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Working Paper

Young Lives 
An International Study of Childhood Poverty

Aspirations, Poverty and Education

Evidence from India

Pieter Serneels and Stefan Dercon



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Summary

While aspirations are receiving increasing attention in the study of poverty, empirical evidence remains limited. Using Young Lives data for Andhra Pradesh, this paper investigates whether mothers' aspirations matter for their children's education outcomes. We observe a strong relationship: aspiring to one additional year of schooling lifts the grade achieved at age 15 by 1.8 years on average. The relationship is, however, non-linear, with low aspirations having low effects, medium aspirations having large effects, and high aspirations having slightly lower but still large effects. These impacts remain strong and significant after controlling for a wide range of village, household, parent and child characteristics, including cognitive skills, and after allowing for endogeneity using a control-function estimation with as identifying instruments whether the child is a first-born son, as well as the mother's assessment of the usefulness of education for herself. Aspirations tend to have smaller effects for children from wealthier backgrounds and higher educated mothers, and impact also depends on the village setting. Extending the analysis, we find similar effects on teenage mathematics and verbal test results. Mothers' educational aspirations for their children have, however, no effect on the choice to attend a private (versus government) school, no effect on attending school at age 15, and a negative effect on working versus staying at home at age 15. Aspirations are higher for mothers from wealthier households and for mothers with higher education, while village effects also play a role. The findings shed light on recent theoretical work and provide new insights on the channel through which intergenerational mobility takes place, indicating that maternal aspirations, rather than maternal (or paternal) education, drive household investment in child education.

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About Young Lives

Young Lives is an international study of childhood poverty, following the lives of 12,000 children in 4 countries (Ethiopia, India, Peru and Vietnam) over 15 years. www.younglives.org.uk

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1. Introduction

Most economic analysis of the past half-century has relied on the assumption that the poor – like the rest of us – are rational decision-makers.¹ This view has been questioned on the basis of insights from behavioural economics arguing that human decision-making fails many of the rationality assumptions.² As a result, a new view of poverty emerged, adopting the premise that the poor – like the rest of us – are ineffective decision-makers. But while the rest of us get by with flawed decision-making, the consequences are more severe for the poor, who pay a higher price for these (same) errors of judgement, as poverty does not allow much margin of error (Bertrand, Mullainathan and Shafir 2004).³ Summarised, this approach argues that poverty is a consequence of ineffective decision-making when one is already living in or close to poverty. In other words, poverty stems from an interaction effect between low income and universal behavioural traits. Using this framework, a rich literature has generated valuable insights on the role of behavioural traits for poverty.⁴

A key characteristic of this approach is that it relies on external constraints. Recent work shifts emphasis to internal constraints, arguing that ineffective decision-making is *caused* by poverty.⁵ Mullainathan and Shafir (2013) and Mani et al. (2013), for instance, argue that decision-making is made more complex by scarcity as such, which taxes individual cognitive resources. Because the poor need to make many urgent decisions on a daily basis, in varying degrees related to survival, they have few resources left for planning and investment. Baumeister et al. (1998) present an alternative approach focusing on will power and ego depletion, arguing that volition is limited and is consumed by resisting temptation or inhibiting behaviour. This approach maintains that ineffective decision-making leads to poverty; it adds that poverty itself leads to ineffective decision-making. The combination of both sustains poverty. This argues not for an interaction effect, but for two-way causality. In contrast to the previous approach, the channel through which poverty persists is no longer exogenous. However, the recommended policies still focus on releasing external constraints. Providing the poor with income would automatically lead to improved decision-making, and spontaneously break the cycle of poverty. This seems unsatisfactory.

1 Early work focused on the assumption that the poor are efficient (Schultz 1964), but this was challenged by later theoretical and empirical work arguing that the poor are often excluded from opportunities and markets, which can be inefficient. The rationality assumption, however, largely remained in place (see also Duflo 2006).

2 The term 'homo economicus' is often used to refer to the general rationality assumptions underlying classic economics models, including optimal choices, perfect foresight, unlimited capacity to digest information, perfect self-control, and self-interest (see, for instance, Henrich et al. 2001).

3 One reason may be that the poor face greater downward risk (Mullainathan 2006).

4 Research on finance and the poor is probably most advanced, showing for instance the importance of limitations to self-control (see Ashraf, Karlan and Yin 2006), temptation (Banerjee and Mullainathan 2010) and other behavioural traits. A sub-strand of papers also investigates how these interaction effects are larger in the presence of market imperfections; see Bernheim, Ray and Yeltekin 2011 for an example of how capital market imperfections can intensify problems of self-control. Much of this research also studies how the impact of these traits may be aggravated by market imperfections.

5 Some see this approach as reflecting folk theory, which often describes the poor as fatalistic and frequently attributes poverty to behaviour of the poor themselves. Lipset (1996) and Gilens (1999) report survey results indicating a strong belief among US respondents that the poor can lift themselves out of poverty. Alesina, Glaeser and Sacerdote (2001), using the World Value Survey, report that 70 per cent of north Americans agree that people are poor because of laziness, and 71 per cent that poor people could work their way out of poverty. In Europe these views are less dominant, with only 40 per cent of respondents agreeing that this type of social mobility existed.

This paper follows a different approach: it considers long-term, rather than instant, decision-making, relying on key insights from behavioural economics. Starting from the premise that agents make decisions based on comparison with a reference point (Kahneman and Tversky 2000), we focus on aspirations, which are reference points for future outcomes. While this approach also concentrates on internal constraints, it considers, in contrast to the previous work, both the long-term dimensions and the social dimensions of decision-making. Poor decision-making, in this setting, is a consequence of poor reference points, which in turn may stem from limited exposure or selective beliefs, among other factors. This also indicates distinct policies concentrating on releasing internal as well as external constraints.

Early work in economics emphasises the role of income aspirations for economic growth (Schloss 1975).⁶ Bandura's (1991, 1997) classic work in social psychology accentuates how the belief in their own potential influences the choices made by the poor. More recent work by Appadurai (2004), taking an anthropological perspective, argues that the poor lack aspirational resources to overcome the conditions of their own poverty: they lack the 'capacity to aspire'.⁷

The role of aspirations for poverty has received increased attention in recent theoretical work. Ray (2006), in a small but influential book chapter, argues that the poor may suffer from 'aspirations failure', and that poverty and a failure of aspirations may be reciprocally linked in a self-sustaining trap. In a similar vein, Mookherjee, Napel and Ray (2010) consider parental decision-making in an overlapping-generations model, and Genicot and Ray (2014) analyse the role of aspirations for income distribution and growth. Dalton, Ghosal and Mani (2011) study the link between aspirations and poverty, where the latter constrains the set of people whose outcomes are considered as a benchmark. Combined with greater downside risk and pessimism about the likelihood of achieving success for the poor, this creates a poverty trap.

There is, however, little empirical evidence on the role of aspirations for economic outcomes.⁸ One possible reason is the challenge to measure aspirations. Bernard, Dercon and Taffesse (2011) discuss measurement challenges and propose a careful way to calibrate aspirations empirically. Another reason lies in the potential endogeneity of aspirations, which complicates empirical analysis.

Endogeneity may stem from different sources. Aspirations may themselves be directly affected by income.⁹ An agent's reference point and his or her economic situation may also

6 Growth is then explained either in terms of aspirations or in terms of the gap between outcomes and aspirations. Dixon (2000) and Oechssler (2001), for instance, show how aspiration-based models can improve understanding of the decision-making of firms, who may aspire not so much to maximise profit at each stage but to attain a certain level of profit, or sharing value, or market share. Furstenberg and Neumark (2005), Danzinger and Eden (2006), as well as Tenjo (1990), consider career outcomes relative to aspirations. De la Croix (1996) shows how the inheritance of aspirations may create a poverty trap for the economy as a whole.

7 Qualitative studies illustrate that poor people regularly think of themselves as poor people; see, for instance, Narajan 2006). Appadurai sees this as providing evidence that there is a common element in their view of the world. He argues that aspirations are socially embedded and are therefore more than an individual capacity: they are the product of what people see around them.

8 Note that while some empirical papers refer to aspirations, aspirations tend to be treated as unobserved or as a latent variable.

9 The early literature on aspirations and growth contained two (opposing) views, with one view arguing that aspirations remain relatively constant, and that growth can be explained by the gap between aspirations and outcomes, considering aspirations as exogenous (see, among others, Fuchs and Landsberg 1973; Schloss 1975). An alternative view is that aspirations change as income increases, stimulating a perpetual growth process. The current view is that we cannot exclude endogeneity and that aspirations may change over time.

be co-determined, as agents observe what is possible and set their aspirations accordingly.¹⁰ The growing literature on neighbourhood effects makes a similar point (Durlauf 2003).¹¹ Finally, agents may also learn from their own experience and revise aspirations as a consequence of experiences or observations that either reinforce or deter: a process known in psychology as reinforcement learning. These economic, sociological and psychological factors imply potential reverse causality and simultaneity in the relationship between aspirations and economic outcomes.

This paper focuses on the effect of aspirations on education outcomes. Using data on a cohort of children in Andhra Pradesh, India, over time, we investigate whether mothers' aspirations matter for their children's education outcomes at age 15, and we find a strong (non-linear) relationship, with low aspirations having small effects, medium aspirations having large effects, and high aspirations having potentially lower but still large effects. The relationship remains strong and significant when controlling for a wide range of village, household, parent and child characteristics, including cognitive skills, and after addressing endogeneity using control-function estimation. The identifying instruments are the mother's assessment of the usefulness of her own past (non)education and the children's gender-birth order. Extending the analysis, we find that mother's aspirations also matter for maths and verbal test results. They have no effect on attending a private school and on attending school at age 15, but a negative effect on the probability of working (versus staying at home) at age 15.

The results confirm the idea central to the theoretical models discussed above, namely that the poor suffer from aspiration failure, with maternal aspirations higher for mothers from wealthier households and for mothers with higher education. The effect of aspirations on education outcomes is larger for children from poorer backgrounds and with lower educated mothers; the effects also depend on the village setting. The findings also furnish a new insight on the channel through which intergenerational (im)mobility takes place, giving a richer explanation to the robust effect of parent on children education, as our results indicate that maternal aspirations, rather than maternal (or paternal) education, drive household investment in child education.

From a policy perspective, our results suggest that faster impact may be possible, because changing maternal aspirations produces more rapid results than waiting (a generation) for parents' educational levels to improve. Changing aspirations may also be more effective. Current evidence shows that while public expenditure on schooling increases intergenerational mobility, persistence remains substantial (0.34), also in countries with high public expenditures on education, such as the Nordic countries. Shifting aspirations may therefore be a more direct and effective approach to increase child education.

The remainder of the paper is structured as follows. In the next section we discuss the relevant literature. Section 3 discusses the framework for analysis and empirical strategy, while Section 4 considers the context and data. Section 5 discusses the results, and Section 6 concludes.

10 A previous literature on relative deprivation argues that people's satisfaction with earnings comes from comparing themselves with others, and this view has gained attention in recent work, considering for instance that people derive a notion of fairness from this (see work by Akerlof, Fehr, and Oswald, among others). An older literature also gives a central role to relative income (see, for instance, Duesenberry 1949 on relative-income hypothesis and Veblen 1947 on conspicuous consumption).

11 Even if there is no consensus about what neighbourhood effects reflect precisely and how we should model them, the evidence of their importance is sufficiently strong and has gained increasing recognition, as discussed by Durlauf (2003).

2. Educational aspirations and poverty

Formal education yields many benefits, both at the level of the individual and at the level of society, and this is especially the case for low-income countries, where schooling often provides a way out of poverty.¹² Recent studies suggest that while divergences in the effects of schooling may start at an early age, sustained investment is also important if the benefits of earlier efforts are not to be undone. To reach desirable outcomes (jobs, income), investment in human capital has to occur at critical and sensitive periods (Heckman 2007). There is, however, limited understanding of the types of investment needed at different stages of human development. With most work focusing on early childhood development, investment during teenage years remains poorly understood. Two papers highlight its potential importance. Beaman et al. (2012) show that adolescent girls' career aspirations and educational attainment in West Bengal, India, can be influenced by examples of female leadership. Bandiera et al. (2014) show how a combined adolescent-development clubs-based programme to empower girls had significant impacts on both their knowledge and risky behaviours and on the likelihood of being engaged in income-generating activities. Our study focuses on attainment and willingness to invest in education during adolescence.

In many of the poorest countries, school drop-out remains an important issue, with the transition from primary to secondary school in particular being problematic (see World Bank 2007). In this context it is especially interesting to consider demand for education. Research in the last two decades has overwhelmingly focused on the supply of schooling. Failures in demand have received more varied attention. Research in social psychology, as well insights from qualitative research, suggests that beliefs in whether returns to education will be materialised may be important factors, as they co-determine investment decisions. Informed by their own (limited) experiences, as well as those of their peers, the poor often believe that their own abilities do not suffice to realise these returns to education, even if opportunities are available. These internal constraints correspond to aspiration failures.

One dimension that has been studied is the role of expectations, in particular for older students. Following Manski's (2004) plea to focus on expectations rather than observed choices, and reassured by work underlining that young people in developing countries can understand and answer probabilistic questions (see also Delavande, Gine and Mackenzie 2011), recent work looks at information constraints. Jensen (2010) studies the role of perceived returns to education among student in Grade 8 in the Dominican Republic, where measured returns are substantial, and finds that information constraints matter. Attanasio and Kaufman (2009), focusing on high school graduates, find that both parents' and young people's expectations matter for high school attendance. But while expectations about the future may affect aspirations, they are not the same, as aspirations reflect what may be possible in the absence of constraints.

¹² Better educated individuals tend to have higher labour-market participation and higher earnings, which is especially relevant for the poor, who earn their income from work. Higher education is also associated with better health, longer lifespan and increased freedom. Higher educated societies tend to do better and have higher growth (Barro 1991; Krueger and Lindahl 2000) – although not universally so (see Pritchett 1999) – lower poverty (WDR 2000), better health outcomes (Glewwe 1999b; Levine 2004) and more favourable demographic trends (Birdsall 1988; Glewwe 1999a), although the effect of education on inequality and political participation remains ambiguous (see Hannum and Buchmann 2004).

There is, as far as we know, no direct quantitative evidence on the role of aspirations for education outcomes in developing countries. The scarce evidence for high-income countries shows that aspirations matter for school achievement. Furstenberg and Neumark (2005), for instance, find that programmes implemented in Philadelphia high schools focusing on post-secondary enrolment had a positive effect both on aspirations for higher education and on college attendance, especially among at-risk young people. Studies focusing on explaining aspirations also suggest a strong positive relationship. Shropshire and Middleton (1999) find that children in low-income households in the UK tend to have lower aspirations; Roker (1998) reports a similar finding for adolescents in the UK. Chiapa, Garrido and Prina (2010) find that Progressa parent participants have higher aspirations for their daughters, and that this is due to exposure to highly educated professionals. Macours and Vakis (2015 forthcoming) observe that social interactions with successful leaders affect households' attitudes towards the future in Nicaragua and amplify programme impacts on investments in human capital. In a similar vein, the study by Beaman et al. (2012), cited above, finds that female leadership has an effect on adolescent girls' career aspirations and education outcomes.

There is also indirect evidence. Across countries, a strong relationship is observed between parent education and child education (Black and Devereux 2011; Solon 1999; Behrman 1997). While the channel through which this intergenerational transmission takes place is not well understood, this result is often interpreted as evidence for the role of aspirations. Hertz et al. (2007) find strong correlations between parent and child education across 42 countries (0.4 to 0.6), often interpreted as evidence of limited intergenerational mobility.¹³ But association does not mean causation. Recent studies attempting to identify causality tend to find such causal effects, but not always.¹⁴ A sub-strand of studies investigates the difference in effects of paternal and maternal education, finding a wide variation in the respective estimates. While maternal education is found to have a stronger effect for the USA (see Black, Devereux and Salvanes 2005), this result does not seem to hold across India (Behrman 1997).¹⁵

However, even if these results may provide evidence for a causal relationship between parent and child education in many settings, the channel through which this intergenerational transmission works remains unclear, as parent education may be a proxy for many factors. Studies of intergenerational mobility underline how 'tastes' and attitudes are passed on from parents to children. Existing empirical work on attitudes provides mixed evidence. Early studies for the USA, investigating the transmission of work attitudes, remain inconclusive (Corcoran 1995). More recent studies tend to support the transmission of attitudes. Dohmen et al. (2012) find that levels of trust and willingness to take risks are correlated across generations in Germany. Almond, Edlund and Milligan (2009), studying Asian immigrants in

¹⁴ While Carneiro, Meghir and Parry (forthcoming) find substantial causal effects of maternal education on children's learning and behavioural outcomes for the USA, Chevalier (2004) observes substantial effects of parents' education on the probability that a child stays in school in the UK. Black, Devereux and Salvanes (2005), focusing on Norway, find no evidence for a relationship between child and parent education in general, although they do observe a relationship between mother and son education, and Farre, Klein and Vella (2009) conclude that the observed intergenerational educational correlation reflects both a causal parental educational effect and a transfer of unobserved ability.

¹⁵ Using twins data, Behrman and Rosenzweig (2002) also question the results for the USA, but later work argues that it is necessary to distinguish between MZ and DZ (dizygotic, fraternal) twins, and find opposite results for Sweden when doing this (Amin, Lundborg and Rooth 2011). Recent evidence using census data for Nepal finds distinct marginal effects of female and male education on various household welfare indicators (Fafchamps and Shilpi 2014).

Canada, observe persistence in a wide range of gender-related attitudes across generations, which they loosely call ‘culture’.

This paper focuses on maternal aspirations for child education, which provide one potential pathway.¹⁶ By studying the simultaneous effects of parent aspirations and parent education, we provide a direct test of whether aspirations are the often-assumed channel for intergenerational transmission, and we find that they are, with maternal aspirations having stronger effects than both maternal and paternal education.

3. Framework for analysis and econometric strategy

Consider that households get utility from reaching targets that correspond to aspirations. More formally, they maximise $U_{it} = u(y_{it}, a_{i(t-1)})$, where y stands for income and a for aspirations. Since income depends on education: $y_t = f(e_t, \theta)$, investment occurs in accordance with aspirations, and education can be written as a function of aspirations, the cost of education, and the budget constraint: $e_{it} = g(a_{i(t-1)}, c, y_{i(t-1)}, \varepsilon_i)$.

To test whether aspirations have a positive effect on investment in education, we estimate the following equation:

$$E_{it}^c = \beta_0 + \beta_1 A_{i(t-1)}^m + \beta_2 X_{i(t-1)}^p + \beta_3 X_{i(t-1)}^c + \beta_4 X_{i(t-1)}^{hh} + \beta_5 V_i + \varepsilon_i \quad (1)$$

where E_{it}^c refers to education of child i at time t . We will consider grade achieved at age 15 as well as test scores on a Peabody Picture Vocabulary, Maths and language test. Finally we also consider the influence of attending a private school versus a government school, and attending a school versus engaging in work, and staying at home and neither attending school nor engaging in work.

$A_{i(t-1)}^m$ stands for maternal aspirations for child i at time $t-1$, $X_{i(t-1)}^p$ represents parent characteristics, including parental education, while $X_{i(t-1)}^c$ reflects child characteristics at $t-1$, including age, gender, caste, and religion, but also cognitive ability, as well as physical and mental health; $X_{i(t-1)}^{hh}$ reflect other household characteristics, while V_i are village dummies, and ε_i other unobserved factors. All right-hand side variables are lagged.

Two key issues which present themselves in estimating Equation 1 are non-linearity and endogeneity. The concern with non-linearity arises from two competing views. One perspective would argue that ‘having more aspirations is better’, advocating a positive monotonic relationship between aspiration and outcomes (as employed by Dalton, Ghosal and Mani (2011) among others). The precise shape of the curve may also be of interest, in particular whether the relationship follows a concave, linear, or convex trajectory, or whether it shows lumpiness, following a step function indicating that aspirations need to be above a certain level before they have substantial effects. An alternative view, focusing on the gap between aspirations and outcomes, argues that ‘having more aspirations is not necessarily better’. Ray (2006), for instance, maintains that the poor may have aspirations that are either too close to or too far from what can be expected to be achieved, implying that there is an

¹⁶ Black and Devereux (2011), in their literature review, appeal for more research in this area.

optimal level of aspirations, beyond which aspirations have a negative effect on outcomes, suggesting an inverse U-shaped relationship.¹⁷

Which of these views holds is, ultimately, an empirical question. We test this by allowing for non-linearity of the aspirations effect on education. If 'more is better' dominates, aspirations should have a monotonically increasing effect; if the alternative perspective rules, the effects would be negative for high levels of aspiration. To allow for nonlinearity, we use a spline function permitting returns to aspirations to vary across levels of aspirations; we estimate:

$$E_{it}^c = \beta_0' + g(A_{i(t-1)}^m) + \beta_2' X_{i(t-1)}^p + \beta_3' X_{i(t-1)}^c + \beta_4' X_{i(t-1)}^{hh} + \beta_5' V_i + \varepsilon_i' \quad (2)$$

with $g(A_{i(t-1)}^m) = \sum_{n=1}^N \beta_n A_{i(t-1)}^m I_{in}$ and $I_{in} = 1[\eta_{n-1} \leq A_{i(t-1)} < \eta_n]$, with η_n the place of the n -th node

for $n=1,2,\dots,N$. We consider two nodes, which we fix at 10 and 13 years of education respectively to reflect the structure of Indian education, where junior secondary school lasts nine years and senior secondary lasts another three years, after which students can move to higher education.¹⁸ β_n then reflects the returns to aspirations for the n -th interval. Returns are linear if $\beta_1 = \beta_2 = \dots = \beta_n$.

A second issue of concern is that aspirations may be endogenous. We expect maternal aspirations to affect child-education outcomes, but parents may also adapt their aspirations when they observe their child's school performance. Education outcomes and mother's aspirations may also be determined by an unobserved third variable. The rich information contained in the data allows us to address simultaneity reasonably well by controlling for a wide range of variables, including the child's cognitive achievement and physical and mental health, as well as demographic and household characteristics. To help to address potential reverse causality, all right-hand side variables are lagged in time. Finally, we apply control-function estimation, an appropriate alternative to instrumental-variable estimation, especially in the case of non-linearity. We estimate:

$$E_{it}^c = \beta_0'' + g'(A_{i(t-1)}^m) + \beta_2'' X_{i(t-1)}^p + \beta_3'' X_{i(t-1)}^c + \beta_4'' X_{i(t-1)}^{hh} + \beta_5'' V_i + \delta_6 \hat{c}_i + \varepsilon_i'' \quad (3)$$

and test whether the coefficients of aspirations are significant. The control-function term \hat{c}_i is obtained from the first stage:

$$A_{i(t-1)}^m = \pi_0 + \pi_1 Z_i + \pi_2 X_{2i} + \pi_3 V_i + c_i \quad (4)$$

We have two identifying instruments Z_i . Being the eldest son or not (gender-birth order of the child) serves as a first identifying instrument. As in many cultures, first-born sons have a special status in India, and parents tend to have higher aspirations for their eldest son. The special status of first-born sons is particularly strong in India, often resulting in sex-selective abortion, and stems from ancient inheritance customs, where the eldest son becomes head of household when the father dies.¹⁹ Our data confirm that aspirations are higher for first-born sons. Moreover, it seems reasonable that being first-born son has no direct effect on

17 In this approach, when aspirations are close to current outcomes, the aspirations gap is small and willingness to invest is low, since agents are already close to their aspiration, and the reward of additional investment is too small. When aspirations are far removed from what is possible to achieve, this implies a large aspirations gap, leading to reluctance to invest because the cost is high relative to uncertain future benefits.

18 Using different nodes leads to similar results.

19 See Prabhat Ja et al. (2011) for recent evidence on sex-selective abortion; Rosenblum (2012) illustrates the economic advantages of having a son.

education outcomes, other than through aspirations. This makes it a valid instrument. The variable is included in the first stage after controlling for the number of other siblings in the household, as well as the child's cognitive ability.²⁰

The mother's assessment of the usefulness of education for herself serves as a second identifying instrument. This variable proxies a belief in the value of education, which is grounded in the mother's own experience. Mothers who find that schooling was or would have been essential in their *own* life are expected to have higher aspirations for their child: a strong positive relationship that is confirmed in our data. This second instrument also satisfies the exclusion restriction, as the effect of a mother's valuation of education for herself can be sensibly presumed to have no direct effect on education outcomes, other than through aspirations. We carry out formal tests, which both instruments pass.

The first stage in Equation 4 also sheds light on the correlates of maternal aspirations, which will be discussed in some detail.

4. Context and data

As a country, India harbours the largest number of poor people. The most recent nationwide estimates indicate that 30 per cent of the population live in poverty.²¹ Andhra Pradesh, one of the five most populous states, representing just below 10 per cent of India's population, performs slightly better than average, with 21 per cent of its people living in poverty. More than 80 per cent of the population work in agriculture.

Education outcomes in India have improved substantially over the past three decades, with 93 per cent of 6–14 year olds in school (Pratham 2007). Enrolment drops considerably for those aged 11–14, with 10 per cent of boys and 8 per cent of girls not in school, and it falls further for 15–16 years old, with 23 per cent of girls and 20 per cent of boys not enrolled. As a result, enrolment rates for secondary education are much lower, with a current national average Gross Enrolment Rate of 58 per cent and 33 per cent for secondary and higher secondary respectively (MHRD 2012). At the same time, returns to education have been estimated to be high for secondary schooling, amounting to 15 per cent for men and 32 per cent for women (World Bank 2009). This poses a question: why is secondary-school participation not higher than it is? While there has been, to our knowledge, limited in-depth analysis, constraints in the supply of schooling are often suggested to play a major role (see, for instance, Kingdon 2007), and the government has recently launched a centrally sponsored scheme, committing itself to additional investment in secondary education.²² This paper focuses on the demand side, investigating whether one specific demand factor,

20 As discussed in Black, Devereux and Salvanes (2006), in the scarce cases suggesting that birth order may help to explain education outcomes – a result on which there is no agreement regarding its robustness – this effect is attributed to higher cognitive ability, which we include as a control variable.

21 These are figures for 2004–5. Earlier estimates were re-done by an expert group, see Government of India Planning Commission 2009.

22 Rashtriya Madyamik Shiksha Abhiyan (RMSA), launched in March 2009, has as its objective to provide universal access to secondary-level education by 2017 and to achieve universal retention by 2020. RMSA also aims at improving quality of education in secondary schools through investment in additional appointments, training and new technology (MHRD 2012). The World Bank recently approved a US\$500 million credit to the Government of India to finance its efforts to improve secondary education (*India Today*, 23 March 2012).

namely maternal aspirations, plays a role in influencing school achievements of children at age 15.²³ Recent work for West Bengal suggests potentially strong effects, as it finds that both parental educational aspirations and teenage educational attainment increase substantially as a result of female leadership, but the study does not disentangle the effects (see Beaman et al. 2012). We use the oldest cohort of the Young Lives data from Andhra Pradesh, consisting of 1,008 children born between January 1994 and June 1995 and revisited in 2006–7, and later in 2009.²⁴ Attrition rates are very low, resulting in data for 994 adolescents. We focus on outcomes at age 15, obtained from the most recent round, and child, parent and household characteristics at age 12 and age 8, obtained from the previous rounds.²⁵

Our analysis focuses on the effect of maternal aspirations on the child's grade achieved at age 15, followed by a similar analysis of learning outcomes, including verbal and maths tests, as well as attending a private school, and attending school or engaging in work versus neither attending school nor engaging in work.

The figures in Table 1 illustrate the substantial variation in grade achieved at age 15. While pupils are expected to be in Grade 9 or 10 at age 15, depending on their month of birth, more than 45 per cent of pupils are below Grade 9, with no substantial differences between boys and girls.²⁶

Mothers' aspirations for their children are measured by the question 'Ideally, what level of formal education would you like the child to complete?'. Maternal aspirations show considerable variation: while more than half (54 per cent) want their child to complete university education, another 7 per cent aspire to post-secondary non-university education, and another 8 per cent aspire to completion of secondary school. Twenty-five per cent aspire to Grade 10 as the highest level of education, and 6 per cent aspire to less than Grade 10. Maternal aspirations are higher for boys than for girls: while 65 per cent of boys' mothers aspire to university for their sons, the corresponding figure for girls is 43 per cent, and while 4 per cent of mothers aspire to a grade below Grade 10 for boys, 8 per cent do so for girls. Similar gender-related differences in aspirations are found in West Bengal (see Beaman et al. 2012).

23 While credit constraints may also play a role, education-related expenses represent only 3 per cent of household budget for those living just above or just below the poverty line.

24 To focus on secondary-school outcomes, we concentrate on the Older Cohort. Young Lives is led by a team based within the Oxford Department of International Development, University of Oxford. More information is available at <http://www.younglives.org.uk/>.

25 Due to the narrow focus of the questionnaire in the early rounds, there are no full panel data on some of the variables of interest.

26 Children normally start in Grade 1 in September of the year when they turn 6.

Table 1. *Descriptive statistics*

	Mean	Standard error
School (and work) outcomes		
Grade achieved at age 15		
Overall mean	8.20	0.06
0	0.001	
1–6	0.14	
7	0.12	
8	0.19	
9	0.38	
10	0.16	
11–12	0.01	
Peabody Picture Vocabulary Test z score	0.03	1.00
Maths z score	-0.01	1.00
Attending school	0.78	0.41
Attending private school	0.36	0.48
Engaged in work	0.14	0.35
Mother's aspiration (aspired grade)		
Overall mean	12.80	0.10
0	0.02	
1–9	0.04	
10–12	0.33	
13–15	0.61	
Household characteristics		
Mother's education	2.70	0.13
Household consumption (in Rupee)	0.91	0.73
Number of siblings	1.83	0.04
Child characteristics		
Raven's matrix score (in %)	0.64	0.004
Height-for-age z score	-1.52	0.03
Total Difficulty score	0.38	0.02
Female	0.51	0.02
Age	11.21	0.01
Age at which started school	5.02	0.02
Scheduled caste	0.21	0.01
Scheduled tribe	0.10	0.01
Backward caste	0.49	0.02
Other caste	0.20	0.01
Hindu	0.93	0.01
Muslim	0.06	0.01
Christian	0.01	0.003
Instrumental variables		
Eldest son	0.59	0.02
Mother (would have) found own formal education essential	0.86	0.01

We control for a wide range of household, parent and child characteristics, for which the descriptive statistics are also reported in Table 1, including maternal education, household consumption, family size, child's cognitive ability (measured by Raven's matrix test), health stock (measured by height-for-age z score), mental health (measured by means of the Total Difficulty Score), as well as gender and age.²⁷ We also include caste and religion, which

27 The Total Difficulty Score is a validated psychiatric behavioural screening test to identify borderline cases in mental health and reflects the sum of answers to 20 questions related to emotional symptoms, conduct problems, hyperactivity, and peer problems. We use a dummy variable, indicating that a case is borderline or abnormal.

proxy potential differences in norms and access to schooling, and we control for the age when starting school, as we are mostly interested in the effect of aspirations on student progression after enrolment, although the results remain the same without this variable. Including these variables reduces potential feedback from school outcomes to mother's aspirations, which may be revised based on observed outcomes that provide indications for the child's cognitive, health, and mental-health abilities, but we include them also because of expected differential access due to caste, gender, or religion.

The first-stage equation sheds light on the correlates of maternal aspirations and includes the additional identifying instruments, namely whether the child is a first-born son, as well as the mother's assessment of the usefulness of education for herself. Being the eldest son is captured by a dummy variable, reflecting the child's gender-birth order. Fifty-nine per cent of sampled children are first-born sons, the others being either first-born daughter or a younger child in the household. (The analysis controls for the number of siblings by including this as a separate variable.) Mother's assessment of the usefulness of education for herself is measured by a combination of two questions that were asked in a separate section which surveyed maternal background. Mothers with at least some education were asked '*Do you think that formal schooling has been useful in your life?*', and their reply was coded into three possible answers: '*No, it has not been useful*', '*Yes, but it is not essential*', or '*Yes, it is essential*'. Mothers without any education were asked '*Do you think that formal schooling would have been useful in your life?*', with their replies coded in the same way. We develop a dummy variable with value 1 if the answer was '*Yes, it is / would have been essential*', and 0 otherwise. Sixty-eight per cent of mothers found or would have found formal education for themselves essential. This variable is considered to reflect the mother's general belief in the usefulness of education, grounded in her own experience. Both variables are strongly positively related to maternal aspirations, and also much more weakly associated with other observed variables. A placebo test, where each of the instrumental variables is added to equation (1) or (2), also illustrates that they do not show up significant.

In the subsequent analysis we then replace the left-hand side variable 'grade achieved' with learning outcomes, including maths and verbal ability test results. Maths skills are measured through a test designed for the local setting. Verbal ability is measured by a Peabody Picture Vocabulary Test (PPVT).²⁸ Average PPVT score at age 12 is 67 per cent. Because the tests are taken in English, we also control for the individual's score on a Cloze test measuring knowledge of English as a second language.²⁹

Finally, to better understand schooling-investment decisions, we also consider a third set of outcomes at age 15, namely whether the teenager is attending a private school or a government school, and whether he or she is attending school or participating in work, or neither attending school nor participating in work. Roughly one-third of adolescents in school (32 per cent) at the age of 15 attend a private school. While the majority of adolescents attend school at age 15, a substantial minority, 37 per cent, do not. Of those not attending school, just over half (55 per cent) are engaged in work, while the remainder are neither at school nor in work.

28 The child is presented with a series of pictures. The examiner then states a word, and the child has to point to the picture that the word describes (see Dunn and Dunn 2007).

29 The Cloze test presents a text with some words removed, where the subject is asked to fill in the missing words. This requires understanding of both vocabulary and context.

5. Results

To provide a first idea about the relationship between maternal aspirations and grade achieved without imposing much restriction, Figure 1 plots the results from a (non-parametric) kernel regression and suggests a strong positive relationship. To further test this relationship, we estimate Equation 1, for which the results are reported in Table 2.

Figure 1 *Kernel regression school achievement at age 15 (y-axis) and maternal aspirations (x-axis)*

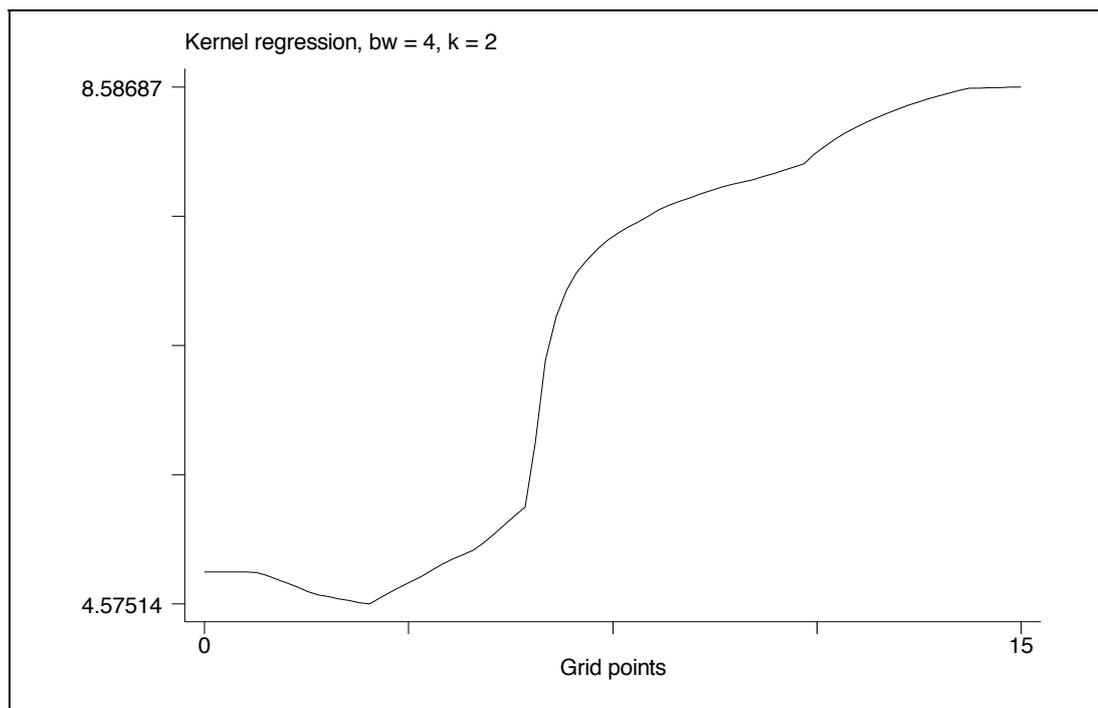


Table 2. *The effect of maternal aspirations at age 12 on grade achieved at age 15*

	(1) Grade achieved at age 15 OLS	(2) Grade achieved at age 15 OLS	(3) Grade achieved at age 15 OLS	(4) Grade achieved at age 15 OLS	(5) Grade achieved at age 15 OLS	(6) Grade achieved at age 15 CFE	(7) Maternal aspiration at age 12 1st Stage
Maternal aspiration	0.244*** (0.020)		0.230*** (0.020)	0.235*** (0.021)	0.224*** (0.020)	0.226* (0.123)	
Maternal education		0.092*** (0.012)	0.037*** (0.012)	0.002 (0.013)	-0.014 (0.014)	-0.014 (0.024)	0.140*** (0.025)
Eldest son							0.607*** (0.208)
Schooling essential							0.949*** (0.309)
Control function term						-0.003 (0.123)	
L(hhcons pc)				-0.054 (0.092)	0.107 (0.094)	0.104 (0.170)	1.130*** (0.186)
N siblings				-0.182*** (0.049)	-0.122** (0.051)	-0.122** (0.051)	0.172* (0.101)
Raven's				1.049*** (0.358)	1.547*** (0.379)	1.545*** (0.387)	0.556 (0.671)
Height-for-age z				0.107** (0.049)	0.088* (0.048)	0.088* (0.050)	-0.070 (0.103)
Total Difficulty score				-0.048 (0.104)	-0.039 (0.109)	-0.038 (0.112)	-0.212 (0.206)
Female				0.207** (0.097)	0.175* (0.095)	0.178 (0.173)	-1.140*** (0.186)
Age				0.520*** (0.141)	0.576*** (0.151)	0.577*** (0.154)	-0.333 (0.309)
Scheduled caste				-0.299* (0.156)	-0.212 (0.162)	-0.212 (0.163)	-0.097 (0.318)
Scheduled tribe				-0.197 (0.178)	-0.337 (0.223)	-0.336 (0.228)	-0.539 (0.422)
Backward caste				-0.067 (0.114)	-0.100 (0.120)	-0.099 (0.130)	-0.430* (0.220)
Christian				0.222 (0.390)	0.185 (0.382)	0.183 (0.398)	0.699 (0.665)
Muslim				-0.476* (0.243)	-0.253 (0.244)	-0.250 (0.259)	-1.028** (0.484)
Age when starting school				-0.263*** (0.067)	-0.204*** (0.068)	-0.205*** (0.069)	0.069 (0.139)
Village dummies	no	no	no	no	yes	yes	yes
Constant	5.076*** (0.270)	7.906*** (0.071)	5.145*** (0.272)	0.541 (1.653)	-0.860 (1.792)	-0.908 (2.647)	15.100*** (3.550)
Observations	930	958	925	910	910	910	910
R-squared	0.195	0.044	0.202	0.263	0.315	0.315	0.217

Notes: The estimations use non-clustered standard errors, since we have a small number of groups relative to the number of observations per group (the Moulton (1990) problem). Results remain the same when using clustered standard errors.

In a first step we regress grade achieved at age 15 on mother's aspirations for her child at age 12 alone, using OLS, and we observe a strong and significant relationship: aspiring to one additional year of schooling is associated with a 24 per cent increase, or almost two years' (1.97) increase, in grade achieved.

To compare with the role of maternal education – the key variable of interest in the literature on generational mobility – we then run a simple regression of grade achieved on maternal education as only right-hand side variable. The result, reported in Column 2 of Table 2, indicates that maternal education has a substantial and significant coefficient that is less than half the size of the coefficient of aspirations, with one additional year of maternal education leading to an increase of 0.7 years in grade achieved. The importance of aspirations is further underlined when considering the two together, as reported in Column 3: the coefficient of aspirations remains large, while the coefficient of maternal education is further attenuated to one third of its original size. This suggests that some of the effect of maternal education takes place through the mother's aspirations. When further control variables are included, the effect of maternal education becomes insignificant (and negative) (Column 5), and this remains the case when allowing for endogeneity (Column 6).³⁰

The effect of aspirations remains large and significant when including the wide set of control variables (Column 4), and village fixed effects (Column 5), which have a high joint significance.

To account for possible endogeneity, we estimate Equation 3, for the moment only allowing for linearity in the coefficients of aspirations. The results, reported in Column 6, remain very similar, suggesting limited endogeneity, possibly because the most important ground for endogeneity, reverse causality, is addressed by considering lagged maternal aspirations and cognitive skills.

Other variables also have strong effects. Teenagers with fewer siblings, who have higher cognitive skills, who are taller for their age, are older, and have started school younger are more likely to achieve a higher grade at age 15, while household welfare does not play a direct role.

Turning to the first-stage results in Column 7, we see that the instruments are highly significant and that they have the expected effects. Aspirations for eldest sons are considerably higher than for other children, and this result is significant at the 1 per cent level, confirming the strong relationship between the two variables observed in univariate analysis. Mothers who found or would have found schooling essential in their own life also have substantial higher aspirations, and this is again highly significant (1 per cent). Testing joint significance of the instruments yields an F statistic of 10.58. The instruments also pass a Sargan test for over-identification. Together with the reasonable ground for exclusion argued earlier, as well as the earlier-mentioned placebo test and weak correlation with other variables, this indicates that our instruments are valid.

Other variables are also strongly related with maternal aspirations, although we cannot make claims about causality. Aspirations are higher for more educated mothers, providing further support for the assertion that aspirations are a channel through which educational outcomes are transmitted across generations. Mothers with one additional year of education aspire to 1.8 years' (14 per cent) higher education for their child (evaluated at the mean). The effect of

30 A common explanation for negative effects of parental education on school outcomes is that highly educated parents spend less time with their children, due to work pressure or ambition, and that this reduces the time in which the child can be stimulated to learn. A stepwise analysis looking at the effect of mother's and father's education (either and both) shows similar results (results not reported).

paternal education is half the size.³¹ Mothers coming from better-off households also have higher aspirations. Aspirations are not higher for those who score better in Raven's matrix test. The number of siblings, and accumulated health and mental health factors, also have no significant relationship with aspirations.

Aspirations are consistently and substantially lower for girls than for boys. Evaluated at the mean, aspirations are 14.6 years lower for girls compared with boys, after controlling for eldest son and number of siblings. When controlling for village fixed effects, the female effect becomes more significant.

Turning to social caste and religion, which are both highly correlated within households, we find lower aspirations for those from backward-caste and Muslim families. The first finding may stem from the fact that members of so-called backward castes are engaged in specific occupations, including artisan and trade professions, which translate into less appetite for formal education. Mothers of backward-caste children are more likely to aspire to completion of junior secondary education and less likely to aspire to completion of senior secondary and tertiary education.

Muslim children have 13 years' lower aspirations (evaluated at the mean), a result that stems from the relatively high proportion of mothers with the lowest education aspirations for their child (5.4 per cent versus 1.6 per cent for the entire sample). Village effects are also important, and their inclusion reduces the wealth effect only slightly, indicating that neighbourhood effects do not solely reflect income effects.

Psychologists argue that beliefs are revised on the basis of experience. Our data allow us to explore whether maternal aspirations are related to different types of exposure. We find only weak evidence for this (details results not reported). The only robust finding is that maternal aspirations are significantly and substantially higher when parents are members of more organisations, but this does not necessarily reflect a causal relationship, since both may well be driven by unobserved variables such as parental ambition, social status, or political power. We find no evidence that aspirations are related to other types of exposure, including time lived in the village or shocks experienced, as these variables either show up insignificant or become insignificant once controlled for village fixed effects.³² Village fixed effects are important throughout (P-value for joint significance 0.00), indicating that neighbourhood characteristics matter. To unravel these effects, we explored the role of community characteristics and found that the highest grade of anyone else in the village has a strong and substantial effect on aspirations, indicating that people with high aspirations live in neighbourhoods with more highly educated people, while living in these neighbourhoods may also increase aspirations (results not reported).

31 Interestingly, when including village dummies, the effect of paternal education is smaller, but not so for maternal education, indicating that mother's education also has a larger effect over and above the average village effect.

32 Mothers who have lived in the current village for a larger part of their lifetime (and thus have less exposure) do not have lower aspirations. Households which have experienced a job or income loss, or other shocks, do not have higher or lower aspirations, and neither do those who have received financial help. Aspirations tend to be higher when the father is working outside the agricultural sector, but the effect becomes insignificant when controlling for village fixed effects. Variables on whether parents are able to get information on education opportunities, income-earning opportunities, family planning, how to vote and who to vote for, legal issues, registration fees, etc. show up significant, but again become insignificant once we control for village characteristics. Answers to questions about whether the household has experienced discrimination do not co-vary with aspirations.

Non-linear estimation

A possible shortcoming of the above estimations is that it imposes linearity on the relationship between maternal aspirations and teenage school outcomes across different levels of education, whereas the non-parametric kernel regression plotted in Figure 2 suggests non-linearity. We proceed with estimating the non-linear model presented in Equation 2, followed by Equation 3, which uses control-function estimation to allow for endogeneity.

The OLS results, presented in Column 1 of Table 3, indicate potential nonlinearities in the relationship. While low levels of aspirations, including aspiring to junior secondary school, have no effect on the outcome at age 15, aspiring to complete (senior) secondary school has large and significant effects, and aspiring to tertiary education has slightly smaller and significant effects. While the difference between the last two is not significant, the analysis consistently finds lower point estimates for the highest aspirations, suggesting an S-shaped function, with a potential low-aspiration trap. Importantly, while the effect of aspirations potentially declines for the highest levels of aspirations, it remains positive, suggesting that a more-is-better model fits best. Lower or negative effects of high aspirations may also set in later, for instance when the child is in tertiary education, a hypothesis which requires data on education outcomes at older ages, beyond age 15.

The control-function estimates, presented in Column 2 of Table 3, are very similar to the OLS estimates and explain a third of the variation in grade achieved. To further assess the heterogeneity in the effect of aspirations, we then interact high aspirations with key variables of interest. The results, reported in Column 3 of Table 3, indicate that high aspirations – both for completing secondary and for completing tertiary school – matter, especially for backward-caste families. The effects of high aspirations are also lower when the mother is more educated, as shown in Column 4, and especially when the household is better off, as shown in Column 5. The combined results in Column 6 confirm these results, although the maternal-education interaction term becomes insignificant, suggesting that this reflects a wealth effect.³³

³³ Note that interactions with cognitive ability do not show up significant; we also investigated whether interaction with belonging to a dominant caste (Srinivas 1959) or a dominant land-owning caste within a village (Anderson 2011; Iversen et al. 2010) has any effect, but they do not (results not reported).

Table 3. *The effect of maternal aspirations on grade achieved at age 15, allowing for non-linearity*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Grade achieved at age 15								
	OLS	CFE							
Maternal aspiration 1–9 years' schooling	0.076 (0.065)	0.072 (0.128)	0.145 (0.128)	0.089 (0.128)	0.036 (0.129)	0.110 (0.129)	0.137 (0.130)	0.137 (0.131)	0.275** (0.138)
Maternal aspiration 10–12 years' schooling	0.266*** (0.030)	0.262** (0.113)	0.136 (0.126)	0.277** (0.114)	0.189 (0.117)	0.113 (0.145)	0.189 (0.159)	0.124 (0.147)	0.145 (0.184)
Maternal aspiration 13–15 years' schooling	0.229*** (0.021)	0.226** (0.111)	0.107 (0.118)	0.235** (0.111)	0.174 (0.113)	0.093 (0.129)	0.126 (0.131)	0.088 (0.134)	0.104 (0.149)
Maternal aspiration 10–12 X Scheduled caste			0.033 (0.075)			-0.010 (0.094)	-0.033 (0.096)	0.003 (0.096)	0.048 (0.111)
Maternal aspiration 10–12 X Scheduled tribe			0.080 (0.089)			0.014 (0.106)	-0.006 (0.111)	-0.002 (0.108)	0.063 (0.130)
Maternal aspiration 10–12 X Backward caste			0.199*** (0.067)			0.148 (0.090)	0.130 (0.093)	0.154* (0.092)	0.124 (0.102)
Maternal aspiration 13–15 X Scheduled caste			0.081 (0.052)			0.057 (0.067)	0.048 (0.068)	0.079 (0.069)	0.103 (0.079)
Maternal aspiration 13–15 X Scheduled tribe			0.041 (0.063)			0.001 (0.077)	-0.001 (0.078)	0.019 (0.081)	0.050 (0.094)
Maternal aspiration 13–15 X Backward caste			0.162*** (0.047)			0.128** (0.065)	0.121* (0.066)	0.138** (0.066)	0.113 (0.073)
Maternal aspiration 10–12 X Maternal education				-0.025** (0.010)		-0.007 (0.014)	-0.008 (0.014)	-0.004 (0.014)	0.001 (0.016)
Maternal aspiration 13–15 X Maternal education				-0.020*** (0.007)		-0.006 (0.010)	-0.007 (0.011)	-0.004 (0.011)	-0.002 (0.012)
Maternal aspiration 10–12 X l(hh cons pc)					-0.121** (0.048)	-0.121** (0.049)	-0.106** (0.050)	-0.128** (0.050)	-0.048 (0.065)
Maternal aspiration 13–15 X l(hh cons pc)					-0.075** (0.033)	-0.067** (0.033)	-0.057* (0.034)	-0.073** (0.034)	-0.016 (0.044)
Maternal aspirations 10–12 X village dummies								yes	yes**
Maternal aspirations 13–15 X village dummies							yes		yes***
Maternal education	-0.009 (0.016)	-0.008 (0.023)	-0.002 (0.023)	0.280** (0.111)	-0.004 (0.023)	0.095 (0.154)	0.102 (0.157)	0.056 (0.157)	0.016 (0.175)
Lhhconspc	0.152 (0.101)	0.156 (0.157)	0.187 (0.156)	0.177 (0.157)	1.291*** (0.495)	1.241** (0.500)	1.053** (0.509)	1.287** (0.510)	0.432 (0.661)
Scheduled caste	-0.201 (0.174)	-0.202 (0.174)	-1.132 (0.757)	-0.165 (0.175)	-0.230 (0.174)	-0.765 (0.980)	-0.612 (1.002)	-1.043 (1.002)	-1.387 (1.161)
Scheduled tribe	-0.317 (0.244)	-0.319 (0.250)	-1.079 (0.916)	-0.281 (0.251)	-0.328 (0.250)	-0.471 (1.124)	-0.409 (1.139)	-0.646 (1.155)	-1.089 (1.352)
Backward caste	-0.079 (0.141)	-0.080 (0.148)	-2.347*** (0.696)	-0.052 (0.149)	-0.090 (0.148)	-1.842* (0.959)	-1.713* (0.977)	-1.987** (0.979)	-1.600 (1.081)
Other control variables	Yes								
Village dummies	Yes***	yes***	yes***	yes***	yes***	yes**	yes**	yes***	yes***
Observations	910	910	910	910	910	910	910	910	910
R-squared	0.337	0.337	0.356	0.342	0.342	0.361	0.373	0.376	0.402

Throughout our analysis, village dummies are highly significant. To test whether the heterogeneity in aspiration effects according to income and caste are village-specific, we interact aspirations with village dummies, as reported in Columns 7–8 in Table 3. The coefficients of the interaction terms with backward caste and household consumption remain significant when including interaction terms between village dummies and aspirations for completing secondary school and tertiary school respectively, but not when including both interaction terms with village dummies, which have high joint significance when included jointly (Column 9). This suggests that local setting plays a role. One interpretation is that aspirations are benchmarked locally, in comparison with what happens in the neighbourhood, as described by Appadurai (2004). Alternatively, other constraints, for instance supply factors including distance to school and credit constraints, hold back the aspiration effects in some neighbourhoods more than in others. Interestingly, in this last specification (Column 9) low aspirations show up as significant, indicating that, once heterogeneity in higher aspirations across villages is taken into account, even very low aspirations have an effect on the grade achieved.

Maternal aspirations and learning outcomes

The grade achieved at age 15 is at best an imperfect measure of human capital accumulated by being at school. Heterogeneity in school quality implies that students who achieved a similar grade may differ in accumulated skills during their time at school. We therefore extend the analysis by assessing the effects of aspirations on learning outcomes, considering the child's scores on both a Peabody Picture Vocabulary Test and a Maths Test separately, re-estimating equations 2 and 3 respectively.

OLS estimation indicates a strong relationship of maternal aspirations with both PPVT and maths test results at all levels of aspirations, as reported in Columns 1 and 4 of Table 4 respectively. These effects increase substantially when controlling for endogeneity, indicating that OLS estimates are downward-biased because of negative feedback caused by mothers revising their aspirations downwards when observing modest learning outcomes. This bias is consistent, large and similar in size across the different levels of aspirations. The control-function term shows up highly significant for the PPVT score, but not for the maths score, possibly due to strong heterogeneity in the latter. Because both tests are conducted in English, which is the second language for many of the subjects in the sample, we include a control for test results on English Language (see Columns 3 and 6), and this yields the same results. Interestingly, while the effects of aspirations on PPVT are similar across levels of aspirations, the effects on maths are largest at low levels of aspirations.

Table 4. *Maternal aspirations and teenage learning outcomes*

	(1) PPVT z- score OLS	(2) PPVT z- score CFE	(3) PPVT z- score CFE	(4) Math z- score OLS	(5) Math z- score CFE	(6) Math z- score CFE
Maternal aspiration 1–9 years' schooling	0.082** (0.039)	0.237*** (0.079)	0.192*** (0.073)	0.140*** (0.041)	0.241*** (0.081)	0.195*** (0.071)
Maternal aspiration 10–12 years' schooling	0.087*** (0.018)	0.241*** (0.070)	0.214*** (0.065)	0.049*** (0.019)	0.150** (0.072)	0.124* (0.063)
Maternal aspiration 13–15 years' schooling	0.083*** (0.013)	0.237*** (0.069)	0.203*** (0.064)	0.049*** (0.014)	0.149** (0.070)	0.113* (0.062)
Control function term		-0.157** (0.070)	-0.138** (0.064)		-0.103 (0.071)	-0.083 (0.063)
Language test results z score			0.386*** (0.029)			0.494*** (0.029)
Maternal education	0.038*** (0.010)	0.014 (0.015)	0.002 (0.014)	0.041*** (0.010)	0.025* (0.014)	0.018 (0.013)
L(hhcons_pc)	0.155** (0.063)	-0.016 (0.098)	-0.018 (0.090)	0.040 (0.064)	-0.070 (0.099)	-0.060 (0.088)
N siblings	-0.009 (0.031)	-0.022 (0.031)	-0.018 (0.029)	-0.013 (0.031)	-0.022 (0.032)	-0.007 (0.028)
Raven's	0.905*** (0.227)	0.817*** (0.230)	0.374* (0.217)	1.415*** (0.231)	1.356*** (0.234)	0.713*** (0.212)
Height-for-age z	0.012 (0.029)	0.026 (0.030)	0.022 (0.028)	0.030 (0.030)	0.039 (0.030)	0.043 (0.027)
Total Difficulty score	0.007 (0.065)	0.045 (0.067)	0.068 (0.062)	-0.146** (0.066)	-0.122* (0.068)	-0.102* (0.060)
Female	-0.345*** (0.061)	-0.176* (0.096)	-0.112 (0.089)	-0.313*** (0.061)	-0.202** (0.098)	-0.181** (0.087)
Age	0.006 (0.094)	0.068 (0.098)	0.028 (0.090)	-0.075 (0.095)	-0.035 (0.099)	-0.037 (0.087)
Scheduled caste	-0.256** (0.107)	-0.240** (0.107)	-0.137 (0.100)	-0.273** (0.109)	-0.261** (0.109)	-0.198** (0.097)
Scheduled tribe	-0.328** (0.153)	-0.248 (0.157)	-0.157 (0.144)	-0.139 (0.155)	-0.084 (0.159)	0.023 (0.140)
Back ward caste	-0.166* (0.090)	-0.107 (0.093)	-0.034 (0.087)	-0.073 (0.089)	-0.032 (0.093)	-0.008 (0.084)
Christian	0.012 (0.243)	-0.112 (0.248)	-0.093 (0.234)	-0.086 (0.252)	-0.167 (0.258)	-0.092 (0.228)
Muslim	0.075 (0.164)	0.229 (0.177)	0.367** (0.167)	-0.624*** (0.151)	-0.519*** (0.167)	-0.276* (0.163)
Age when starting school	-0.057 (0.049)	-0.065 (0.049)	-0.030 (0.046)	-0.056 (0.047)	-0.061 (0.047)	-0.051 (0.044)
Village dummies	yes	yes	yes	yes	yes	yes
Constant	-0.782 (1.116)	-3.424** (1.614)	-2.430 (1.489)	-0.098 (1.125)	-1.828 (1.635)	-0.591 (1.449)
Observations	839	839	808	888	888	809
R-squared	0.316	0.320	0.435	0.270	0.272	0.486

Other school- and work-related outcomes

To further understand the role of maternal aspirations, we consider their effects on two more decisions: (i) enrolment at a government school versus a private school, and (ii) attending school versus engaging in work, and neither attending school nor engaging in work, all at age 15.

To assess the effect of maternal aspirations, we estimate the equivalent of equations 2 and 3, using a linear probability model with and without control function respectively. The results, reported in the first two columns of Table 5, indicate that maternal aspirations play no role in the decision to attend a private or a government school. This decision seems to be primarily affected by household income and maternal education.

Table 5. *Maternal aspirations and other school and work outcomes*

	Attending private or government school		Working, attending school, or neither			
	OLS	CFE	mlogit		CFE	
	Attending a private school at age 15	Attending a private school at age 15	Attending school at age 15	Working at age 15	Attending school at age 15	Working at age 15
Maternal aspiration 1–9 years' schooling	0.009 (0.043)	0.056 (0.055)	-0.202 (0.160)	-0.231* (0.127)	-0.805** (0.353)	-0.855** (0.386)
Maternal aspiration 10–12 years' schooling	-0.004 (0.015)	0.044 (0.037)	0.187** (0.074)	-0.089 (0.066)	-0.405 (0.317)	-0.699* (0.363)
Maternal aspiration 13–15 years' schooling	0.001 (0.011)	0.049 (0.036)	0.188*** (0.054)	-0.108** (0.049)	-0.403 (0.313)	-0.717** (0.359)
Control function term		-0.049 (0.035)			0.602* (0.314)	0.621* (0.362)
Maternal education	0.025*** (0.005)	0.017** (0.007)	0.014 (0.044)	-0.227*** (0.081)	0.098 (0.062)	-0.141 (0.095)
L(hhcons_pc)	0.132*** (0.031)	0.080* (0.048)	-0.226 (0.265)	-0.618* (0.348)	0.502 (0.462)	0.129 (0.554)
N sibling	-0.003 (0.016)	-0.007 (0.016)	-0.244** (0.124)	0.195 (0.146)	-0.176 (0.130)	0.267* (0.152)
Raven's	0.111 (0.109)	0.078 (0.111)	1.160 (0.954)	0.203 (1.224)	1.619 (0.994)	0.682 (1.263)
Height-for-age z	0.029** (0.015)	0.034** (0.015)	-0.337*** (0.123)	-0.135 (0.148)	-0.437*** (0.135)	-0.235 (0.159)
Total Difficulty score	-0.000 (0.032)	0.010 (0.033)	-0.043 (0.277)	-0.127 (0.333)	-0.200 (0.291)	-0.298 (0.350)
Female	-0.079*** (0.030)	-0.026 (0.048)	-0.757*** (0.277)	-1.155*** (0.337)	-1.401*** (0.438)	-1.810*** (0.511)
Age	0.091* (0.046)	0.111** (0.049)	-1.235*** (0.415)	-0.497 (0.503)	-1.484*** (0.438)	-0.770 (0.531)
Scheduled caste	-0.248*** (0.053)	-0.241*** (0.053)	0.229 (0.489)	0.420 (0.634)	0.167 (0.492)	0.373 (0.638)
Scheduled tribe	-0.156** (0.074)	-0.130* (0.076)	-1.789*** (0.646)	-1.265 (0.847)	-2.175*** (0.687)	-1.608* (0.874)
Backward caste	-0.110*** (0.042)	-0.090** (0.044)	-0.126 (0.392)	0.181 (0.548)	-0.346 (0.411)	-0.040 (0.565)
Christian	0.020 (0.126)	-0.021 (0.129)	-0.700 (1.217)	0.236 (1.316)	-0.254 (1.244)	0.707 (1.348)
Muslim	-0.035 (0.071)	0.018 (0.081)	-0.892 (0.600)	0.389 (0.740)	-1.542** (0.691)	-0.273 (0.835)
Age when starting	-0.027 (0.022)	-0.030 (0.022)	-0.071 (0.227)	-0.004 (0.268)	-0.075 (0.228)	-0.013 (0.269)
Village dummies	yes***	yes***	yes	yes	yes	yes
Constant	-0.102 (0.554)	-0.930 (0.811)	14.786*** (5.017)	7.420 (6.039)	25.210*** (7.428)	18.367** (8.829)
Observations	725	725	938	938	938	938
R squared	0.391	0.393				

Note. All reporting marginal effects. The first two columns use linear probability models. Probit models yield the same results. The multinomial logit has those neither at school nor working as the base category.

We investigate the role of maternal aspirations using a multinomial logit to estimate the equivalent of Equation 2, as well as Equation 3, including a control-function term, following Petrin and Train (2009), who extend the control-function approach to the multinomial logit. The results are reported in the last four columns of Table 5, with those neither at school nor in work as base category.

Focusing on the effect of maternal aspirations, we find that a number of results are striking. First, the coefficients of maternal aspirations are consistently upwards biased when not controlling for endogeneity. In other words: not accounting for unobserved factors leads to overestimating the causal effect of maternal aspirations. The control-function term is important for both the decision to work and the decision to attend school. Children of mothers with some, but low, aspirations at age 12 are less likely to attend school than to stay home and not work at age 15, presumably because by now they (should) have completed the level of education aspired to four years earlier. Mothers' educational aspirations for their children have negative effects on the decision to work, whatever the level of education aspired to. Considering the control variables, we find that gender especially, but also caste and religion, plays an important role.

6. Conclusion

Increased attention is given to the role of aspirations for poverty. Existing work is mostly theoretical, and there is limited quantitative evidence testing the causal relationship. This paper investigates whether aspirations for education matter for adolescent school outcomes. Using Young Lives data for a cohort of children in Andhra Pradesh, India, we observe substantial variation in mothers' educational aspirations for their children and find that these aspirations have a strong causal effect on grade achieved at age 15. The analysis controls for a wide range of child and household characteristics, including household consumption, mother's education, the child's reading, writing and cognitive skills, the child's physical and mental health, age, ethnicity and religion, and village fixed effects. Being a first-born son and the mother's assessment of the usefulness of education for herself serve as identifying instruments. Better educated mothers and mothers from wealthier households have higher aspirations.

The results suggest that the effect of aspirations on grade achieved may be non-linear, following an S-shaped relationship, raising the possibility of a low-aspiration trap. Returns to aspirations are also found to be higher for children coming from backward castes, for less educated mothers and for mothers coming from less wealthy households, underlining the potential importance of aspirations to escape poverty.

Extending the analysis to learning outcomes, we find equally strong effects of maternal aspirations on test scores for general learning and maths. Here, low aspirations matter more, especially for maths. We find, however, no effect, or limited effects, of aspirations on the choice to attend a private versus a government school, while they have negative effects on the probability of working rather than staying at home at age 15.

The results also shed new light on the large body of work on intergenerational mobility in education that investigates the causal effect of parental education on children's education, and they indicate that this effect reflects to a large extent an aspirations effect.

The findings therefore also have policy implications and suggest that it may be more time-effective to try to change mothers' aspirations than to wait (a generation) for parents' levels of education to increase. This fits with an increased interest in information interventions in other fields of poverty alleviation. Recent work shows how outcomes can be improved by providing mothers with training and information on nutrition (see, for instance, Roy et al. 2005; King and Behrman 2009). Similarly, children's school attendance and learning achievements can be improved by shifting mothers' aspirations.

Focusing on maternal aspirations may not only be quicker, but may also be more effective, as intergenerational mobility remains confined even in countries with high public expenditures on education (which typically increase intergenerational mobility). There are currently not many examples of policy interventions targeting a change in aspirations. One welcome exception is Bernard et al. (2014), who implemented an intervention which randomly exposed poor people in remote villages to short films of the life stories of similar people who managed to escape poverty. Preliminary results suggest that this can bring about strong effects on a range of outcomes, including credit and savings behaviour, children's school enrolment and investment in children's schooling, and provide more evidence on the key finding of this paper, namely that aspirations can play important roles for economic decision-making. More work is needed to test this relationship in different contexts, and to further investigate the non-linearity of the aspirations effect, including the fall at higher levels of aspirations. For this, data containing information on early aspirations, as well as later outcomes in life, are needed.

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Aspirations, Poverty and Education: Evidence from India

While aspirations are receiving increasing attention in the study of poverty, empirical evidence remains limited. Using Young Lives data for Andhra Pradesh, this paper investigates whether mothers' aspirations matter for their children's education outcomes. We observe a strong relationship: aspiring to one additional year of schooling lifts the grade achieved at age 15 by 1.8 years on average. The relationship is, however, non-linear, with low aspirations having low effects, medium aspirations having large effects, and high aspirations having slightly lower but still large effects. These impacts remain strong and significant after controlling for a wide range of village, household, parent and child characteristics, including cognitive skills, and after allowing for endogeneity using a control-function estimation with as identifying instruments whether the child is a first-born son, as well as the mother's assessment of the usefulness of education for herself. Aspirations tend to have smaller effects for children from wealthier backgrounds and higher educated mothers, and impact also depends on the village setting. Extending the analysis, we find similar effects on teenage mathematics and verbal test results. Mothers' educational aspirations for their children have, however, no effect on the choice to attend a private (versus government) school, no effect on attending school at age 15, and a negative effect on working versus staying at home at age 15. Aspirations are higher for mothers from wealthier households and for mothers with higher education, while village effects also play a role. The findings shed light on recent theoretical work and provide new insights on the channel through which intergenerational mobility takes place, indicating that maternal aspirations, rather than maternal (or paternal) education, drive household investment in child education.

About Young Lives

Young Lives is an international study of childhood poverty, involving 12,000 children in 4 countries over 15 years. It is led by a team in the Department of International Development at the University of Oxford in association with research and policy partners in the 4 study countries: Ethiopia, India, Peru and Vietnam.

Through researching different aspects of children's lives, we seek to improve policies and programmes for children.

Young Lives Partners

Young Lives is coordinated by a small team based at the University of Oxford, led by Professor Jo Boyden.

- *Ethiopian Development Research Institute, Ethiopia*
- *Pankhurst Development Research and Consulting plc*
- *Save the Children (Ethiopia programme)*
- *Centre for Economic and Social Sciences, Andhra Pradesh, India*
- *Save the Children India*
- *Sri Padmavathi Mahila Visvavidyalayam (Women's University), Andhra Pradesh, India*
- *Grupo de Análisis para el Desarrollo (GRADE), Peru*
- *Instituto de Investigación Nutricional, Peru*
- *Centre for Analysis and Forecasting, Vietnamese Academy of Social Sciences, Vietnam*
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