



Is the learning crisis responsible for school dropout? A longitudinal study of Andhra Pradesh, India



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ABSTRACT

Having achieved remarkable improvements in basic education, India now faces the issues of low learning levels, and a high dropout rate. This paper examines whether the learning crisis is responsible for students dropping out of school using unique panel data that followed nearly 1000 Indian children from 2002 to 2013. We discover that literacy skills acquired by the age of 12 have long-lasting, positive effects on subsequent school progression. We also find that local job opportunities influence school progression. Further, we find that time spent on household chores negatively affects literacy acquisition during primary school years.

1. Introduction

There is a global understanding that schooling is a major catalyst for human and economic development. Developing countries have made remarkable strides toward universal access to primary education (Barro and Lee, 2013). In spite of this progress, however, the knowledge acquired by children who complete primary school is often observed to be insufficient (Glewwe and Kremer, 2006; Pritchett and Beatty, 2012). “Globally, 125 million children are not acquiring functional literacy or numeracy, even after spending at least four years in school (WDR, 2018, p. 71). Cognitive skills, not merely school attainment, are found to strongly affect economic growth (Hanushek and Woessmann, 2008). Today, the learning crisis is a serious issue, especially among developing economies.

The Indian government has made various efforts to promote access to basic education, and has almost achieved universal access to basic education.¹ The major issues that have now emerged in India are high primary and secondary school dropout rates, and low levels of student learning.² Only 42.5% of third grade students are able to read first-grade-level texts (Pratham, 2017). Rapid increase in enrollment, though it is probably an inevitable necessary step toward better learning, can be responsible for low school quality because school resources and

teachers could not increase simultaneously.³ These are pressing issues requiring immediate action, but little is known about the causes of India's high dropout rates.

Empirical studies have found that a child's individual and household characteristics, as well as community level factors all play a role in school dropouts. Among children's characteristics, a child's learning level in the early stages of schooling is expected to affect their tendency to drop out of school, yet rigorous empirical studies investigating the effect of learning level on dropout are scarce. Assessing this effect is complicated because (i) learning level affects long term schooling decisions, and (ii) learning level is correlated with many factors affecting school dropout. Unique panel data from a study that followed children of the same age cohort for 11 years (2003–2014) in Andhra Pradesh, India allows us to apply an instrumental variable method to address these issues. This study fills in gaps of school dropout literature by reporting evidence of the significant, long-term effects of basic literacy skills on school progression.

The sections of this article are organized as follows. Section 2 explains the nature of the dataset and conducts a descriptive analysis. Section 3 reviews relevant literature and proposes testable hypotheses. Section 4 analyzes the determinants of upper primary school completion, and upper secondary school entry. Finally, Section 5 draws

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¹ Gross enrollment rate in primary schools in 2013–14 was 99.3%, up from 83.8% in 1990–91 (Government of India, 2014). The Indian government implemented a number of schemes such as Sarva Shiksha Abhiyan, Rashtriya Madhyamik Shiksha Abhiyan, the Right of Children to Free and Compulsory Education, and a midday meal scheme which contributed significantly to improvement in enrollment ratio. Details of these schemes are provided in Appendix A.

² Dropout rates in secondary school (years 9 and 10) in 2013–14 were 48.1% for boys and 46.7% for girls (Government of India, 2014).

³ Duraisamy et al. (1998) find that enrollment expansion unaccompanied by increase in number of teachers in Tamil Nadu resulted in rise pupil-teacher ratio and had a negative effect on student learning.

conclusions and policy implications from the results of the analyses. In addition, the [Appendix A](#) summarizes key features of the educational system, policies, and schooling attainment status in India and the state of Andhra Pradesh, in particular.

2. Data and descriptive analysis

2.1. Data

This study uses a panel data set collected by the Young Lives study, which followed 3000 children in Andhra Pradesh, India. Two cohorts of children, approximately 1000 children aged 8 years old, and 2000 children aged 1 year old in 2002, have been followed since 2002 and four rounds of data were collected at the child, household, and community levels in 2002, 2005, 2009, and 2013.⁴ The present study will use survey data of 951 older cohort children born in 1994–95, since as of 2003, the younger cohort children were not old enough to enable analysis of completed school progression. The survey covers complete educational history as well as information on members of the household to which the child belongs.

Comprised of three regions, Andhra Pradesh (including Telangana)⁵, is one of the states that have successfully promoted IT and manufacturing industries.⁶ The state government's strategy of promoting these industries as a prime growth engine as early as in the mid-1990s has resulted in the establishment of many IT and electronic companies including Microsoft, Oracle, and Dell, which are now concentrated in Hyderabad. The state's industrial development policy aims to increase the manufacturing sector's contribution to gross state domestic product from 9.95% in 2013–14, to 15% by 2020 by attracting foreign direct investment, and creating employment opportunities for an additional one million people.

The Young Lives survey covers Hyderabad as well as other urban and rural areas of Andhra Pradesh, thereby reflecting a large variation in job opportunities across communities. Using community-level information, a couple of pertinent variables were constructed to serve as proxy reflecting the labor market environment in a locality in order to examine its effect on school dropout rates.

2.2. Critical stages in school progression

To identify critical stages where children are most likely to drop out of school or discontinue schooling, school completion and progression are examined in eight stages: (S_0) = lower primary school entry, which is a given condition;⁷ (S_1) = completion of lower primary school; (S_2) = upper primary school entrance; (S_3) = completion of upper primary school; (S_4) = lower secondary school entry; (S_5) = completion of lower secondary school; (S_6) = upper secondary school entrance; and (S_7) = completion of upper secondary school.

[Fig. 1](#) shows the progression rates of sample children at each educational stage. Here, progression rate refers to the number of children who successfully transition to the next stage, divided by the number of children who completed the previous stage. For example, progression

rate at stage one is the ratio of those who completed lower primary school to those who entered it. As we examine the seven educational stages, it is clear that progression rates of stage three (upper primary completion) and stage six (upper secondary entry) are notably low. This study thus focuses on the determinants of school progression at these two critical stages. It is also clear that progression rates are lower in rural areas than in urban areas and lower among girls than boys. Our statistical analyses take into account these regional and gender differences.

Figure Note: (S_1) = completed lower primary school; (S_2) = upper primary school entry; (S_3) = completed upper primary school; (S_4) = lower secondary school entry; (S_5) = completed lower secondary school; (S_6) = upper secondary school entry; and (S_7) = completed upper secondary school.

2.3. Descriptive statistics

[Table 1](#) gives descriptive statistics of sample children by upper primary completion status at age 15 (S_3), and upper secondary entry status at age 19 (S_6). To examine the differences between those who complete upper primary school, and those who drop out, we limit the samples in S_3 analysis to those who entered upper primary school. In the same manner, we use the limited samples of those who complete lower secondary when analyzing progress to lower secondary school. For convenience of exposition, we designate those who progress to the next level at each stage as “the progressed” and those who did not, “the non-progressed.”

At the individual level, the data shows more boys than girls in the progressed and less boys than girls in the non-progressed group in S_6 , but not in S_3 . This means that the gender gap is more serious among students progressing to lower secondary school than those completing upper primary school. Although recent statistics show that gender gap has closed at the primary education level, it remains visible at the secondary level ([Siddhu, 2011](#)).

Two variables represent children's ability: the Raven test score taken at age 8, and a dummy variable for reading and writing ability at age 12.⁸ The progressed have higher Raven's scores than the non-progressed. The difference in reading and writing skills, however, is much starker.

Father's and mother's education, as would be expected, are higher among the progressed than among the non-progressed. We use household asset index as a household wealth indicator, which is not positively associated with school progression.⁹ Other household level variables include household size, dependency ratio, caste status, and whether they live in urban or rural areas.

Two variables represent job opportunities. One is the average daily wages of unskilled workers in a community.¹⁰ Another variable related to the labor market is a dummy variable, which is equal to one if a community has a factory that employs local workers.¹¹ Although there are no significant differences in the daily wages of unskilled workers between the progressed and the non-progressed groups, the existence of a factory within the community seems to stimulate investment in

⁴ The Young Lives sample is distributed across the three main regions and covers about 100 communities (villages or urban wards) across 20 subdistricts. A careful comparison with representative data for Andhra Pradesh shows that the data in the Young Lives sample contain similar variations across comparable measures: a detailed explanation of the sampling methodology and a comparison of the characteristics of the Young Lives sample with those of the demographic and health survey sample on a range of observed characteristics are reported in [Kumra \(2008\)](#).

⁵ In 2014, the state of Andhra Pradesh was divided into two states, Andhra Pradesh and Telangana.

⁶ The share of gross state domestic product of the non-agricultural sector was 81% in 2013–14 ([Government of India, 2016](#)).

⁷ Among the sample children, only nine of the 951 older cohort children never enrolled in primary school. Therefore, entering primary school is assumed to be a given condition in our school progression analysis.

⁸ The Raven test is a method of testing IQ, which all sample children took at age 8. Reading and writing skills are based on self-report and take a value of 1 if a child can read sentences and can write without difficulties.

⁹ Household asset index is an average of three indexes: Housing quality index (average of indicators: crowding, main material of walls, main material of roof, main material of floor), consumer durable index (average of a set of dummy variables which takes the value 1 if they own radio, television, bicycle, motorbike, automobile, landline phone, mobile phone, refrigerator, fan), and housing services index (average of indicators: access to electricity, access to safe drinking water, access to sanitation, access to adequate fuel for cooking).

¹⁰ It is a community-level average daily wage of agricultural work, construction work, and helping at workshops. Unskilled workers include not only adults but also children.

¹¹ Daily wage and existence of factory are measured at municipal wards in urban areas and villages in rural areas.

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