or not, as a measure of success in reading arithmetic tests.

The main independent variables include child level ( $X_c$ ), household level ( $X_h$ ) and school level ( $X_s$ ) controls and identifier of social groups ( $X_{sg}$ ). The resilience literature highlights the importance of several protective factors. They include individual characteristics of the child, like temperament, autonomy, effective coping strategies and communication skills and characteristics of child's social environment, including family – cohesion, support, positive attachment; environmental like positive school experiences, peer relations, relationship with other adults (Prince-Embury 2013). Due to data limitations, instead of these specific factors we use several instruments that are indicative of these factors. We use two variables as indicators of child-level factors – hours spent on homework or paid academic assistance (tuition) in a week and days absent from school in the last month. Two variables are used as indicators of household level factors – number of household member involved in supervising children's homework and whether the child attends a government, private or other type (government aided, convent, madrassa, other or open school) of schools. Finally, four variables are used as indicators of school level factors – whether the student enjoys school, whether the teacher treats the student nicely, whether the household has confidence in the school to provide good education and the district level average student classroom ratio (SCR) at the primary level.

The social group indicators are based on a composite variable of religion and caste from the IHDS. The variable identifies the SCs and the STs irrespective of religion. Except for them, those belonging to Muslim, Jains, and Christian religions are identified as same irrespective of caste. This essentially means that the OBCs are not separated from the Muslim for the purpose of our analysis. This is not a major issue as affirmative action for OBC were introduced later. Sikhs are coded as OBCs if identified so, else coded as Sikh religion. Finally, Hindus are classified into Brahmins, Forward Castes, OBCs and other. For our purpose, we identify Brahmins and Forward Caste as CH, the OBC, SC, ST and Muslim as in the composite variable and all remaining as Others.

We also control for a set of 'structural variables' ( $X_z$ ) which includes household assets, consumption poverty (per-capita consumption expenditure as a proportion of the poverty level),



and mother's education (in years). Finally, we control for child age, an indicator of a female child, an indicator whether the child missed classes in the last month for short-term morbidity like fever, cough and diarrhea and location in urban versus rural areas. To account for different concentration of individuals belonging to the particular social groups across the country as well other state level fixed effects, we also control for state dummies.

With these additional controls, the child, household, and school controls would pick up some of the internal characteristics of the students, aspects of parental expectations and intentions as well as school and peer caring relations. For example, given child age, gender, recent morbidity and socioeconomic conditions as well as parental and school inputs, days absent and hours spent on homework can be considered indicative of child's motivation, persistence and other characteristics associated with self-efficacy, autonomy, and control. Formal schooling in India puts undue emphasis on inputs from home (Balagopalan and Subrahmanian 2003). This creates additional disadvantages for the marginalized households where the children are usually first generation learners and the parents are limited in their ability to spend on education. This is an important factor of educational stratification. However, in those situations, having educational support at home, which often involves paid services for out-of-school instructions or sending to paid private schools (generally believed to provide better quality education) shows parental motivation and expectation from child education. The four school factors are similarly indicative of access to supportive relationships from both teachers and peers and material resources. For example, child level response of whether they enjoy school and being treated nicely by teachers are indicative of the important roles played by peers and teachers at school. Confidence in school is indicative of school quality while SCR indicates a broader societal intentions.

Previous studies on academic resilience among disadvantage groups (Borman and Overman 2004; Garmezy 1991; Gizir and Aydin 2009) identified protective factors by observing individuals over time. Since here we are limited to only one period of data, we pursue an alternative strategy. We identify a factor as protective if it shows significant positive effect on cognitive skills for that group while having similar or better effect compared to the control group. Since the main source of risk is social exclusion, having no significant difference with the control group would imply that particular factors removes the effect of exclusion. It plays an even stronger role when the difference is significant and positive.

To address this in the next specification, we consider two groups at a time – the socially excluded and the control group. To relax the assumption that all factors behave similarly across groups, we interact all the academic inputs and structural factors by group affiliation and consider the following specification:

$$\begin{aligned}
 Prob(\text{Success}) = & \alpha + \beta_0 X_0 + \beta_c X_c + \beta_h X_h + \beta_s X_s + \beta_{sg} X_{sg} + \beta_z X_z \quad (2) \\
 & + \beta_{csg} X_{sg} \times X_c + \beta_{hsg} X_{sg} \times X_h + \beta_{ssg} X_{sg} \times X_s + \beta_{zsg} X_{sg} \times X_z + \epsilon
 \end{aligned}$$

For the purpose of this paper, we restrict the socially excluded groups to the SC, ST, and Muslim community. We compare them with the CHs.

Following this, we decompose the total effect of group membership between the direct and the indirect effects. We measure the direct and indirect effect of social group ( $X_{sg}$ ) on the outcome and its indirect effect through the academic inputs ( $X_c$ ,  $X_h$  and  $X_s$ ) and the structural factors ( $X_z$ ) by a method suggested by Erikson et al. (2005) for logistic models. Using a specification as (2) above, the method uses the log-odds to compute the proportion of success among each group. The difference in the proportions between the groups gives the total effect. Calculation of the indirect effect of a group through a particular protective factor requires creating a counterfactual sample. For example, a counterfactual sample for the disadvantaged group is created with the same distribution of the protective factor as in the control group (Caste Hindus). The proportion of success from the log-odds with the counterfactual distribution is then compared with the proportions from the observed distribution and for the disadvantaged group. This gives the secondary effect. Alternative decomposition can be done using the counterfactual of the control group. This will lead to a similar but not necessarily exact measure of secondary effect. The difference between total and secondary effect gives the primary effect of the social group on the outcome of interest.

Erikson et al. (2005) computed the average proportion of success under the assumption of normal distribution of the mediating factor. Buis (2010)'s alternatively introduces numerical integration which no longer requires the normality assumption. In addition, it calculates the average of the secondary effect from the two possible decompositions one using the disadvantaged group and one using the control group. Finally, it also calculates the bootstrap

standard errors for the estimates of different effects. The decomposition is implemented by STATA package <ldecomp> written by Buis (2010).

### *Preliminary results*

**The main** purpose of this study was to examine the sources of academic resilience among children belonging to socially excluded groups in India. Our main finding is that though the general factors that usually come up in the resilience literature are present in all cases, the specific elements that constitute them differ across groups. Risk and resilience take place in a process of continuous interaction (Fraser et al. 1997). Therefore, it is quite possible that they differ as they face different types of risks. We also do a decomposition analysis to further understand the nature of this variation. We find that the different social groups also differ in the extent to which group membership affects the outcome through those factors.

The decomposition analysis shows that the effect of group membership on child test performance is most strongly mediated through structural factors. This highlights the importance of the economic consequences of social exclusion in the India context. All three social groups face this effect but the effect is strongest in a case of the ST. On the other hand, ST has much fewer protective factors compared to the other social groups.

Despite the effect of resources, the study finds the important role of the household level factors among all social groups. This may be because some occupations that were traditionally associated with these groups are no longer appealing and the parents are keen on taking advantage of the expanding school opportunities. This has important implications for the possibilities of educational and occupational mobility among these groups. Such protective factors need to be supported by public interventions. A related issue is the importance of child level factors across all social groups. This is also related to the role of parental expectations and support that we observe.

Studies on resilience (Werner and Smith 1992, 2001; M. Rutter 1983) have often observed that schools can play a very important role when the main source of risk for families are economic. Yet our results show that in India, schools fail to provide the necessary support. When the indirect effect is the strongest through structural factors (for ST both reading and doing arithmetic; for SC doing arithmetic), the school factors can potentially play a significant role as

they are least affected by group membership. Another important observation can be made for the Muslim children. They have as many school level protective factors as the SCs, yet the indirect effect of group membership on outcome is strongest through school (after structural factors). This implies that the burden of discrimination is quite strong among the Muslim children.

Among the different roles of teachers and schools that are discussed in Henderson and Milstein (2003) and Brooks (2006), two factors are particularly important in the context of the socially excluded group in India. They are caring relationship and communicating high expectations. Several studies on education in India (Nambissan 2010; PROBE Team 1999; Sujatha 2002) find the prevalence of discrimination in treatment within the classroom. This is often due to the teachers being from the more privileged groups. They usually have low expectations about children from these social groups. In addition, the schools that are accessible to these groups are usually of poor quality and the curriculum is often disconnected to their needs. Consequently, the schools fail to provide the environment, which can create resources necessary for resilience.

Education policy in India till the early 1990s (National Education Policy 1986, revised 1992) paid little attention to the socially excluded groups (Bhatty 2014). Recent efforts towards increasing enrollment through increase in number of schools, improvement of facilities, free textbooks, and increased spending on teacher training under the Sarva Shiksha Abhiyan (SSA) (“Education for All Initiative”) (2001) and other complementary programs like free mid-day meals have failed to specifically address some of the important barriers that students from the socially excluded groups face. The curriculum was hardly sensitive to the needs of these groups. In addition, teacher recruitment and pedagogy suffered from similar weaknesses. It also came about a time of reduction in public expenditure. One important consequence of which was to recruit unqualified para-teachers to meet the growing targets of school expansion (Bhatty 2014).

The main limitation of this study is the cross-sectional nature of the data, which may limit the generalizability of the results. The next wave of the survey (IHDS 2012) is publicly available, but as the reading and arithmetic tests are restricted to 8-11 years, the same child is not interviewed in both surveys. Another issue is the fact that, not all children took the test. The proportion of currently enrolled students is higher among test takers. Since one of the important objectives of the paper was to account for school level academic inputs and since primary school enrollment around the time of the survey was nearly universal, this issue was ignored, though it

may potentially bias the outcome. In addition, there are limitations in the way we use certain variables to infer about motivations and beliefs. This is important and probably limits the generalizability of the results. This can only be overcome with a better data source in the future. However, even with these limitations, the paper contributes to our understanding of the importance of group membership and their interaction with the educational inputs in the academic achievement of India's children.

**Table 1** shows the distribution of the ability to read and do arithmetic among children belonging to different social groups. In general, the ability to read is better than the ability to do arithmetic. The CH children lead the rest except for a small and heterogeneous group of “Others”. 70% of the CH children can read while 63% can do arithmetic. The proportions are much lower for the SC (44% read; 39% do arithmetic), ST (45% read; 36% do arithmetic) and Muslim (45% read; 40% do arithmetic) children. Though lower than the CH, children in the OBC households do better than the SC, ST and the Muslim households.

Household structural factors like household poverty or mother’s education may explain part of it. Table 2 shows the distribution of household asset and consumption poverty and mother’s education by the children's social group. While only 11% of the CH children belong to household from the lowest asset quintile, the rates are much higher for the others. 53% of the ST, 37% of the SC and 28% of the Muslim children belong to households in the lowest asset quintile. On the other end, while 49% of the CH children belong to the top two asset quintiles, only 23% of the Muslim and 14% of the SC children belong there. The proportion of the ST is even lower at 6%. In the case of consumption poverty, 57% of the ST children are below the poverty level compared to 15% of the children from the CH household. Though the children from the Muslim households are marginally better off compared to those from the SC households in the case of asset poverty, they are similar in the case of consumption poverty, with about 80% household having per capita consumption less than 200% of poverty level.

In the case of mother’s education, while only 32% of the mothers of CH children are illiterate, about 70% of the mothers of the SC and ST children and 64% of the mothers of Muslim children are illiterate. On the other end, while 31% of the CH children’s mother have more than eight years of schooling, less than 10% of the mothers of the SC, ST and Muslim children have more than eight years of schooling.

Finally,

**Table 3** shows the distribution of the child, household, and school level educational inputs among the different social groups. The proportion of children spending 5 hours or fewer per week on homework is generally higher (around 37%) among the SC, ST and the Muslim compared to the CH (27%) household. Having no days of absence from school is also higher

among the CH compared to the SC, ST and Muslim children. In this regard, the ST children are slightly better than those from the SC and Muslim household. Among household educational inputs, the distribution of children having no support in academic activities is almost double among the SC, ST and Muslim children compared to those from CH households. The difference between the CH and other social groups also shows in having two or more persons to help. A higher percent of children from CH households attends private schools while a majority from the SC and ST households attend government schools. While most students on average seem to enjoy school, the percentage is lower among the SC and ST compared to the CH children. Also, a lower percentage of the SC and Muslim students report that their teacher treats them nicely compared to the children from the CH. Also, the Muslim households have lower confidence in local schools compared to other social groups. The Muslim children, followed by the children from SC households are also in districts with higher average student-classroom ratios.

### ***Regression results***

We start our regression analysis by first examining whether there is any significant effect of the social groups after controlling for the educational inputs and structural factors. Table 4 shows the coefficients and marginal effects of the regression of the different inputs on reading and arithmetic outcomes. Almost all the child, household, school factors that we consider, have a significant marginal effect on at least one of the outcomes for the full sample. Homework hours have similar effects on both reading and arithmetic outcomes. Spending 11 or more hours in a week increases the probability of those outcomes by approximately 12-13 percent points (pcpt), compared to those spending less than 6 hours a week. On the other hand, days absent even for 1-3 days have a significant effect on the arithmetic outcome but not reading the outcome. Though having, no absent days have similar effects on increasing the probability of success by 4 pcpt in either case. Having an educational support at home, have a stronger effect on arithmetic compared to a reading outcome. Similarly, private schools have a similar effect on both outcomes, raising the probability of success by 8 pcpt. Among school characteristics, students enjoying school have a stronger effect on reading outcome (28 pcpt as against 17 pcpt). While being treated nicely have a stronger effect on the arithmetic outcome (10 pcpt as against 6 pcpt). Parents confidence in school also affects the reading and arithmetic outcome. It increases the

probability of success by 6 pcpt and 4 pcpt respectively. Average district level SCR has a significant effect only in case of reading outcome, but not in arithmetic outcome.

Even after controlling for different child, household, school factors and other sources of variation (child's age, gender, missed classes, urban/rural location and state fixed effects in addition to structural factors listed earlier), the regression shows significant negative effect for the dummies for the social groups. Specifically, the results show a significant negative effect in reading among SC (8 percent point), ST (5 percent point) and Muslim (9 percent point) compared to the CH children. The effects are slightly lower for the SC (7 percent point) and higher for the Muslim (11 percent point) children in the case of the arithmetic outcome. The variation in arithmetic among the ST children seems to be explained fully by the controls and the dummy for the ST is not significantly different from the CH. The OBC and Others show no significant difference with the CH using the more general specification.

The main purpose of the above exercise is to highlight the significance of the group affiliation on cognitive outcome. Yet this is not sufficient to establish group differences as such specifications assume that all the academic inputs have the same coefficients across the groups. In Table 5, Table 6 and Table 7, we compare the effect of different academic inputs among different social groups and their differences with the CH children.

As mentioned earlier, for a factor to be protective to social exclusion, first it needs to show a positive marginal effect on cognitive outcome for that particular group. Second, the difference between the marginal effects for that group and the control group should be either not statistically significant or of a positive sign if statistically significant. Though, all of the factors considered are protective for either reading or arithmetic for the SCs, that is not the case for the STs and the Muslims. The STs show the least number of protective factors followed by the Muslims.

Hours spent on homework is protective for almost all cases except for reading among ST children. For Muslim children, it is even associated with better outcomes compared to CH in the case of reading skills. Days absent also have similar effects except for arithmetic among SCs. For ST children having no absence is associated with better outcome in reading compared to CH. Educational support at home is protective in all cases except for arithmetic among ST children. It



is also worth noting that it has a significant positive difference in marginal effects compared to CH for both reading and arithmetic among SC and for reading for ST and for arithmetic for Muslim children. Private schooling is protective for both reading and arithmetic for SC and only for reading among Muslim children.

Among school level factors, enjoying school is the single most important factor as it is present in both reading and arithmetic for all social groups. Being treated nicely in school is protective for arithmetic among all and for reading among Muslim children. Having confidence in school is only protective for arithmetic among SC children and in this case it is associated with better outcome compared to the CH. Low district level SCR is protective only for reading among SC and Muslim and among SC it is associated with better outcome compared to HC.

Finally, Table 8 shows the proportion of the indirect effect in total effects of social groups in reading and arithmetic outcomes. In addition to the educational inputs, the table also includes the structural factors. In terms of the proportion of indirect effect in total effect, the structural factors dominate the pathway from social groups to cognitive outcomes. Among structural factors, the indirect effect of social groups is strongest among ST children. About 72% of the total effect of being ST on reading outcomes is through the structural factors that are associated with being ST. For arithmetic outcomes, the proportion of indirect effect is 62%. The proportions are lower for both SC and Muslim children for reading and for Muslim children for arithmetic outcomes.

Among educational inputs, in both reading and arithmetic outcome, the indirect effect is the strongest through household inputs for SC and ST children. The proportion of indirect effect of social group affiliation through household inputs on reading and arithmetic outcome are about 30% for SC and 40% for ST children. For the SC children, it is followed by school factors in the case of reading and child factors in the case of arithmetic outcomes. On the other hand, for the ST children, it is followed by child factors. School factors are not significantly different from zero in either reading or in arithmetic outcome for the ST children. For Muslim children, the indirect effect is strongest in the case of the school factors (25% for reading and 23% for arithmetic). It is followed by the child factors and household factors.

## ***Discussion***

The main purpose of this study was to examine the sources of academic resilience among children belonging to socially excluded groups in India. Our main finding is that though the general factors that usually come up in the resilience literature are present in all cases, the specific elements that constitute them differ across groups. Risk and resilience take place in a process of continuous interaction (Fraser et al. 1997). Therefore, it is quite possible that they differ as they face different types of risks. We also do a decomposition analysis to further understand the nature of this variation. We find that the different social groups also differ in the extent to which group membership affects the outcome through those factors.

The decomposition analysis shows that the effect of group membership on child test performance is most strongly mediated through structural factors. This highlights the importance of the economic consequences of social exclusion in the India context. All three social groups face this effect but the effect is strongest in a case of the ST. On the other hand, ST has much fewer protective factors compared to the other social groups.

Despite the effect of resources, the study finds the important role of the household level factors among all social groups. This may be because some occupations that were traditionally associated with these groups are no longer appealing and the parents are keen on taking advantage of the expanding school opportunities. This has important implications for the possibilities of educational and occupational mobility among these groups. Such protective factors need to be supported by public interventions. A related issue is the importance of child level factors across all social groups. This is also related to the role of parental expectations and support that we observe.

Studies on resilience (Werner and Smith 1992, 2001; M. Rutter 1983) have often observed that schools can play a very important role when the main source of risk for families are economic. Yet our results show that in India, schools fail to provide the necessary support. When the indirect effect is the strongest through structural factors (for ST both reading and doing arithmetic; for SC doing arithmetic), the school factors can potentially play a significant role as they are least affected by group membership. Another important observation can be made for the Muslim children. They have as many school level protective factors as the SCs, yet the indirect effect of group membership on outcome is strongest through school (after structural factors). This implies that the burden of discrimination is quite strong among the Muslim children.

Among the different roles of teachers and schools that are discussed in Henderson and Milstein (2003) and Brooks (2006), two factors are particularly important in the context of the socially excluded group in India. They are caring relationship and communicating high expectations. Several studies on education in India (Nambissan 2010; PROBE Team 1999; Sujatha 2002) find the prevalence of discrimination in treatment within the classroom. This is often due to the teachers being from the more privileged groups. They usually have low expectations about children from these social groups. In addition, the schools that are accessible to these groups are usually of poor quality and the curriculum is often disconnected to their needs. Consequently, the schools fail to provide the environment, which can create resources necessary for resilience.

Education policy in India till the early 1990s (National Education Policy 1986, revised 1992) paid little attention to the socially excluded groups (Bhatty 2014). Recent efforts towards increasing enrollment through increase in number of schools, improvement of facilities, free textbooks, and increased spending on teacher training under the Sarva Shiksha Abhiyan (SSA) (“Education for All Initiative”) (2001) and other complementary programs like free mid-day meals have failed to specifically address some of the important barriers that students from the socially excluded groups face. The curriculum was hardly sensitive to the needs of these groups. In addition, teacher recruitment and pedagogy suffered from similar weaknesses. It also came about a time of reduction in public expenditure. One important consequence of which was to recruit unqualified para-teachers to meet the growing targets of school expansion (Bhatty 2014).

The main limitation of this study is the cross-sectional nature of the data, which may limit the generalizability of the results. The next wave of the survey (IHDS 2012) is publicly available, but as the reading and arithmetic tests are restricted to 8-11 years, the same child is not interviewed in both surveys. Another issue is the fact that, not all children took the test. The proportion of currently enrolled students is higher among test takers. Since one of the important objectives of the paper was to account for school level academic inputs and since primary school enrollment around the time of the survey was nearly universal, this issue was ignored, though it may potentially bias the outcome. In addition, there are limitations in the way we use certain variables to infer about motivations and beliefs. This is important and probably limits the generalizability of the results. This can only be overcome with a better data source in the future. However, even with these limitations, the paper contributes to our understanding of the

importance of group membership and their interaction with the educational inputs in the academic achievement of India's children.

**Table 1: Ability to read and do arithmetic among different social groups**

Able to read Paragraph /Story	Social Groups						
	Caste Hindu	Other Backward Class	Scheduled Caste	Scheduled Tribe	Muslim	Others	Total
No	29.6	44	56	54.7	55.4	20.6	45.9
Yes	70.4	56	44	45.3	44.6	79.4	54.1
Total	100	100	100	100	100	100	100
Sample Size	<b>2,478</b>	<b>4,030</b>	<b>2,600</b>	<b>861</b>	<b>1,630</b>	<b>305</b>	<b>11,904</b>

Able to do Subtraction /Division	Social Groups						
	Caste Hindu	Other Backward Class	Scheduled Caste	Scheduled Tribe	Muslim	Others	Total
No	36.9	50.9	60.9	63.5	60.1	21	52.1
Yes	63.1	49.1	39.1	36.5	39.9	79	47.9
Total	100	100	100	100	100	100	100
Sample Size	<b>2,467</b>	<b>4,009</b>	<b>2,591</b>	<b>855</b>	<b>1,626</b>	<b>304</b>	<b>11,852</b>

**Table 2: Asset, Consumption poverty and mother's education among the Hindu Upper Caste, SCs, STs and Muslim**

	HH head: Social group			
	Caste Hindu	Scheduled Caste	Scheduled Tribe	Muslim
Household Asset Quintiles				
Q1	10.6	36.6	53.4	27.6
Q2	18.6	30.5	29.6	26.4
Q3	22	18.7	10.7	23.5
Q4	23.9	8.9	3.5	12
Q5	24.9	5.3	2.8	10.5
Total	100	100	100	100
Per capita consumption to poverty level				
LTE 100 %	14.5	37.4	57.1	33.5
100-200 %	46.5	42.9	32.4	47.7
200-300 %	20.4	13.7	6.7	13.2
300-400 %	9.6	4	1.6	2.9
GT 400 %	9.1	2	2.2	2.8
Total	100	100	100	100
Mother's Education				
None	32.4	70.2	71.4	63.9
1-5yrs	17.2	14.7	14.3	16.7
6-8yrs	19	7.9	7.6	10.1
9+yrs	31.4	7.1	6.7	9.3
Total	100	100	100	100

**Table 3: Child, household and school academic inputs among the Hindu Upper Caste, SCs, STs and Muslim**

	HH head: Social group			
	Caste Hindu	Scheduled Caste	Scheduled Tribe	Muslim
Homework Hours				

5 or less	26.9	37.4	37.6	36.2
6-10	38.2	37	44.4	35.4
11+	34.9	25.6	17.9	28.4
Total	100	100	100	100
Days absent				
4+	26.1	34.6	31.9	37.3
1-3	18.8	22.1	21.2	19.3
None	55.1	43.3	46.8	43.4
Total	100	100	100	100
Sources of educational support				
None	9.2	19.4	23.9	19.8
One	47.8	52.1	49.8	51.9
2 +	43.1	28.5	26.3	28.3
Total	100	100	100	100
School Type				
Government	56.9	79.2	84.4	62
Others	7	5.3	5.1	11.6
Private	36	15.5	10.6	26.4
Total	100	100	100	100
Student enjoy school				
No	1.9	6.5	5.4	4.2
Yes	98.1	93.5	94.6	95.8
Total	100	100	100	100
Teacher treats nicely				
No	24.6	34.3	26.1	37.2
Yes	75.4	65.7	73.9	62.8
Total	100	100	100	100
Household confidence in schools				
Hardly any	7.2	6.5	6.6	8.7
Some	25	24.9	20.6	27.6
High	67.8	68.6	72.8	63.6
Total	100	100	100	100
District Student Classroom Ratio (Primary)				
High	39.7	45.1	25.7	58.8
Medium	36.1	28.7	47.3	21.2
Low	24.2	26.2	27.1	19.9
Total	100	100	100	100

**Table 4: Factors affecting ability to read and do arithmetic**

	Read		Arithmetic	
	Coeff.	Marg. Eff.	Coeff.	Marg. Eff.
Homework Hours: 6-10	0.318*** (0.08)	0.061*** (0.01)	0.390*** (0.08)	0.074*** (0.02)
Homework Hours: 11+	0.622*** (0.09)	0.118*** (0.02)	0.657*** (0.09)	0.126*** (0.02)
Days absent: 1-3	0.150	0.028	0.246**	0.046***

	(0.09)	(0.02)	(0.10)	(0.02)
Days absent: none	0.233***	0.043***	0.216**	0.040**
	(0.08)	(0.02)	(0.08)	(0.02)
Educational Support: One	0.257***	0.048***	0.525***	0.097***
	(0.09)	(0.02)	(0.09)	(0.02)
Educational Support: 2+	0.526***	0.099***	0.638***	0.118***
	(0.10)	(0.02)	(0.10)	(0.02)
School type: Others	0.183	0.034	0.313**	0.059**
	(0.13)	(0.02)	(0.13)	(0.02)
School type: Private	0.414***	0.077***	0.424***	0.080***
	(0.09)	(0.02)	(0.09)	(0.02)
Enjoy school	1.551***	0.278***	0.965**	0.172***
	(0.40)	(0.06)	(0.40)	(0.07)
Treated nicely	0.336***	0.063***	0.532***	0.100***
	(0.08)	(0.01)	(0.09)	(0.02)
Confidence in school: Some	0.207	0.039	0.160	0.030
	(0.13)	(0.02)	(0.13)	(0.02)
Confidence in school: High	0.330***	0.062***	0.231*	0.043*
	(0.13)	(0.02)	(0.13)	(0.02)
District SCR: Med	0.186*	0.035*	-0.014	-0.003
	(0.10)	(0.02)	(0.11)	(0.02)
District SCR: Low	0.404***	0.075***	-0.000	-0.000
	(0.12)	(0.02)	(0.12)	(0.02)
OBC	-0.136	-0.025	-0.123	-0.023
	(0.10)	(0.02)	(0.10)	(0.02)
SC	-0.429***	-0.080***	-0.367***	-0.069***
	(0.11)	(0.02)	(0.11)	(0.02)
ST	-0.278**	-0.052**	-0.193	-0.036
	(0.14)	(0.03)	(0.15)	(0.03)
Muslim	-0.455***	-0.085***	-0.571***	-0.107***
	(0.12)	(0.02)	(0.12)	(0.02)
Others	-0.336	-0.063	0.160	0.030
	(0.21)	(0.04)	(0.25)	(0.05)
Observations	10,947	10,947	10,900	10,900

Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: The regression also controls for child age, an indicator of a female child, an indicator whether the child missed classes in the last month for short term morbidity like fever, cough and diarrhea, asset and consumption poverty, mother's education and location in urban versus rural areas and state dummies.

**Table 5: Comparing the marginal effects of the academic inputs on the ability to read and do arithmetic between Hindu Upper Caste and Scheduled Caste children.**

	Read (Marginal Effects)		Arithmetic (Marginal Effects)	
	SC	Difference from CH	SC	Difference from CH
Homework Hours: 6-10	0.018 (0.03)	-0.035 (0.04)	0.016 (0.03)	-0.076* (0.04)
Homework Hours: 11+	0.082** (0.04)	0.022 (0.05)	0.089** (0.04)	-0.044 (0.05)
Days absent: 1-3	0.063* (0.03)	0.038 (0.05)	0.035 (0.03)	0.009 (0.05)
Days absent: none	0.062** (0.03)	-0.001 (0.04)	0.044 (0.03)	0.019 (0.04)
Educational Support: One	0.100*** (0.03)	0.102** (0.05)	0.144*** (0.03)	0.121** (0.05)
Educational Support: 2+	0.116*** (0.04)	0.038 (0.05)	0.110*** (0.03)	0.046 (0.05)
School type: Others	0.067 (0.06)	0.164** (0.08)	0.062 (0.05)	-0.118 (0.08)
School type: Private	0.076* (0.04)	0.035 (0.04)	0.115*** (0.04)	0.023 (0.05)
Enjoy school	0.303*** (0.05)	-0.138 (0.11)	0.218*** (0.05)	-0.017 (0.11)
Treated nicely	0.056** (0.03)	-0.070* (0.04)	0.107*** (0.03)	-0.051 (0.04)
Confidence in school: Some	0.057 (0.04)	0.041 (0.07)	0.082* (0.05)	0.165** (0.07)
Confidence in school: High	0.033 (0.04)	-0.018 (0.06)	0.092** (0.04)	0.172** (0.07)
District SCR: Med	0.034 (0.04)	0.034 (0.04)	-0.007 (0.04)	-0.018 (0.04)
District SCR: Low	0.141*** (0.04)	0.117*** (0.04)	-0.011 (0.04)	-0.043 (0.04)
Observations	4,745		4,727	

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: The regression also controls for child age, an indicator of a female child, an indicator whether the child missed classes in the last month for short term morbidity like fever, cough and diarrhea, asset and consumption poverty, mother's education and location in urban versus rural areas and state dummies.



**Table 6: Comparing the marginal effects of the academic inputs on the ability to read and do arithmetic between Hindu Upper Caste and Scheduled Tribe children.**

	Read (Marginal Effects)		Arithmetic (Marginal Effects)	
	ST	Difference from CH	ST	Difference from CH
Homework Hours: 6-10	-0.029 (0.05)	-0.077 (0.06)	0.047 (0.05)	-0.049 (0.06)
Homework Hours: 11+	0.090 (0.06)	0.023 (0.07)	0.123* (0.07)	-0.027 (0.08)
Days absent: 1-3	0.023 (0.05)	-0.015 (0.06)	0.063 (0.06)	0.025 (0.07)
Days absent: none	0.174*** (0.05)	0.104* (0.05)	0.098** (0.05)	0.063 (0.06)
Educational Support: One	0.060 (0.05)	0.064 (0.06)	0.048 (0.06)	0.029 (0.07)
Educational Support: 2+	0.217*** (0.06)	0.147** (0.07)	0.050 (0.06)	-0.016 (0.07)
School type: Others	0.091 (0.11)	0.161 (0.12)	0.032 (0.11)	-0.148 (0.12)
School type: Private	0.123 (0.09)	0.071 (0.09)	0.021 (0.08)	-0.061 (0.08)
Enjoy school	0.290*** (0.11)	-0.145 (0.15)	0.226*** (0.09)	-0.004 (0.13)
Treated nicely	0.038 (0.05)	-0.088 (0.06)	0.104** (0.05)	-0.059 (0.06)
Confidence in school: Some	-0.053 (0.09)	-0.077 (0.11)	-0.151* (0.09)	-0.072 (0.10)
Confidence in school: High	0.037 (0.09)	-0.022 (0.10)	-0.077 (0.08)	-0.005 (0.10)
District SCR: Med	0.062 (0.06)	0.063 (0.06)	0.050 (0.06)	0.012 (0.06)
District SCR: Low	0.070 (0.06)	0.006 (0.07)	0.038 (0.06)	-0.028 (0.07)
Observations	3,003		2,991	

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: The regression also controls for child age, an indicator of a female child, an indicator whether the child missed classes in the last month for short term morbidity like fever, cough and diarrhea, asset and consumption poverty, mother's education and location in urban versus rural areas and state dummies.

**Table 7: Comparing the marginal effects of the academic inputs on the ability to read and do arithmetic between Hindu Upper Caste and Muslim children.**

	Read (Marginal Effects)		Arithmetic (Marginal Effects)	
	Muslim	Difference from CH	Muslim	Difference from CH
Homework Hours: 6-10	0.060*	0.015	0.057	-0.038
	(0.04)	(0.05)	(0.04)	(0.05)
Homework Hours: 11+	0.154***	0.090*	0.102**	-0.048
	(0.04)	(0.05)	(0.04)	(0.05)
Days absent: 1-3	-0.016	-0.059	0.049	0.003
	(0.04)	(0.06)	(0.04)	(0.06)
Days absent: none	0.062*	-0.020	0.085**	0.043
	(0.04)	(0.05)	(0.03)	(0.05)
Educational Support: One	0.076**	0.081	0.107***	0.089*
	(0.04)	(0.05)	(0.04)	(0.05)
Educational Support: 2+	0.135***	0.082	0.180***	0.122**
	(0.05)	(0.06)	(0.05)	(0.06)
School type: Others	0.057	0.130*	-0.065	-0.251***
	(0.05)	(0.07)	(0.04)	(0.07)
School type: Private	0.060*	0.020	0.045	-0.040
	(0.04)	(0.04)	(0.04)	(0.04)
Enjoy school	0.277***	-0.163	0.295***	0.051
	(0.09)	(0.14)	(0.07)	(0.12)
Treated nicely	0.078**	-0.058	0.099***	-0.065
	(0.03)	(0.04)	(0.03)	(0.04)
Confidence in school: Some	0.027	0.003	-0.010	0.073
	(0.06)	(0.07)	(0.05)	(0.08)
Confidence in school: High	0.019	-0.039	0.043	0.120
	(0.05)	(0.07)	(0.05)	(0.07)
District SCR: Med	0.055	0.042	0.060	0.021
	(0.04)	(0.05)	(0.04)	(0.05)
District SCR: Low	0.136**	0.084	0.076	0.006
	(0.06)	(0.05)	(0.05)	(0.05)
Observations	3,806		3,793	

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Notes: The regression also controls for child age, an indicator of a female child, an indicator whether the child missed classes in the last month for short term morbidity like fever, cough and diarrhea, asset and consumption poverty, mother's education and location in urban versus rural areas and state dummies.

**Table 8: Proportion of indirect effect of social groups on protective and structural factors.**

<b>Read</b>	<b>Child</b>	<b>Household</b>	<b>School</b>	<b>Structural</b>
SC	0.189*** (0.05)	0.297*** (0.07)	0.251*** (0.06)	0.596*** (0.07)
ST	0.293*** (0.10)	0.407*** (0.12)	0.043 (0.10)	0.722*** (0.09)
Muslim	0.171*** (0.04)	0.153*** (0.04)	0.256*** (0.06)	0.524*** (0.06)

  

<b>Arithmetic</b>	<b>Child</b>	<b>Household</b>	<b>School</b>	<b>Structural</b>
SC	0.239*** (0.05)	0.305*** (0.06)	0.221*** (0.04)	0.618*** (0.05)
ST	0.357*** (0.08)	0.389*** (0.12)	0.013 (0.08)	0.618*** (0.09)
Muslim	0.187*** (0.04)	0.138*** (0.04)	0.233*** (0.06)	0.485*** (0.07)

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Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

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