Skill Formation in Bombay's Slums

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Abstract

We examine the impact of a programme designed to raise the psychosocial skills (self-esteem and self-efficacy) and aspirations of children in the slums of Bombay. We use a cross-cutting design with two comparison groups of peers for young adults who have attended the programme until leaving high school to analyse whether, compared to those from a similar environment and background, enrollment in the programme demonstrably raises psychosocial skills. We also use extensive data on parental background and psychosocial skills to construct difference-in-difference estimates that account for for family-level observables and unobservables. This is a non-randomised evaluation: hence, we are cautiously optimistic in our finding of substantial impacts on both self-esteem and self-efficacy, as well as evidence of an impact on aspirations. Furthermore, in line with the literature, both self-esteem and self-efficacy are positively related to success in school-leaving examinations and initial labour market outcomes.

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Common sense tells us that non-cognitive as well as cognitive characteristics affect social and economic success. Most people assume, for example, that individuals with 'ambition', 'good attitudes', 'high aspirations', or 'good judgement' are more likely to succeed than individuals who lack these characteristics. Employers . . . reflect this belief when they seek personal interviews, letters of recommendation, and other personal evaluations, even when test scores and other measures of cognitive ability are available. (Jencks: 122[44]).

1 Introduction

It is a truism that a better education makes for material success. Better-educated children get the better jobs and are less likely to engage in anti-social behavior and crime. A good education encompasses more than competence in the 3 R's[1] ; also valued is the building up of self-esteem, self-efficacy, motivation and aspirations[2] Economists are now increasingly concerned with understanding how such psychosocial skills (sometimes called non-cognitive skills) affect socioeconomic outcomes, and whether the failures in building such skills are critical for children from disadvantaged backgrounds[3]. Although the precise ways in which these skills are formed and affect individuals is a subject of ongoing investigation by educational sociologists and economists, it is clear that they are a vital determinant of future outcomes[4]. In short, while most are persuaded that an education of quality will also require investment in soft or psychosocial skills, we know little about how malleable these skills are and whether, like the 3 R's, they can be built upon and shaped over time.

[1] This refers to reading,(w)riting and (a)rithmetic, from the Mock Turtle in Carroll's Alice in Wonderland: "We had the best of educations..I only took the regular course....Reeling and Writhing, of course, to begin with and then the different branches of Arithmetic....".

[2] Gardner[29] [30] , an educational psychologist, argues that intelligience might consist of competency in more than one domain - and formal schooling often fails to take account of this. Also see Bowles[9]; Groves[37]; and Heckman[39] for views in economics.

[3] There are a number of references: for instance, Carneiro[12];Cunha et al [18] ; [21] ; Heckman et al [41].

[4] References include Currie [22];Paxson and Schady [51] ; Smith [63]. We also present a summary of this and other evidence below.

In this study we examine the impact of long-term intervention targeting predominantly psychosocial skills for children from disadvantaged backgrounds, living in adverse conditions. The intervention provides non-formal education to children, upon entry into school (roughly between the ages of six and eight), until the completion of high school about 10 years later. It is run by a non-govermental organisation (NGO), Akanksha, for children living in the severely deprived slums of Bombay. While providing some support with school learning, Akanksha (which means aspiration in Hindi) focuses on raising children's psychosocial skills. It actively engages in raising self-esteem, a sense of efficacy and higher aspirations through the use of workshops, drama, art and story-telling as part of the curriculum. Evidence on sustained intervention in this area is scant as are studies examining the impact of interventions on a broader range of skills than just the 3 R's[5]. This programme is, therefore, of tremendous interest as an opportunity to test whether psychosocial skills can be changed through long-term intervention.

In this study, we analyse whether, compared to children from a similar environment and background, children enrolled in the programme have demonstrably higher psychosocial skills as a result of the intervention. This is a small sample evaluation of a non-randomised intervention and clearly, we have to be cautious with the assessment of the impact. Nevertheless, we find that with a cross-cutting design and two comparison groups we find evidence consistent with the value-added of this intervention.

It might be argued that the main issue of interest for disadvantaged children should be investment in schooling and not accumulation of "additional" skills. But if opportunity is determined through investment in 'human capital' broadly defined where it captures multiple skills and not merely those acquired in the usual school curricula then this intervention becomes particularly relevant. There is anecdotal evidence that investment in a broad set of skills matters for getting better jobs[6]. Furthermore, as Jalan and

[5] The best known studies in this regard are the evaluations of the Perry pre-school and Abcedarian programmes. The evidence from these projects (which were short-term interventions for pre-school children) suggests that the gains in cognitive achievement died out while those in non-cognitive skills persisted. The latter were rewarded in a broad range of socio-economic outcomes. See Carneiro [12] and Heckman et al [40] [41] for careful summaries of these studies.

[6] A survey on employability conducted across students in three major cities in India (Times of India, 24-09-2009) concludes that: 'Mumbai students seem to recognise that, while searching for a job, they will be competing with several others with similar educational qualifications. What sets them apart, then, are their skills in other spheres of

Murgai[43] show, while there has been substantial increase in educational attainment over the last 20 years, it is unclear whether this has translated into an increase in occupational mobility; perhaps indicating persistence in inequality in human capital investment. A final and key point in the context of this study is the importance of the family in the building and transmission of skills, particularly psychosocial skills[7]. Disadvantage and deprivation in skills seem to be transmitted across generations and there is a large literature in education that suggests that low human capital (broadly defined) perpetuates such disadvantage[8].

In the next section we discuss the justification for this paper in the context of the existing literature. This is followed by Section 3, in which we propose a framework for the analysis. Section 4 describes the survey, specific outcomes of interest, the empirical methodology and the main results and their robustness. We then turn to a discussion of the literature on the impact of psychosocial skills on outcomes in Section 5 - and offer some descriptive evidence from this survey. The importance of such investment is usually based on the literature that suggests that cognitive skills and psychosocial skills are complementary in affecting socioeconomic outcomes and so we offer some evidence of the relationship between outcomes and psychosocial skills, controlling for the measurement of cognitive skills. We conclude with Section 6.

2 Psychosocial skills: A discussion

2.1 The Akanksha intervention

Akanksha is an NGO that has been active in Bombay for the last 15 years. It aims to augment formal education acquired in school with non-formal education for children in the Bombay slums and raise their aspirations. Social anthropologists argue that poverty is deprivation of many kinds, including

life".

[7] Guttman et al [38] find that parenting behaviour was related to child developmental outcomes, controlling for education and income. Carneiro et al [13] argue that "both family background and the home learning environment are extremely important for skill development."

[8] Feinstein et al[28] investigate intergenerational mobility in education. They argue that children's skills (both cognitive and psychosocial) are affected strongly by parental skills.

deprivation in the 'capacity to aspire'. Consequently, living in a deprived neighbourhood can mean being trapped in circumstances where individual effort offers little escape, but coordinated action to change the aspirations of the group could do so. Akanksha's focus is thus on broadening the horizons open to some of the most disadvantaged children in this city through building up their psychosocial capabilities throughout childhood and adolescence. They also offer some support for formal learning in English and mathematics.

They offer a 10 level programme: the first 7 levels focus on having a good time, self-esteem, agency and values to build up a strong educational foundation. The last 3 levels focus on preparation for a job, life skills, goal-setting and decision making. An important aspect of these lessons is to get students to identify specific instances of the application of these skills in real life through role-play and other group activities and avoid a mere abstract understanding of them. This, they argue, ought to help the students later as they try to implement some of what they have learned outside the protected environment of the Akanksha centres. Akanksha aim to build these skills through both lessons and activities, beginning with a focus on the self and then moving to the family, community, society, India and the world. They use sports, drama and art to provide the children with the experience of successfully completing challenging tasks thus give them a sense of autonomy and the ability to attain goals. They also provide a nurturing environment and support during times of stress and trauma which is vital in this context. The appendix provides examples of some of Akanksha lesson plans (see Appendix).

The two skills that we focus on are: self-efficacy (also known as agency and related to the concept of an internal locus of control) and self-esteem/pride that capture the degree of self-worth. As described below, both have a long history of measurement and use in psychology and education. We also examine the impact of the intervention on aspirations which are closely linked to formation of ambitions and hopes for the future.

2.2 Self-Efficacy: A selective summary

The first concept used is self-efficacy, understood as a sense of agency or mastery (Bandura [3]). It is related to the concept of 'locus of control'[9] in the psychological literature, capturing a belief about the link between one's own behaviour and its consequences (Rotter [54]) and one's capability to behave or act to achieve desired outcomes. Individuals hold beliefs about whether outcomes are due to their own efforts or the result of luck, fate, or the intervention of others. Individuals who believe that outcomes are due to their own efforts have high self-efficacy, as opposed to those who defer to circumstances outside their control (Maddux [46]).

Self-efficacy is thought to form during childhood and stabilise during adolescence (Sherman [61]). Rotter [54] hypothesises that an individual develops a sense of control when reinforcement is perceived as contingent on their behaviour. Carton and Nowicki [14] offer three antecedents of differences in self-efficacy in a review. First, parents influence children's development of efficacy; consistent parental use of reward and punishment as well as parental encouragement of autonomy are positively associated with the development of self-efficacy. Second, experiencing stressful life events, particularly if disruptive and when young, is negatively associated with the development of self-efficacy. Third, more efficacious children have parents who were more nurturing, emotionally supportive, and warm[10]. Low self-efficacy in parents appears to be related to low self-efficacy in children.

Locus of control and self-efficacy measures have been found to be associated with a variety of choices people make in their lives including vocational and career decisions (Maddux [46]). More efficacious individuals are generally more active in trying to pursue their goals and improve their lives (Rotter [54]). Furthermore, through ingenuity and perseverance, they often work out ways of exercising some measure of control even in situations containing limited opportunities and many constraints (Bandura[4]). There is considerable evidence of the relationship between self-efficacy and outcomes

[9] Locus of control is more generally seen as beliefs about control across situations, while self-efficacy includes beliefs in one's capability to behave or act to achieve desired outcomes. For example, a musician may believe that daily practice would result in an improved performance (internal locus of control), but not believe that she is capable of practising sufficiently hard (self-efficacy).

[10] Skinner et al. [62] examine the development of locus of control in children and find that parental involvement, family environment, teacher warmth, and academic performance help determine the development of internal locus of control.

in terms of academic achievement, occupational achievement, and general physical and mental well-being (see Bandura [5]; Swartzer and Fuchs [64]).

A large number of related, if different and internally validated instruments to measure self-efficacy are in use, based on aggregations of agreement and disagreement with specific statements (Schwarzer and Fuchs [64]; Lambe [45]). They typically take the form of a set of statements or questions relating to beliefs about being able to affect outcomes or cope with stress. The specific measure adopted in this study is discussed in Section 4.2.

2.3 Self-Esteem: A selective summary

The second concept used refers to self-esteem and pride. It reflects a person's overall evaluation of his own worth. This is distinct from self-confidence and self-efficacy, which involve beliefs about ability and future performance.

Theories of the formation of self-esteem emphasises the influence of parents, peers and the perceptions of close friends. Genetic differences in temperament have also been allowed for. Trzesniewski and colleagues use a sample of twins aged between 5 and 7 years to examine the development of self-esteem. Their findings suggest that self-esteem has a moderate genetic component, like most other individual differences, but also a substantial amount of variance due to environmental factors. Trzesniewski et al [65] conduct a meta-analysis of studies of self-esteem to establish whether it fluctuates or is relatively stable over time. They find that self-esteem has substantial continuity over time, once they stabilise post adolescence. Such stability suggests that self-esteem could be important for long-term outcomes. Dercon and Krishnan [23] also examine the links between material poverty on self-esteem and efficacy of young children in 4 countries. For a cohort of 12-year olds, they find that measures of self-efficacy, self-esteem and educational aspirations all correlate with measures of material well-being of the family in which they are growing up. This suggests that material circumstances contribute to shaping these wider dimensions of child wellbeing.

There is a considerable literature on the importance of self-esteem (Baumeister et al [6]; Crocker and Park [17]). Donnellan et al, [24] examine the impact of self-esteem on behavior and find a robust relation between low self-esteem and high antisocial behavior. Furthermore, other studies using longitudinal data spanning from early adolescence (age 11) to early adulthood (age 26),

find that adolescents with high self-esteem have better mental and physical health, better economic prospects, and lower levels of criminal behavior during adulthood, compared to adolescents with low self-esteem (Trzesniewski et al [65]).

As with the measurement of self-efficacy, there are a number of validated instruments based on aggregation of degree of agreement with specific statements relating to positive and negative dimensions of pride and shame. In the main, these are adaptations of the Rosenberg Self-Esteem Scale (Rosenberg [56]), more focused on specific dimensions of the living circumstances such as housing, clothing, work and school. The specific measure adopted in this study is discussed in Section 4.2.

2.4 Aspirations

Unlike the previous two measures, those of aspirations are perhaps less-established and well-defined. There is a literature in social anthropology that examines the importance of aspirations, defining them as unconstrained hopes for "a good life". A distinction is made between aspirations and expectations, where the latter reflects the economic, social and other constraints in fulfilling these hopes. Seginer[59] distinguishes between realistic and idealistic expectations, whereby aspirations more closely reflect the latter. Appadurai[2] emphasises that wishes for 'commodities' widely defined, reflect the individual's aspirations to the good life. He argues that an individual's capacity to aspire is determined by the stock of meaningful experiences relating aspirations to commodities. He and Ray[52] argue that this capacity is socially determined by the lives, achievements, or ideals of similar, attainable role-models.

A literature traced back to Boudon[8], has found that inequalities in actual education achievement are linked to differences in initial levels of educational aspirations, even though it is not always clear how this works nor what shapes these aspirations (Saha [58]). We emphasise that the literature on the measurement and impact of aspirations is more sparse than that on self-esteem and self-efficacy.

2.5 Implications for investment in psychosocial skills

There is clearly substantial agreement on the significance of environmental factors, such as family,[11] neighbourhood and school[12] in the development of individual's psychosocial skills. In particular, there is a large literature on the role of low psychosocial skills in parents and poor parenting resulting in low levels of such skills in children [13]. However, there is little evidence on the question of whether it is possible to intervene to raise such skills for children from deprived families or deprived environments [14]. This question can only be addressed by analysing the impact of such interventions targeting non-cognitive skills. There is a literature based mainly on short-term early childhood interventions, summarised in the review by Currie [22] and Grantham-Mcgregor et al [36]; also an excellent review of interventions aimed at improving parental skills (Smith et al [63]). It should be emphasised that while most of this literature concentrates on early childhood development (interventions before the age of three), we are interested in a longer-term intervention for school-age children. While research suggests that ages 1-3 are a critical period for brain development it is not possible to conclude from this that there is an optimal age for child interventions as there appears not to be a clear monotone relationship between brain development and general child development (see Gopnik at al [35] and other references in Currie [22]). There is agreement that intervention in the early years of child schooling is likely to be beneficial but given the dearth of long-term interventions in this area, there is little evidence on the value of interventions after this period. Our study is an attempt to provide some evidence on this issue.

[11] Carton and Nowicki [14] test the hypothesis that children with internal control have parents who act in a consistent manner (i.e. parental behavior in response to child is predictable, contingent behaviour), and who encourage autonomy in their children. Their results suggest that for those with internal control had mothers who provided more contingent support.

[12] Skinner et al [62] present interesting evidence on the formation of self-control. They use data on 1,600 children aged between 8-13 over three years on children's interactions with teachers. They find that children who experience teachers as warm and contingent were more likely to perform better.

[13] See Duckworth et al[26], Feinstein [27] and Feinstein at al[28] for reviews and evidence.

[14] There is some evidence that skills such as self-control can be taught (Mischel et al [47]).

3 Analytical Framework

We now turn to the design of the study and analytical framework we will use in order to isolate the effects of the intervention. It should be emphasised that this is not a randomised intervention, throwing up difficult issues of identification. This is also an evaluation of a long-term intervention. Arguably, if skill accumulation could be meaningfully measured over the short horizon it would have been possible to evaluate the impact of this intervention in a randomised framework. However, the evidence from the psychology literature suggests strongly that these skills are unstable in early childhood and adolescence and are most stable (and hence measurable) between early adulthood and middle age (see Trzesniewski et al [65] [66]). Given that these skills are unstable in early adolescence, the impact of such an intervention can only be captured over the long term.

In order to achieve a plausible identification of impact, we use a design, similar to a cross-cutting one and involving two comparison groups in addition to the treatment group. The first set of Akanksha alumni graduated from school and left Akanksha in the summer of 2007. This is our treatment group. We set out to examine whether and to what extent Akanksha's involvement affected key psychosocial traits and aspirations of these alumni. Our comparison group includes the school peers of the alumni, as well as same-age peers from the communities where they live.

We use two comparison groups in order to deal with a number of potential issues that might contaminate any conclusions drawn about the effectiveness of the intervention. The first comparison group allows us to control for any effects on abilities and aspirations that are due to formal schooling and background-specific effects that have nothing to do with Akanksha training; by comparing alumni to students in the same class, background (including caste/religion and parental background) and community, we can eliminate the effects of the same environment, school and teacher. However, a potential problem is that the effect is contaminated due to possible peer-effects at the school level. If children enrolled in Akanksha transmit both cognitive achievement and other skills to and from their peer groups, comparison to this peer group might not produce any evident difference. Hence, the comparison with the second group; children of a similar age, schooling attainment and living in the same slum area but unknown to the Akank-

sha alumni and obviously not their neighbour, relative or friend. Here, we might not be able to eliminate differences due to the class/teacher in formal school but there is enough distance between the two groups to eliminate all difficulties of peer effects.

The design is cross-cutting; apart from the Akanksha intervention, the effect of being in the same school can be seen as an implicit additional treatment. We seek to isolate the impact of just the one treatment by Akanksha using 3 groups: the first, the treated (who are treated by both Akanksha and "common" school), the second, treated only by the "common" school and finally, a comparison group who are untreated by either Akanksha or the "common" school. We illustrate this below, with constant treatment effects and a linear specification for the outcomes (psychosocial skills).

Define two sets of schools: those attended by Akanksha students (and their classmates), denoted by S_A and those attended by neighbourhood peers, S_N.

$$\begin{aligned} S_i &= 1 \text{ if person } i \text{ in } S_A \text{ and 0 otherwise} \\ W_i &= 1 \text{ if person } i \text{ in Akanksha programme and 0 otherwise} \end{aligned}$$

We can then denote the outcome for individual i as:

$$Y_i = S_i W_i (Y_{11i}) + S_i (1 - W_i)(Y_{10i}) + (1 - S_i)(1 - W_i)(Y_{00i})$$

where:

$$\begin{aligned} Y_{11i} &= \tau + \theta_{SA} + X_i\beta + \varepsilon_{11i} : && Treated\ (in\ Akanksha) \\ Y_{10i} &= \theta_{SA} + X_i\beta + \varepsilon_{10i} : && Classmate \\ Y_{00i} &= \theta_{SN} + X_i\beta + \varepsilon_{00i} : && Neighbourhood \end{aligned}$$

τ denotes the constant treatment effect of the Akanksha programme; θ_{SA} and θ_{SN} denote the fixed (or treatment) effect of the school and class attended . Note that this fixed effect is common to Akanksha participants and their classmates in the formal school attended, but is distinct for neighbourhood peers since they attended a different class and school. Under the assumption of conditional (on school S and measured attributes, X) independence of the treatment, we have:

$$E(Y_i \mid S_i = 1, W_i = 1, X) - E(Y_i \mid S_i = 1, W_i = 0, X) = \tau \quad (1)$$

$$E(Y_i \mid S_i = 1, W_i = 1, X) - E(Y_i \mid S_i = 0, W_i = 0, X) = \tau + (\theta_{SA} - \theta_{SN}) \quad (2)$$

$$E(Y_i \mid S_i = 1, W_i = 0, X) - E(Y_i \mid S_i = 0, W_i = 0, X) = (\theta_{SA} - \theta_{SN}) \quad (3)$$

Clearly, assuming conditional independence and assuming away peer effects the first estimate from (1), obtained by examining the difference in outcomes between classmates and the treated, gives us an unbiased estimate of the Akanksha treatment (note that as explained below, we control for many different aspects of parental skills and background). The comparison between the Akanksha alumni and the neighbourhood peers gives us an alternative estimate, potentially confounded only by the differences in school effects. If the differences in school effects from (3) are insignificant, the first two estimates must be similar estimates of the true Akanksha treatment effect. Figure 1 provides a diagrammatic representation of the design of the study.

We now turn to a discussion of the implications of deviation from the assumptions of conditional independence and the absence of peer effects for our estimates.

We begin by considering the potential biases due to peer effects. The first possibility is that Akanksha alumni sort with classmates who differ substantially from them in psychosocial skills. Suppose, first that they select classmates with lower skills than them but are unaffected by them. We would then obtain a positive treatment effect of Akanksha which might,in fact, reflect this selection rather than the effect of the treatment. The second possibility is that they sort with stronger classmates - this would suggest that we have a negative (or insignificant) treatment effect. Finally, the peer effects that spillover to both groups (Akanksha and classmates) would bias the estimates of the treatment downwards towards zero. Another possibility is that there are systematic differences in the quality of schools attended by

the neighbourhood peers and Akanksha. This becomes an issue only in the presence of selection/peer effects since in their absence, the comparison of (2) and (3) should yield an unbiased estimate of the treatment effect as well.

The pattern of results that is consistent with isolating a true treatment effect relative to both comparison groups is where equations (1) and (2) yield similar sized positive effects and the estimate from (3) is insignificant [15]. The only plausible alternative scenario consistent with this pattern would be if the comparison group contains systematically weaker classmates and simultaneously, neighbourhood peers go to schools that are bad enough to lower their skills to at least the levels of the classmates. However, as we will demonstrate there is no evidence of this pattern; in fact, if anything, Akanksha appear to select "stronger" friends.

A second issue is non-random attrition. This is particularly relevant in the context of examining the impact of long-term interventions. Since the duration of participation can be as long as 12 years, the drop-out rates among Akanksha participants are higher than those characteristic of shorter-term interventions. This is the first cohort of "graduates" from Akanksha and while accurate records of their initial intake are unavailable, we have interviewed those who initially recruited and worked with this intake. They suggest that children dropped out primarily due to circumstances outside their control, such as change in the school time-table, family re-location or re-location of Akanksha centres [16]. Further, these children (the majority aged between 8 and 10) dropped out of both the programme and formal school. In addition, since school attainment is constant across the groups, and since participation in Akanksha is conditional on school attendance, we make an assumption that selection into completion of Akanksha is conditional on similar unobservable traits as selection into school completion.

A third issue is selection into the programme driven by unobservable characteristics of the alumni themselves, such as ability or personality traits. A key feature of the study is that it examines the impact of the programme on the first cohort that entered Akanksha. Consequently, parents faced only

[15] If peer effects mattered, we would expect to find significant estimates from the classmate community comparison (3) and insiginificant estimates from the Akanksha classmate comparison (1).

[16] We informally interviewed past employees, the past Director and those who were directly involved in the recruitment in the initial years of Akanksha. In the initial period, Akanksha had difficulty in finding permanent classrooms and the venue had to be moved when they lost access to a teaching room.

the choice of putting in a child of the appropriate age into the programme rather than selecting a child amongst all the children the household, based on some personality trait or characteristic. Furthermore, as explained below, the main motivation of enrolling children in this programme (relatively unknown at the time) was to obtain childcare or an extension of the school day.

A final set of problems relates to the concern that the measured impact may still be a consequence of self-selection by the parents into the programme related to motivation or other unobservables. To address this, the primary care-givers of the children in both the treatment and comparison groups were interviewed on their own motivation and aspirations, beyond a large set of socioeconomic characteristics. We also interviewed the Akanksha's recruiters about the recruitment process into Akanksha in the relevant period. It appears that a main motivation for many parents was to achieve an extension of the school day in terms of care and the constraint on enrollment was largely to do with conflicts between school timings and those of the centres run by Akanksha [17] (there was no rationing of places because the NGO was relatively unknown). In short, selection on the basis of unobservable motivation or some other characteristics likely to affect an outcome of interest does not seem to be in play.

Despite our best efforts to measure parental background, own attributes and parental psychosocial skills and norms, potential unobservables that affect selection into the programme and outcome, remain a concern. Since we measure psychosocial skills for both parents and children, our preferred estimates are difference-in-difference estimates of (1), (2) and (3) where these are obtained as differences relative to the parents. This serves to remove any biases due to unobservable family-specific effects that matter either in terms of parenting skills or the specific environment at home; this approach might also take care of family-specific unobservables that might have prompted enrollment and attendance at Akanksha [18].

[17] Schools in Bombay are run in shifts.

[18] Mean reversion is unlikely to be a contender given the large amount of evidence (cited previously) on the persistence of skills from generation to generation. However, we will also discuss the results if we include controls for levels of parental psychosocial skills.

4 Data Description: Summary Statistics and Results

4.1 The survey and summary statistics

The aim of the study is to examine how Akanksha's graduates have fared, compared to their peers. The survey, conducted in 2007, aimed to interview all individuals who had completed Akanksha in that or the previous year. This is the first group to complete Akanksha since its inception in the late 1990's. We interviewed 58 alumni , 46 classmates and 50 (randomly selected) peers from the same community. We also interviewed one of the parents (or main carer) of each of the young people, to examine to what extent outcomes were mediated by parental influence and control for an extensive range of parental characteristics. In all, we conducted 300 interviews, 154 with the young people and the remainder with their parents. Comparison groups were chosen in collaboration with the 58 alumni of Akanksha (to help identify classmates) and key informants to identify similar young people living in the community (the neighbourhood or community peers).

The interviews were formally structured and conducted in Hindi (and occasionally in Marathi). We collected data on various aspects of the household of each young person interviewed (such as the education and occupation of their parents, assets and facilities in the household, the quality of the house they live in), as well as separate questions (taken from the educational psychology literature) designed to measure aspirations, self-esteem and self-efficacy. The young people were also asked questions on their schooling, their results on the 10th standard exams and their current occupation and earnings, if they had a job. In addition, respondents played games designed to measure their behaviour towards risk[19], time preference, propensity to cooperate (using a simple public goods game). We also administered a test of cognitive ability, the Peabody Picture Vocabulary Test that has been validated in various settings, including Andhra Pradesh and Maharashtra[20].

[19] This was based on similar attempts in ICRISAT villages by Binswanger [7] and Gine et al [31]. Subjects were asked to choose between lotteries in a manner similar to that used by Allais, but the riskier alternatives were a mean-preserving spread of the less risky ones - they had the same expected value, but a higher variance of payoffs.

[20] The Peabody Picture Vocabulary Test, has been validated in many settings and has been used in India. It is a test of receptive vocabulary. It is administered individually, at home and does not test schooling in a particular language or curriculum. Correlations of PPVT scores with academic achievement tests range from 0.33 to 0.80 with tests of

The parent (or main carer) was interviewed and asked for recall information on the environment in which the children were living a decade ago, around or before the time when they were enrolled in Akanksha. In addition, as with the children, they were asked questions designed to capture their aspirations, self-esteem and self-efficacy. Furthermore, they were questioned about their norms regarding children such as traits they valued, e.g., responsibility, respect and thrift. We also asked them about their own parental background and further questions on their education and occupation [21].

Table 1 provides summary statistics for the sample and also examines whether there are any significant differences between the three groups. It shows data on basic individual characteristics, as well as pre-treatment parental and socio-economic characteristics of the sample. Column (1) shows statistics for the pooled sample, while Columns (2) – (4) show the disaggregated statistics for the treatment and each of the comparison groups. These are followed by tests for differences in means of Akanksha relative to each of the comparison groups (Columns 5 and 6).

In childhood, approximately ten years preceding the survey, most of the individuals in the sample were living with mothers who had less than complete primary school education and who were predominantly not employed. The fathers in the sample have higher levels of schooling than the mothers, with only 42 per cent who have less than complete primary education. The majority of the fathers worked in manual labour with the remainder in semi-skilled work. Basic indicators of living conditions suggest that the respondents grew up in very modest households; about half of the respondents lived in households that had electricity and a only a third had a water connection inside the dwelling. The asset index shows that on average, ten years preceding the survey, individuals in the sample owned less than a fifth of the basic assets[22] . The sample has a slightly higher proportion of boys

academic achievement (Williams & Wang [67]) in the U.S.A.

[21] An issue of concern might be whether recall data truly captures self-esteem and self-efficacy in the past. We explore this by comparing recall data on variables also measured in the current time period. We asked the children about their recollection of assets in the household over 10 years ago and their assets today. We also asked the parents about their recollection of assets over 10 years ago. We examined the correlation between recollection of past asset ownership for both children and parents and find that this is high and significant with little difference by asset category. Furthermore, they report a growth in assets on average in this period, suggesting that recall bias along these dimensions is probably not a major concern.

[22] The complete list of assets includes: gas stove, radio, television, video player, landline

than girls and consists of individuals who were around 19 years of age at the time of the survey. The average parent is risk-averse and relatively impatient with a discount rate of 150% over a month's horizon.

We now turn to differences in observable characteristics between the three groups. The alumni are slightly older than the classmates, by about 6 months - but similar to the community peers (by construction). Akanksha alumni and their community peers look similar when comparing the characteristics of the conditions in which they grew up and the material attributes of the parents. In contrast, the classmates look persistently better off along these dimensions. A higher proportion of the classmates grew up in households with running water and electricity. They also possessed 35 per cent of basic assets, compared to 12 per cent among the alumni and community matches. A significantly higher proportion of classmates were raised by fathers with more than (incomplete) primary education, employed in the semi-skilled sector and by mothers who did not go out to work.

Finally, there are differences across all three groups in parental attitudes and preferences. Parents of Akanksha alumni were least trusting of their neighbours and community of in the areas where they lived prior to the treatment. They also felt more stigmatised and were significantly less likely to value characteristics such as thrift and respect in their children. However, there appear to be no statistically significant differences in the time and risk preferences of the three groups of parents. In short, in the pre-treatment period, Akanksha parents were worse off both materially and emotionally. As discussed below, Tables 3, 5 and 7, show that this pattern also holds for the outcome measures that we study here: self-esteem, self-efficacy and aspirations[23].

Overall, Akanksha alumni appear to have associated in school with children who were from significantly more affluent backgrounds and whose parents had higher pychosocial skills. Consequently, there are some observable differences between the two groups. In contrast, the process of selecting community peers ensured that they are much more similar to the alumni,

phone, refrigerator, bicycle, motorbike.

[23] Clearly, given that the treatment group are from a relatively worse-off background, raises the possibility that mean reversion might account for any effects we find. We therefore examine the robustness of the results, explicitly controlling for parental psychosocial skills - the results are only mildly affected by matching on parental psychosocial skills, in addition to other variables. The effects are similar to the effects obtained in levels and are substantially more significant as well.

at least with respect to basic observable individual and background characteristics. As discussed earlier, there might be concerns about spillovers and reflection effects between Akanksha alumni and their classmates. The descriptive statistics presented here suggest that the alumni select friends who are better-off , which, if anything, would bias our results against finding a significant treatment effect relative to the classmates.

4.2 Results: Methods and Estimates

Our outcomes of interest include self-esteem, efficacy and aspirations. A large scale study, Young Lives[24], led by a team at the University of Oxford has developed a set of questions to measure these skills in four countries including southern India. Self-esteem and self-efficacy are thus measured using statements that are adapted from the Young Lives Longitudinal study, which based its measures on the Rosenberg[56] and Rotter scales [54], suitably modified for the context and age-groups . The statements used to construct the self-esteem score reflect feelings of pride and shame about one's socio-economic background, occupation and abilities, while those used to construct the self-efficacy score refer to one's perception of control over one's life and ability to make choices. Table 2 shows the statements and corresponding raw average scores used to construct each of the outcome measures. The score indicates the extent to which the respondent agrees with each statement. For negative statements the higher the score the more strongly the respondent disagrees with the statement. In other words, the individual scores indicate the extent to which the respondent agrees with the "positive sentiment" of the statement. The outcome measures used in the analysis were constructed by taking a standardised average of the degree of agreement with the statements. The final indicators of esteem and self-efficacy, therefore, reflect the standardised deviation of the individual average score of all esteem/efficacy statements from the sample average.

The survey further includes questions that reflect different dimensions of aspirations. In this study we focus on aspirations for future quality of life, as well as indicators of an individual's "aspirations window" [52] [25].

[24] See documents at: http://www.qeh.ox.ac.uk/centres/yl

[25] Ray suggests that "the window is formed from an individual's cognitive world, her zone of "similar", "attainable" individuals. Our individual draws her aspirations from the lives, achievements, or ideals of those who exist in her aspirations window."

Aspirations for future quality of life are measured by a question asking the respondent to place themselves on the "ladder of life" ten years from now. The ladder has nine steps, the first of which refers to the worst possible life for the respondent, while the ninth is the best possible life. Our indicator for the "aspirations window" is constructed using data we collected on the respondents' role models. We asked all respondents to name up to three individuals who they consider successful and who they admire. Once the three role models were identified, we asked a number of questions relating to their education, wealth, and personality traits. The outcome measure we use in the analysis is the number of role models named by the individual, who live outside the community and are wealthier than the individual.[26].

In order to control for unobservable family characteristics all outcome variables in the analysis are expressed as the difference between the child and parental outcomes. Since, the parental outcomes refer to the pre-treatment period, these differenced outcome measures eliminate any family-level unobservables that might affect both selection into the programme and the outcomes measured here. An example of potential unobservables that are controlled for in this differenced measure might include particular aspects of motivation and self-discipline that might have contributed to the parent enrolling the child into the programme and thereafter, to the child's performance in the programme. Given that we are interested in the impact of treatment relative to the comparison groups and the relative difference between comparison groups, we present difference-in-difference results, where the estimated treatment effect reflects the difference between treatment and comparison groups, differenced between child and parent..

Our preferred estimator is nearest neighbour Mahalanobis covariate matching using the bias adjustment introduced by Abadie et al [1]. This is a combination of matching algorithm and weighting matrix which has been shown to perform best in small samples. This is supported by Monte Carlo simulations conducted by Zhao [68]. Further, as discussed in Caliendo et al [10], if the selection of close control matches is sparse, which is likely with

[26] In the specific context of Bombay, this is a particularly relevant measure of the breadth of an individual's reference group. Slums in Bombay tend to be introverted and isolated, with many residents not socialising with anyone outside their specific slum area. On the other hand, there is a lot of prejudice directed at slum residents by wealthier groups. This combination undoubtedly reduces communication between individuals like those in our sample and wealthier groups who live in other communities.

small samples, using fewer matches improves the quality of the matches, at the cost of higher variance. In the context of this study, one-to-one covariate matching, therefore, reduces the likelihood of falsely identifying a significant treatment effect. In addition to the preferred specification, we use alternative estimators to show the robustness of our findings. These include estimates based on propensity score calliper matching and multiple neighbour covariate matching with replacement.

As discussed above and shown in Table 1, we control for a range of pre-treatment and time-invariant covariates in the matching function. These include some basic individual characteristics such as age and sex, as well as controls for parental education, pre-treatment employment and wealth. We also control for a wide range of parental attitudes and preferences relating to time, risk, trust in the community, satisfaction with services and feelings of stigma (all based on 10 year recall) as well as norms valued in children including respect, responsibility and thrift.

The matching functions relative to the two main comparison groups in the analysis and the pooled group satisfy the balancing property. While this validates the choice of matching function for propensity score matching, it does not directly do so for covariate matching (the preferred method in this study). However, the satisfaction of the balancing property goes some way to reassuring us that the matching functions includes a set of covariates that are effective at describing the differences between treatment and comparison groups[27].

Figures 2 – 4 show the balancing graphs for matching of Akanksha to the three main comparison groups – community peers, classmates and the pooled group. These show how well the distribution of propensity scores for the treatment group matches those of the comparison groups. Consistent with the descriptive statistics discussed above, the balancing graphs suggest that the quality of matching is somewhat better relative to the community than the classmate comparison group, as the distributions of propensity scores are more closely matched. In both cases, however, as well as in the case of the pooled comparison group (Figure 4) there are individuals in both treatment and comparison groups in the majority of propensity score

[27] The balancing property requires that individuals with the same propensity score have the same distributions of covariates. This ensures that the propensity score distance measure assigned based on the variables included in the set of covariates identifies similar individuals accurately.

intervals.

The main results are presented in Tables 3 – 8. In addition to our preferred difference-in-difference results, based on outcomes expressed as differences between parent and child, we also present, for comparison, the estimates of the level of each treatment effect. Further, while we favour the Mahalanobis covariate matching nearest neighbour estimates because of their low bias and robust small sample properties, we also present propensity score matching results and covariate matching multiple neighbour estimates. This gives an indication of the robustness and stability of our findings.

In order to investigate whether there are systematic differences between comparison groups, we also match classmates to the community peers and estimate a community "treatment effect". As discussed in Section 3, the pattern of the three estimates, where this last effect is insignificant while the other two (treatment classmate comparison and treatment community comparison) are not significantly different from each other, is consistent with isolating a true treatment effect. Finally, we present estimates relative to the pooled comparison group, conditional on there being no significant difference between the two groups (i.e., a statistically insignificant community "treatment" effect). The advantage of these estimates is that since the quality of matching improves with the larger, pooled, comparison group, they are less likely to be affected by matching bias.

The main results also include two falsification tests. These share the premise of a placebo test; we examine the effect of alternative "treatments" on the main outcomes to determine whether the effects we find are attributable to the specific treatment of interest. We test two placebo treatments: the first is participation in sports clubs and youth groups and the second is attending an English medium school. In both tests we exclude Akanksha alumni from the sample and match those who receive the placebo treatment to those who do not in the remaining group[28]. One way of thinking about these placebos is in terms of alternative channels for the effects that we find. Being in Akanksha or participation in sports clubs and youth groups provides children with more adult attention and time for socialising with peers. This is one possible alternative channel for the observed treatment effects. Another one is the English proficiency that Akanksha offers. If this is the channel through which being in Akanksha impacts the outcomes of interest,

[28] The matching functions for the placebo tests also satisfy the balancing property.

than the treatment effect of being in Akanksha should be similar to that of attending an English medium school. A related, more broad, take on these placebo tests is that we are testing the hypothesis that Akanksha has an effect on psycho-social abilities and aspiration through the work that it does to raise these skills. The hypothesis is rejected if we find that an alternative treatment that does not target these outcomes has a comparable impact.

4.2.1 Self-esteem

Table 3 presents summary statistics for self-esteem. The questions that make up the self-esteem measure and the mean raw scores for each statement are presented in Table 2. The outcome variable used in the analysis is a standardised mean of all the statements. The scores presented in Table 3 therefore, show the standardised deviation from the mean for each group (respondents and their carers), as well as the standardised mean esteem score differenced across the two groups. The use of standardised measures allows for more intuitive interpretations of the magnitude of the treatment effects; deviations from the mean in terms of proportions of standard deviations is a more sensible measure than proportions of a raw ordinal score. We also present t-tests of statistical significance of the differences across the three groups.

While on average, according to the measure in levels, Akanksha alumni have slightly higher self-esteem than their peers, the differences are small and not statistically significant. In contrast, there appear to be some substantive differences between the parents of the alumni and those of their peers. Ten years preceding the survey, the self-esteem of Akanksha's parents was almost two thirds of a standard deviation lower than that of parents of the classmates and community peers. Combining the child and parent self-esteem measures into a differenced outcome results in large and statistically significant differences across the three groups. On average, the self-esteem of Akanksha alumni exceeds that of their community peers by nearly one standard deviation. The difference between the alumni and their classmates is only slightly lower.

These differences persist and become larger in magnitude once we match the groups on pre-treatment characteristics. Table 4 shows a range of estimates of the Akanksha treatment effect. Overall, the results present strong evidence that being in Akanksha raises self-esteem. This effect is persistent,

stable and robust to different matching methods, placebo treatments and tests for unobservable confounders.

Prior to differencing with respect to parental self-esteem, (or controlling for family unobservables), we find a positive treatment effect that is only marginally significant (Table 4, Row 2). The magnitude and statistical significance of this effect increases substantially once we use the differenced measures. As discussed above, our preferred estimate is the Mahalanobis bias adjusted nearest neighbour covariate matching with one neighbour which offers the lowest bias at the cost of the highest potential variance. This difference-in-difference estimate, suggests that being in Akanksha increases self-esteem by more than one standard deviation. This result holds relative to both comparison groups (Table 4, Row 3). It also remains stable with increases in the number of neighbours used in the matching (Table 4, Rows 4 and 5). Finally the estimates are robust to the choice of matching technique; the propensity score matching estimates of the treatment effect are as significant as those estimated using covariate matching, and only slightly lower in magnitude (Row 6). These trends are an encouraging indicator of the quality of matching, suggesting that the matching bias is small.

The pattern of results allows us to discount the possibility of systematic group-specific contaminators such as classmate reflection effects and community school effects . First, there is a similar and significant treatment effect of Akanksha relative to both classmates and the community peers (Table 4, Columns 1 and 2). This, combined with the lack of significant differences in the community-classmate comparison (Table 4, Column 3), points firmly to the absence of reflection effects between Akanksha and classmates, as well as differences that might arise because community peers attend different schools. As discussed earlier in Section 3, the only plausible alternative explanation of this pattern would be that Akanksha alumni selected systematically "weaker" friends amongst their classmates and simultaneously, neighbourhood peers attend worse schools that lower their skills to the level of the "weak" classmates. The descriptive statistics show convincingly that, if anything, Akanksha select "stronger" friends, from a better-off background and with "stronger" parents. Furthermore, there is no reason to believe that there are any systematic differences across schools attended in these communities. Hence, we conclude that the pattern of

results can only be consistent with a positive impact of Akanksha.

Building on these findings, we pool the comparison groups and estimate the treatment effect of being in Akanksha using the larger comparison group. The new treatment effect is slightly lower at 0.97 of a standard deviation (Column 4, Row 3). It remains significant at a one per cent level, stable across different matching algorithm specifications and robust to choice of matching estimator (Column 4, Rows 4-6).

Finally, the placebo tests support the hypothesis that the treatment effects we find are attributable specifically to the work Akanksha does to raise self-esteem. Columns (5) and (6) show that both of the placebo "treatments", participation in youth groups and sports clubs as well as attending an English Medium school, have no significant or even marginally significant impact on self-esteem.

4.2.2 Self-Efficacy

Table 5 provides summary statistics for the measures of self-efficacy, while Table 6 offers the estimated treatment effects. The statements that make up the self-efficacy measure and the mean raw score for each statement are presented in Table 2. Though on average Akanksha alumni have a higher self-efficacy score than both of the comparison groups, the differences across the three groups are not statistically significant. In contrast, the parents of Akanksha alumni tend to have lower self-efficacy scores than parents of the community peers and classmates. The difference between the parents of Akanksha alumni and their classmates is particularly large and statistically significant, at more than half of a standard deviation (0.64). As before, we combine the child and parental self-efficacy into a differenced measure. According to this measure, Akanksha alumni have significantly higher efficacy than both community peers and classmates. These trends are broadly similar to those in self-esteem (Table 3), though the variation in the magnitudes of differences in self-efficacy relative to the two comparison groups is greater than that in the levels of self-esteem.

The difference-in-difference estimates of the treatment effect of attending Akanksha are presented in Table 6, preceded by the estimates of the level effect for comparison. Again, there is persistent and robust evidence that being in Akanksha raises self-efficacy. Our main estimate suggests that the magnitude of this effect is nearly one standard deviation, relative to both

the classmates and community peers (Table 6, Column 1 and 2, Row 3). The insignificance of the community-classmate estimate (Table 6, Column 3) further suggests that the small differences in the point estimates are due predominantly to noise rather than true variation in the magnitude of the impact of Akanksha relative to the two comparison groups. As before, given the lack of significant differences in magnitude of the treatment effect between comparison groups, we also present estimates obtained by pooling the comparison groups (raising the precision of the estimated treatment effect). By this estimate, being in Akanksha raises self-efficacy by about one standard deviation (Column 4, Row 3). It is robust to the number of matches and matching estimators and remains significant across the different estimators (Column 4, Rows 4-6).

Columns 5 and 6 show the results of the placebo tests using alternative treatments defined from within the sample. Participation in youth and sports clubs has no significant impact on self-efficacy in any specification. There is, however, a more noticeable general negative trend in the treatment effect of the English medium placebo test. This negative effect is even statistically significant in the level estimates (Column 6, Row 2); however, the differenced estimate (i.e., controlling for family-level unobservables) is insignificant, though it remains persistently negative and relatively large at about 0.5 of a standard deviation (Column 6, Row 3). We could speculate that either attending an English medium school lowers efficacy or that English medium schools attract children with lower levels of self-efficacy. In any case, the hypothesis that Akanksha raises efficacy is not rejected by either of the placebo tests.

4.2.3 Aspirations

Both children and parents were also asked questions about their aspirations. We asked parents about their assessment of life a decade ago using a ladder with 9 steps to represent levels of well-being and asked their children about their hopes of where they thought they might be 10 years in the future, also using a 9-step ladder. We construct a measure of the difference between child and parent using these scores. We also asked both parents and children to tell us about three people whom they might regard as role models. As explained earlier, we use the number of people mentioned, who are wealthier than the respondent and live outside the community as a measure of the

"aspirations window" for each person: the difference in this number between parents and children is our preferred outcome measure. However, we also report the level measures of aspirations based on the ladder and "aspirations window".

Table 7 provides the summary statistics for both the hopes for a better life and for successful role models outside the community. Akanksha alumni have similar hopes relative to both classmates and community peers. In contrast, the parents of alumni had far lower assessments of life a decade ago than parents of the other two comparison groups. The differenced measures suggest that this outcome is significantly higher for Akanksha alumni relative to their classmates, but is similar to that of the community. The size of the "aspiration window", proxied by the number of wealthier role models outside the community, is significantly larger for alumni relative to the other two groups; that of the parents is the same across the three groups. The differenced measure of the "aspirations window" is marginally higher for Akanksha alumni relative to both groups.

Table 8 provides estimates of the treatment effect using hopes for a better life as the measured outcome. The estimated treatment effect is significant relative to the community peers (Column 1, Row 3) but not the classmates (Column 2, Row 3). The lack of any even marginally significant community-classmate difference, however (Column 3), suggests that the differential impact across the two comparison groups is due to noise. Therefore, we pool the two control groups to reduce the matching bias in the estimates, and find a strong and large treatment effect of Akanksha on assessments of future well-being. The estimates suggest that, on average, Akanksha alumni hope to be approximately 2 steps closer to the "best possible life" point on the 9-step ladder ten years from now compared to their peers. The magnitude of this effect is equivalent to 0.74 of a standard deviation (Column 4, Row 3).

We test the robustness of the results using the alternative "treatments" or placebos. In consistency with the hypothesis that the estimated treatment effect can be correctly attributed to Akanksha, the difference-in-difference estimates indicate that neither membership in youth groups (Column 5) nor attendance of English Medium schools (Column 6) has any significant impact on the outcome.

We find similar patterns in the impact of Akanksha on aspirations using

the "aspirations window" measure. Table 9 provides estimates of the "aspirations window" as measured by the number of role models the respondent can name who are wealthier than the respondent and live outside the community. Here the effect is more pronounced and the impact is similar in magnitude and significance relative to both comparison groups (Columns 1 and 2, Row 3) . The treatment effect estimated using the pooled control group suggests that Akanksha alumni are able to name on average 0.9 more such role models than their peers; the magnitude of this effect is equivalent to nearly one standard deviation (Column 4, Row 3).

There is little evidence of an alternative channel of influence or placebo effects. As with the previous aspirations measure, the effect of being in a youth club is entirely insignificant (Column 5, Row 3). There is mild evidence of a positive effect, of attending an English medium school, significant at the 16 percent level (Column 6, Row 3). However, this estimate is not robust to alternative estimators as shown in Column (6). One can comfortably conclude, therefore, that Akanksha successfully increases the size of the "aspirations window" as defined here.

4.3 Other robustness checks

Throughout this paper, we ensure robustness of our analysis and findings in various ways. Our empirical and estimation strategies aim to eliminate a number of potential sources of contamination of the estimated effects. We selected two comparison groups that are similar along two key unobservable dimensions – neighbourhood and school environments. We use an extremely rich set of covariates to match treatment and comparison groups. Further, we adopt a difference-in-difference estimation strategy to control for relevant unobservable family characteristics. We present multiple estimates of the treatment effects in our main results to test the robustness of the findings to matching method and bias. Lastly, we use placebo treatments as falsification tests for all of the main findings.

The final check is to allow for the possibility that despite the careful treatment of possible sources of bias in our results, there are, nevertheless, some omitted unobservable variables that violate the conditional independence assumption (CIA) which underpins the validity of our results. We do this by conducting sensitivity analysis proposed by Ichino et al [42]. This test is in the family of sensitivity analysis tests, originally proposed

by Rosenbaum and Rubin [55], which introduce a confounding variable into the matching set and test the sensitivity of the results to this confounder. Ichino et al [42] propose to introduce binary confounders with distributions similar to those of the covariates included in the matching function to test the sensitivity of the results to omission of a variable similar to those included in the matching set. The advantage of the methods they propose is that they do not rely on a parametric model (like Rosenbaum and Rubin [55]); in addition, they offer point estimates of the average treatment effect under a range of plausible deviations from the CIA.

We follow the authors in examining confounders which have similar distributions to those of the binary covariates included in the matching function, thus testing the sensitivity of our findings to a "likely" omitted variable. Table 10 presents the results. The first four columns of each sub-table (1a-4a and 1b-4b) show the proportions of observations for which the binary variable takes the value of one in each of the four groups, denoted by p_{ij}, where i is a treatment indicator and j is an indicator of whether the outcome is above the mean. The effect of the confounder on the outcome (the outcome effect Λ) is estimated using a logistic regression (Columns 5a and 5b). The table presents the odds ratio of the estimated effect of the confounder on the probability of being treated (the selection effect Γ, in Columns 6a and 6b). The next column (7a and 7b) shows the treatment effect estimated with the confounder included in the matching function.

The first row of the table shows the estimated treatment effects using propensity score radius matching with no confounder. The remaining rows introduce a range of confounders with different distributions; in all cases except the PPVT score (last row of the table) the parameters of the confounders are set to follow the distributions of covariates included in the matching function used in the main analysis.

Overall, the estimated treatment effects of Akanksha on self-esteem and self-efficacy are very robust to possible violations of the CIA. We introduce a range of confounders with various distributions and find that the variation in the magnitude of the estimated treatment effects does not exceed *0.07* of a standard deviation, irrespective of the direction and magnitude of the selection and outcome effects of these confounders. The statistical significance of the estimates also remains constant.

The last row of the table introduces a confounder which is not, in fact,

in the matching set - the results of the PPVT test (a measure of cognitive achievement). This variable is not in the matching set as the test was administered during the survey (post-treatment) and is unlikely to constitute a valid control for pre-treatment differences between the groups. However, to the extent that the PPVT score, at least in part, proxies inherent cognitive ability, introducing a confounder with a similar distribution is a way of testing the sensitivity of our findings to omitted controls for unobservable cognitive ability. We use the raw PPVT scores to construct a binary variable indicating whether an individual scored above the mean. The results suggest that the estimated treatment effects of Akankhsa on self-esteem and self-efficacy hold even in the presence of omitted controls for ability. This is particularly encouraging in the context of a non-randomised evaluation, as selection into treatment on ability is a valid concern that cannot be fully controlled for (though, as discussed in Section 3, this is not a major concern given the enrollment of children in the initial cohort). In addition, the distribution of the binary PPVT indicator is such that it has a positive impact on both selection into treatment and the outcomes. As discussed by Ichino et al [42], omitted variables that follow this distribution are of particular concern since they may bias the results towards finding a falsely significant effect. Reassuringly, we find that in this case omission of such a variable would have no inflationary effect on the estimates of treatment effects on both self-esteem and self-efficacy [29].

5 Psychosocial skills and outcomes: Or why we care?

The intervention studied here is part of a growing literature emphasizing the importance of a wider range of competencies in skill formation than has traditionally been examined in economics[30]. There is a vast literature in

[29] We also examined the sensitivity of the estimated treatment effects of Akanksha on our measures of aspirations. As before, the magnitude of the estimates remains stable. However, in line with the estimates obtained using propensity score radius matching methods in Tables 8 and 9, the estimates lose significance. We have omitted these results in the interest of brevity.

[30] There has been new interest in this area. The research programme set up by Heckman and others (Pritzker Consortium on Early Childhood Development) seeks to examine these issues for disadvantaged children in developed countries. For a review of the literature on early childhood interventions to raise both non-cognitive and cognitive skills see

economics and other social sciences establishing the importance of cognitive skills/IQ for child development and future outcomes[31]. The interest in the work of Akanksha lies primarily in bringing other skills and competencies into this discourse. The emphasis on the malleability of this broader spectrum of skills is driven by the well-established link between these and a variety of key adult outcomes. We now turn to a brief overview of this literature.

A number of studies in economics have established a link between psychosocial abilities and education, employment and socio-economic outcomes. Coleman and DeLeire [15], find consistent evidence suggesting that agency affects teenagers' decisions about investment in education, through their assessment of the returns to education. Carneiro et al [12] use a broader measure of psychosocial skills in an empirical paper looking at the impact of these on a range of outcomes, including education. They find that, controlling for cognitive ability and a selection of background factors, children who have a higher level of social adjustment at age 11 are more likely to be at school after the age of 16 and gain a higher education qualification. Goldsmith et al [34] use data from the U.S. National Longitudinal Survey of Youth (from 1978-87) to examine the effect of self-esteem on wages. They find that self-esteem has a higher impact on wages than does education. Heckman et al [41] compare the labour outcomes of high-school drop-outs with those of high school graduates with similar cognitive skills. The difference between these groups is in their non-cognitive (or psychosocial) skills, as the drop outs are "nonpersistent and undisciplined". In this series of studies, it is found that the lower level of non-cognitive skills results in lower hourly wages and higher job turnover. Further, many studies find a significant link between psychosocial skills and anti-social behavior. For instance, in a careful study, Carneiro et al [12] also find that lower levels of non-cognitive skills raise the likelihood of criminal behaviour.

The link between psychosocial skills and educational outcomes is also supported by findings in the psychology literature. Duckworth and Seligman [25] use longitudinal data on 140 children in the eighth grade (age 13-14) to show that self-discipline predicts final educational attainment, school atten-

Currie [22].

[31] There is a vast literature here. References include Murnane et al for the USA and Connolly et al[16] for the UK. For a review of the literature for developing countries see Glewwe [32].

dance and test results. The authors further use a sample of 164 adolescents to test how the predictive power of this trait compares to that of IQ. Their results suggest that self-discipline has a stronger impact on performance than IQ and is a major factor in explaining students' inability to fulfill their potential. Other studies include Donnellan et al [24] and Swartzer et al [64]

While any serious contribution to this empirical literature is outside the scope of our study, we nevertheless present some descriptive evidence using our data, of the associations between the skills investigated in this paper and a range of outcomes such as school results and wages for those in employment. In this study, we collected data on Standard 10 exam results, occupational outcomes (whether currently employed, studying or inactive) and wages received by those who are employed. The correlations between these and self-esteem, self-efficacy and aspirations are shown in Figures 5-6. Before proceeding to the results, however, we emphasise that the timing of this study renders in-depth exploration of the link between adult outcomes and psychosocial skills impossible; at the time of the survey the young people in the sample were in transition between school and employment or further education.

As mentioned before, we conducted the PPVT test for all the young people in the survey. The test is a measure of cognitive achievement. It might be argued that in settings with low educational achievement, the measurement of cognitive skills might be sufficient to explain the variation in socio-economic outcomes. We examine this below by comparing the relationship of psychosocial skills to outcomes, both with and without the control for PPVT results[32]. The idea here is to ask whether psychosocial skills have any role in affecting outcomes, once we control for cognitive achievement. Arguably, if the variation in psychosocial skills that is uncorrelated with cognitive skills is simply noise, then the measurement of cognitive skills might be considered sufficient. We show below that this is not the case.

Figures 5a - 5d show the associations between examination results in Standard 10, self-esteem, self-efficacy and aspirations. These are two-way lowess graphs with the examination results (going from Fail to a First Class or Distinction) on the y-axis and each of the psychosocial skills/aspirations on the x-axis, obtained using partial linear regressions. Consistent with the existing literature there is a strong positive association between examination

[32] The simple correlation between psychosocial skills and the PPVT scores is about 0.18.

results and both self-esteem and self-efficacy. In the sample, children with higher self-esteem are more likely to have attained better results at Standard 10; the same trend holds with respect to self-efficacy. This hold, even with the control for cognitive achievement. However, we find the reverse to be the case in relation to aspirations; there appears to be a negative association between exam results and both measures of aspirations used in this study. A priori it is unclear what the theoretical links are between these measures of aspirations and outcomes; for instance, the relationship between the size of the aspiration window and outcomes is ambiguous (Ray 2006 [52]).

We further investigate links between self-esteem, self-efficacy and aspirations and wages paid to those who are employed (Figures 6a-6d). Both self-esteem and self-efficacy are also positively associated with wages (Figures 6a & 6b) - and this relationship is unaffected by the control for cognitive skills. Among those who are in work, there is a distinct positive association between the hopes for a better life and wages (Figure 6d), with mixed evidence of a positive association with the "aspirations window".

Overall, the link between psychosocial skills and adult outcomes widely reported in the economics and psychology literature appears to be supported by the associations we find in our data, with the important caveat that our data is not suited for such analysis, given both the small sample and the fact that the young people have only just left secondary school. It is more difficult to make conclusions regarding the associations between outcomes and aspirations due to the mixed results on this in our data, the sparsity of evidence on the links between aspirations and outcome in the wider literature, and the lack of available measures of aspirations that are as well-established as those of self-esteem and self-efficacy.

6 Conclusions

This study investigates the impact of an NGO that offers informal education to children from poor communities (slums) enrolled in formal schools in Bombay. The NGO concentrates on raising the psychosocial skills and aspirations of children who join the programme at entry into primary school and stay both in school and in the programme until they complete secondary school. The programme aims to bolster self-esteem and self-efficacy and raise the aspirations of these children. We use a design similar to a cross-

cutting design in order to obtain difference-in-difference estimates of the impact of the programme, controlling for family-level unobservables.

We find a remarkably strong and robust effect of the intervention on both self-esteem and self-efficacy: being in the programme raises both by about one standard deviation. Unlike these skills, for which validated and well-defined measures are available, aspirations are a more vague and disputed concept. We chose to measure it both as hopes for future well-being and in terms of an "aspirations window", where the latter captures some notion of the individual-specific space of attainable role-models. The effect of the intervention on these measures is between 0.75 and 0.90 of a standard deviation. All these estimates are robust to alternative treatments/placebos. The magnitude and significance of the estimated impacts on self-esteem and self-efficacy are also robust to alternative estimators, while the results on aspirations display slightly more sensitivity. All the estimates are insensitive to simulated deviations from the assumption of conditional independence that underpins the validity of our conclusions.

This is a non-randomised evaluation of a long-term intervention and thus warrants a careful and thorough examination of robustness of estimates. Arguably, if skill accumulation could be meaningfully measured over the short horizon it would have been possible to evaluate the impact of this intervention in a randomised framework. However, the evidence from the psychology literature suggests strongly that these skills are unstable in early childhood and adolescence and are most stable (and hence measurable) between early adulthood and middle age (see Trzesniewski et al [65] [66]). We aim, therefore, to offer a robust and persuasive method of evaluating the long-term impact of this intervention.

The purpose of this paper is to ask whether interventions to raise psychosocial skills can be effective. The evidence provided here suggests that they can and, combined with what we already know about the importance of the broader set of skills for key socio-economic outcomes, offers stronger grounds for interventions targeting psychosocial skills. It has always been clear that such skills matter - what is less certain is whether they are malleable over time. Our evidence suggests that there are grounds for optimism.

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Figure 1: Study Design

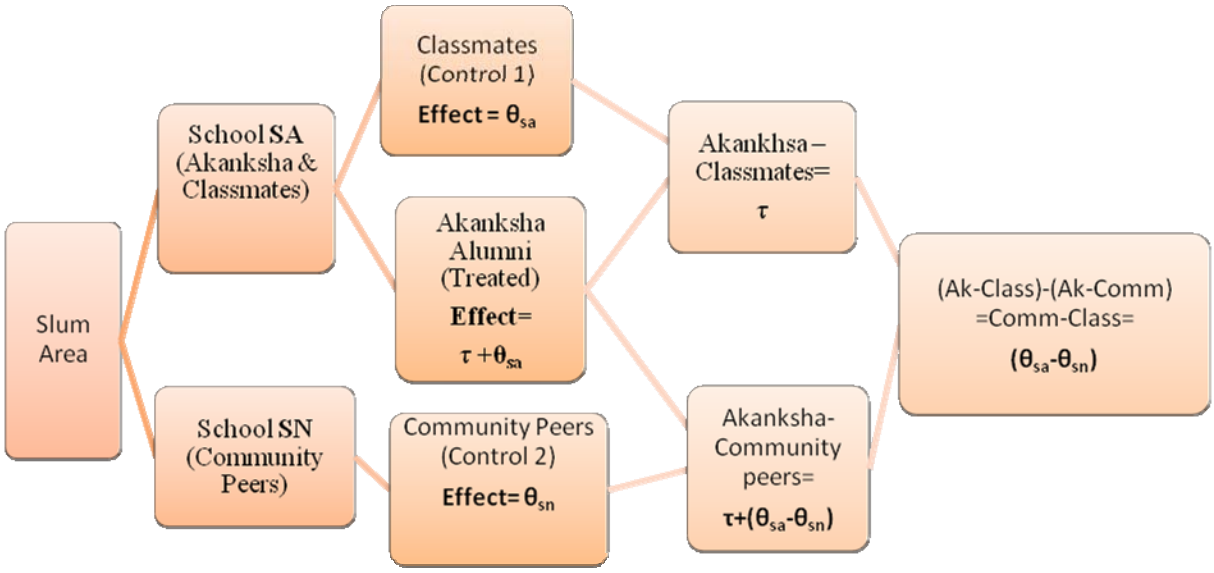


Table 1: Basic individual, socio-economic and parental characteristics

	All	Akanksha Alumni	Community Peers	Classmates	Akanksha-Community	Akanksha – Classmates
	(1)	(2)	(3)	(4)	(5)	(6)
					z-score (t-stat for cont vars)	z-score (t-stat for cont vars)
Individual characteristics						
Male	0.58	0.58	0.58	0.59	-0.01	-0.08
	0.49	0.50	0.50	0.50		
Age	19.33	19.61	19.28	19.04	0.96	1.76*
	1.74	1.69	1.93	1.56		
Height	162.03	161.66	160.73	163.88	1.27	-0.55
	8.64	8.92	8.35	8.45		
Dwelling characteristics 10 yrs ago						
Dwelling owned	0.76	0.74	0.74	0.83	-0.04	-1.08
	0.43	0.44	0.44	0.38		
Electricity in house	0.54	0.46	0.46	0.72	-0.04	-2.66***
	0.50	0.50	0.50	0.46		
Water in house	0.33	0.25	0.32	0.46	-0.85	-2.25***
	0.47	0.43	0.47	0.50		
Asset index	0.19	0.12	0.12	0.35	0.09	-4.77***
	0.25	0.18	0.19	0.30		
Parental characteristics 10 yrs ago						
Primary carer is male	0.21	0.11	0.20	0.35	-1.37	-3.00***
	0.41	0.31	0.40	0.48		
Mother's education: incomplete primary	0.74	0.77	0.74	0.70	0.38	0.87
	0.44	0.42	0.44	0.47		
Mother not working	0.74	0.65	0.76	0.83	-1.25	-2.01**
	0.44	0.48	0.43	0.38		
Father's education: incomplete primary	0.42	0.46	0.54	0.26	0.87	2.04**
	0.50	0.50	0.50	0.44		
Father employment: manual labour	0.42	0.42	0.56	0.28	-1.43	1.46
	0.50	0.50	0.50	0.46		
Parent attitudes & preferences						
Parent trust score (10 yrs ago)	2.73	2.45	2.79	3.01	-2.48***	-4.04***
	0.73	0.72	0.70	0.68		
Parent feeling about quality of service provision (10 yrs ago)	2.82	2.62	2.91	2.96	-2.18***	-2.61***
	0.68	0.67	0.70	0.63		
Parent feeling of respect in the community (10 yrs ago)	3.51	3.27	3.66	3.64	-3.16***	-2.91***
	0.63	0.71	0.54	0.55		

Parental norms: Responsibility	0.36	0.35	0.34	0.41	0.06	-0.69
	(0.48)	(0.48)	(0.48)	(0.50)		
Parental norms: Thrift	0.24	0.13	0.32	0.28	-2.38**	-1.95**
	(0.43)	(0.34)	(0.47)	(0.46)		
Parental norms: Respect	0.58	0.45	0.72	0.57	-2.75***	-1.11
	(0.50)	(0.50)	(0.45)	(0.50)		
Parental risk	1.30	1.46	1.09	1.34	1.19	0.39
	1.59	1.73	1.49	1.53		
Parental discount rate	1.54	1.70	1.23	1.67	1.06	0.05
	(2.22)	(2.64)	(1.70)	(2.17)		
Total Observations	154	58	50	46		

Table 2: Self esteem & efficacy statements and raw scores

Characteristic	Statement	Mean raw score
Self-esteem (children)	I feel proud to show my friends or other visitors where I live	3.2 (0.97)
	I feel proud of the job the main breadwinner in my family did when I was at school	3.7 (0.62)
	The job I do makes me feel proud	3.8 (0.67)
	I am proud of my past achievements at school	3.6 (0.76)
	I am not comfortable with/feel shy around members of the opposite sex*	2.7 (1.2)
	My parents/guardians felt proud to show friends or other visitors where we lived	3.3 (0.92)
	My parents/guardians were ashamed of their clothes *	3.5 (0.79)
	My parents/guardians felt proud of the job they did	3.1 (0.96)
	My parents/guardians were embarrassed by/ashamed of the work they had to do, or by the fact that they had no job*	3.4 (0.88)
	My parents/guardians were proud of my achievements at school	3.7 (0.70)
Self-esteem (parents)	I felt proud to show my friends or other visitors where I live	2.9 (1.1)
	I felt proud of the job the main breadwinner in my family did	3.7 (0.69)
	I felt proud of my children/NAME	3.9 (0.41)
	The job I did made me feel proud	3.7 (0.72)
Efficacy (children)	If I try hard, I can improve my situation in life	3.9 (0.34)
	It feels as if other people in my family make all the decisions about how I spend my time*	2.1 (0.90)
	I like to make plans for my future work or studies	3.6 (0.72)
	I have no choice about the work I do - I must work*	2.5 (1.2)
	Working hard will be rewarded by a better job in the future	4.0 (0.23)
	My parents/guardians believed that if one tries hard, one can improve ones situation in life	3.9 (0.25)
	My parents/guardians liked to make plans for the future	3.6 (0.64)
	My parents/guardians believed that working hard would be rewarded by a better job in the future	3.9 (0.3)
Efficacy (parents)	I believed that If I tried hard, I could improve my situation in life	3.6 (0.69)
	I liked to make plans for my future work or that of my children	3.5 (0.67)
	I had no choice about the work I did - I must work*	1.7 (1.1)
	I believed that working hard would be rewarded by a better job in the future	3.8 (0.5)
	I had no choice about which school to send my NAME to*	1.6 (0.89)
	I could do little to help my child/children do well in school, no matter how hard I tried*	1.8 (1.0)

Figure 2: Balancing graph: Treated = Akanksha alumni, Untreated = Community peers

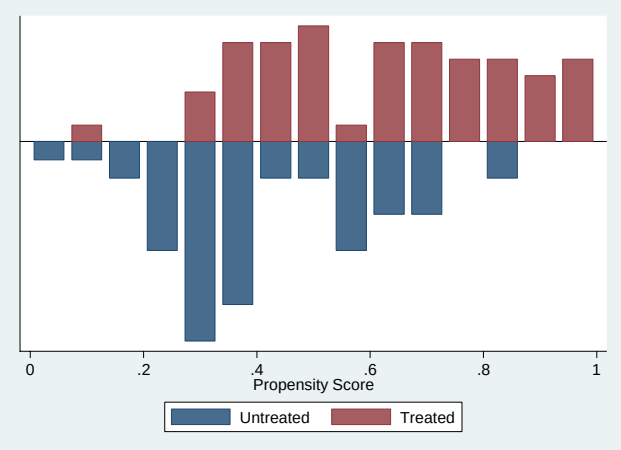


Figure 3: Balancing graph: Treated = Akanksha alumni, Untreated = Classmates

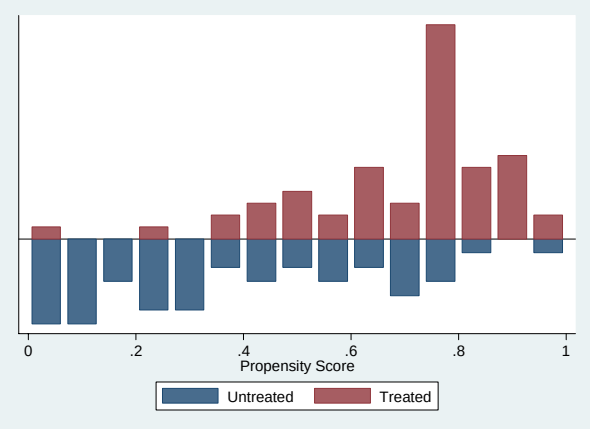


Figure 4: Balancing graph: Treated = Akanksha alumni, Untreated = Pooled Control (Community peers and Classmates)

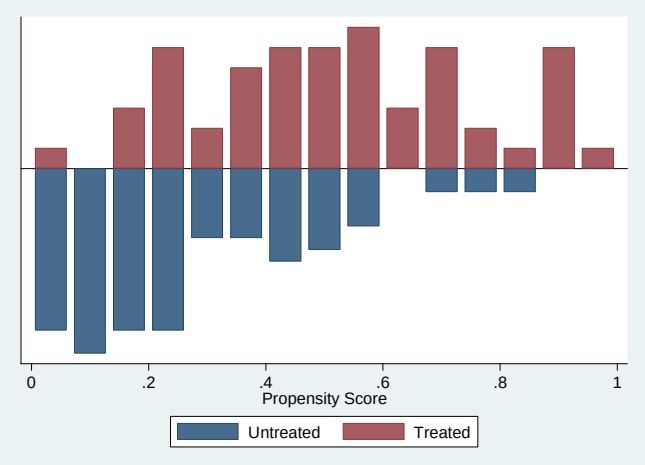


Table 3: Self-esteem - Summary Statistics

	Akanksha Alumni	Community Peers	Classmates	Akanksha-Community	Akanksha-Classmates	Akanksha-Joint
				t-stat	t-stat	t-stat
Standardised mean self-esteem score	0.11	-0.11	-0.01	1.06	0.59	1.01
	1.08	1.01	0.90			
Standardised mean parental self-esteem score	-0.37	0.28	0.28	-3.5***	-3.5***	-4.34***
	1.04	0.85	0.73			
Differenced standardised mean self-esteem score[1]	0.47	-0.39	-0.29	3.3***	2.8***	3.76***
	1.51	1.16	1.16			
Total Observations	58	50	46			

[1] Child – parent difference in standardised mean self-esteem score.

Table 4: Akanksha Treatment Effect on Self-esteem

		Akanksha – Community	Akaknksha – Classmates	Community -Classmates	Akanksha - Pooled	Club-no club	English Med. School – Non
		(1)	(2)	(3)	(4)	(5)	(6)
		Akanksha treatment effect	Akanksha treatment effect	Community treatment effect	Akanksha treatment effect	Club treatment effect	English medium treatment effect
Self-Esteem levels (standardised)							
OLS, robust se	(1)	0.25	0.47*	0.08	0.39*	0.10	0.08
		(0.25)	(0.26)	(0.21)	(0.21)	(0.21)	(0.19)
Nearest Neighbour Covariate Matching (n=1, Mahalanobis)	(2)	0.43*	0.62**	0.25	0.62***	-0.23	-0.52*
		(0.25)	(0.29)	(0.29)	(0.23)	(0.25)	(0.29)
Self-Esteem Difference-in-Difference (standardised)							
Nearest Neighbour Covariate Matching (n=1, Mahalanobis)	(3)	1.11***	1.09***	0.17	0.97***	-0.28	-0.21
		(0.29)	(0.35)	(0.38)	(0.27)	(0.34)	(0.38)
Nearest Neighbour Covariate Matching (n=2, Mahalanobis)	(4)	1.11***	1.00***	0.22	0.91***	-0.28	-0.44
		(0.29)	(0.34)	(0.32)	(0.25)	(0.30)	(0.30)
Nearest Neighbour Covariate Matching (n=3, Mahalanobis)	(5)	0.85***	0.99***	0.16	1.00***	-0.21	-0.33
		(0.28)	(0.31)	(0.29)	(0.24)	(0.28)	(0.25)
Propensity Score Matching (bandwidth=0.6)	(6)	0.89***	0.90***	-0.06	0.88***	0.09	0.19
		(0.27)	(0.29)	(0.25)	(0.24)	(0.27)	(0.23)
Total Observations		108	104	96	212	96	96

Table 5: Self-Efficacy Summary Statistics

	Akanksha Alumni	Community Peers	Classmates	Akanksha-Community	Akanksha-Classmates	Akanksha-Joint
				t-stat	t-stat	t-stat
Standardised mean self-efficacy score	0.17	-0.15	-0.04	1.58	1.09	1.6
	(1.05)	(1.03)	(0.89)			
Standardised mean parental self-efficacy score	-0.22	-0.09	0.42	-0.71	-3.37***	-2.32**
	(0.96)	(0.92)	(0.97)			
Differenced standardised mean self-efficacy score[2]	0.39	-0.06	-0.47	1.83*	3.42***	3.05***
	(1.28)	(1.24)	(1.24)			
Total Observations	58	50	46			

[2] Child – parent difference in standardised mean self-efficacy score.

Table 6: Akanksha Treatment Effect on Self-efficacy

		Akanksha – Community	Akaknksha – Classmates	Community -Classmates	Akanksha - Pooled	Club-no club	English Med. School – Non
		(1)	(2)	(3)	(4)	(5)	(6)
		Akanksha treatment effect	Akanksha treatment effect	Community treatment effect	Akanksha treatment effect	Club treatment effect	English medium treatment effect
Self-Efficacy levels (standardised)							
OLS, robust se	(1)	0.45	0.20	-0.09	0.51**	-0.03	-0.44**
		(0.26)	(0.29)	(0.23)	(0.22)	(0.21)	(0.22)
Nearest Neighbour Covariate Matching (n=1, Mahalanobis)	(2)	0.75	0.46	-0.14	0.71***	0.09	-0.53*
		(0.20)	(0.31)	(0.25)	(0.19)	(0.26)	(0.31)
Self-Efficacy Difference-in-Difference (standardised)							
Nearest Neighbour Covariate Matching (n=1, Mahalanobis)	(3)	0.88***	0.98**	-0.01	1.06***	0.07	-0.54
		(0.30)	(0.44)	(0.32)	(0.26)	(0.38)	(0.41)
Nearest Neighbour Covariate Matching (n=2, Mahalanobis)	(4)	0.72***	0.81**	-0.05	0.88***	-0.29	-0.05
		(0.29)	(0.34)	(0.28)	(0.25)	(0.34)	(0.36)
Nearest Neighbour Covariate Matching (n=3, Mahalanobis)	(5)	0.57**	0.73**	0.10	0.86***	-0.08	-0.26
		(0.27)	(0.32)	(0.28)	(0.24)	(0.31)	(0.33)
Propensity Score Matching (bandwidth=0.6)	(6)	0.56***	0.72**	0.35	0.66***	-0.35	-0.12
		(0.25)	(0.28)	(0.27)	(0.22)	(0.28)	(0.33)
Total Observations		108	104	96	212	96	96

Table 7: Summary Statistics - Aspirations

	Akanksha Alumni	Community Peers	Classmates	Akanksha-Community	Akanksha-Classmates	Akanksha-Joint
				t-stat	t-stat	t-stat
Ladder of Life Aspirations (9 steps)						
Best Possible Future Life Ladder (in 10 Years)	7.33	6.86	7.52	1.31	-0.55	0.53
	(1.90)	1.82	(1.50)			
Best Possible Life Ladder – Parents (10 Years Ago)	2.61	2.56	3.96	0.16	-3.18***	-1.79*
	(1.77)	(1.66)	(2.51)			
Differenced Best Possible Life	4.72	4.30	3.57	0.82	2.16**	1.68*
	(2.47)	(2.82)	(2.95)			
Aspirations Window[3]						
Aspirations Window	0.70	0.40	0.39	1.81*	1.87*	2.21**
	(0.91)	(0.81)	(0.74)			
Aspirations Window – parents	0.26	0.28	0.24	-0.15	0.22	0.03
	(0.55)	(0.57)	(0.52)			
Differenced Aspirations Window	0.44	0.12	0.15	1.67*	1.57	1.93*
	(0.98)	(0.98)	(0.84)			
Total Observations	58	50	46			

[3] Number of role models named by respondent who are richer and living outside the community.

Table 8: Akanksha Treatment Effect on Aspirations – Best Possible Future Life

		Akanksha – Community	Akaknksha – Classmates	Community -Classmates	Akanksha - Pooled	Club-no club	English Med. School – Non
		(1)	(2)	(3)	(4)	(5)	(6)
		Akanksha treatment effect	Akanksha treatment effect	Community treatment effect	Akanksha treatment effect	Club treatment effect	English medium treatment effect
Best Possible Future Life Ladder – Levels							
OLS, robust se	(1)	0.50	0.15	-0.47	0.16	0.49	-0.13
		(0.38)	(0.37)	(0.41)	(0.31)	(0.40)	(0.43)
Nearest Neighbour Covariate Matching (n=1, Mahalanobis)	(2)	1.07***	0.20	-0.72*	1.52***	0.39	1.58***
		(0.40)	(0.44)	(0.40)	(0.38)	(0.61)	(0.50)
Best Possible Future Life Ladder – Difference-in- Difference							
Nearest Neighbour Covariate Matching (n=1, Mahalanobis)	(3)	1.09*	0.71	-0.11	2.01***	0.40	0.39
		(0.63)	(0.68)	(0.68)	(0.53)	(1.06)	(0.81)
Nearest Neighbour Covariate Matching (n=2, Mahalanobis)	(4)	1.03*	0.95	0.18	0.84*	0.87	-0.16
		(0.59)	(0.62)	(0.67)	(0.49)	(0.85)	(0.74)
Nearest Neighbour Covariate Matching (n=3, Mahalanobis)	(5)	1.02*	1.03*	-0.29	0.86*	0.99	-0.47
		(0.56)	(0.56)	(0.66)	(0.47)	(0.74)	(0.71)
Propensity Score Matching (bandwidth=0.6)	(6)	0.58	0.93	0.57	0.56	0.63	0.06
		(0.53)	(0.62)	(0.63)	(0.46)	(0.63)	(0.70)
Total Observations		108	104	96	212	96	96

Table 9: Akanksha Treatment Effect on Aspirations – Successful people who live outside and are richer

		Akanksha – Community	Akaknksha – Classmates	Community -Classmates	Akanksha - Pooled	Club-no club	English Med. School – Non
		(1)	(2)	(3)	(4)	(5)	(6)
		Akanksha treatment effect	Akanksha treatment effect	Community treatment effect	Akanksha treatment effect	Club treatment effect	English medium treatment effect
Aspirations Windo - Levels							
OLS, robust se	(1)	0.26	0.37*	-0.09	0.25	0.01	0.31
		(0.19)	(0.22)	(0.14)	(0.17)	(0.19)	(0.25)
Nearest Neighbour Covariate Matching (n=1, Mahalanobis)	(2)	0.39*	0.59***	-0.09	0.64***	-0.00	0.46*
		(0.24)	(0.21)	(0.20)	(0.18)	(0.18)	(0.28)
Aspirations Window – Difference-in-Difference							
Nearest Neighbour Covariate Matching (n=1, Mahalanobis)	(3)	0.69**	0.51**	-0.28	0.87***	0.13	0.43
		(0.28)	(0.23)	(0.21)	(0.20)	(0.25)	(0.30)
Nearest Neighbour Covariate Matching (n=2, Mahalanobis)	(4)	0.43	0.45**	-0.25	0.60***	0.04	-0.12
		(0.28)	(0.21)	(0.19)	(0.20)	(0.22)	(0.28)
Nearest Neighbour Covariate Matching (n=3, Mahalanobis)	(5)	0.39	0.31*	-0.21	0.47***	0.09	-0.05
		(0.26)	(0.19)	(0.18)	(0.20)	(0.21)	(0.24)
Propensity Score Matching (bandwidth=0.6)	(6)	0.36*	0.27	-0.02	0.35	-0.10	0.13
		(0.20)	(0.20)	(0.20)	(0.17)	(0.21)	(0.24)
Total Observations		108	104	96	212	96	96

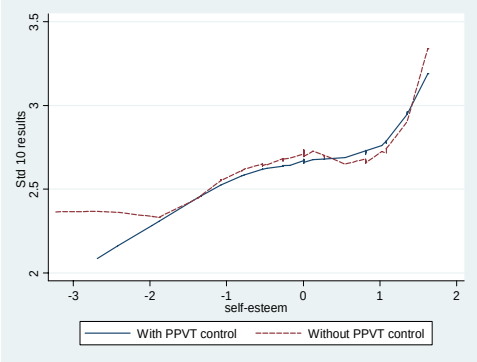
Table 10: Sensitivity analysis: Estimates of Akanksha Treatment Effects with Confounders

	SELF-ESTEEM								SELF-EFFICACY							
	Fraction U=1 by treatment/outcome								Fraction U=1 by treatment/outcome							
	p_{11} (1a)	p_{10} (2a)	p_{01} (3a)	p_{00} (4a)	Λ (5a)	Γ (6a)	ATT w/ U (7a)	*s.e.* (8a)	p_{11} (1b)	p_{10} (2b)	p_{01} (3b)	p_{00} (4b)	Λ (5b)	Γ (6b)	ATT w/U (7b)	*s.e.* (8b)
No Confounder							0.84	0.25							0.70	0.23
Treatment =Akanksha Control = joint (Community peers + Classmates) Confounder like:																
Owned dwelling (pre-treatment)	0.78	0.63	0.83	0.75	4.6	0.86	0.86	0.25	0.81	0.56	0.77	0.79	1.27	0.80	0.68	0.23
Electricity in dwelling (pre-treatment)	0.47	0.47	0.61	0.57	1.79	0.70	0.86	0.25	0.41	0.61	0.46	0.67	0.39	0.63	0.65	0.24
Water in dwelling (pre-treatment)	0.25	0.26	0.33	0.42	0.89	0.51	0.85	0.26	0.22	0.33	0.33	0.42	0.72	0.55	0.65	0.24
Primary carer is male	0.14	0.05	0.25	0.28	1.22	0.29	0.86	0.27	0.08	0.17	0.26	0.28	1.1	0.36	0.67	0.24
Father's education: secondary school plus	0.28	0.58	0.19	0.47	0.22	1.26	0.85	0.25	0.35	0.44	0.23	0.46	0.28	1.27	0.68	0.23
Mother nor working (pre-treatment)	0.64	0.68	0.81	0.78	2.18	0.49	0.85	0.26	0.59	0.78	0.90	0.72	8.30	0.50	0.69	0.24
Father's employment: manual labour (10 years ago)	0.39	0.53	0.42	0.43	1.13	1.18	0.85	0.25	0.49	0.33	0.51	0.37	3.06	1.19	0.68	0.23
Parent values responsibility	0.31	0.42	0.33	0.40	0.82	0.98	0.85	0.25	0.35	0.33	0.26	0.46	0.37	0.97	0.68	0.23
Parent values respectfulness	0.36	0.63	0.69	0.62	2.3	0.44	0.86	0.26	0.46	0.44	0.69	0.61	2.21	0.45	0.68	0.24
Parent values thrift	0.11	0.16	0.25	0.33	0.74	0.30	0.85	0.26	0.16	0.06	0.28	0.32	0.97	0.32	0.67	0.24
PPVT score above the mean	0.72	0.53	0.69	0.40	7.33	2.33	0.82	0.26	0.65	0.67	0.59	0.46	2.6	2.58	0.65	0.24

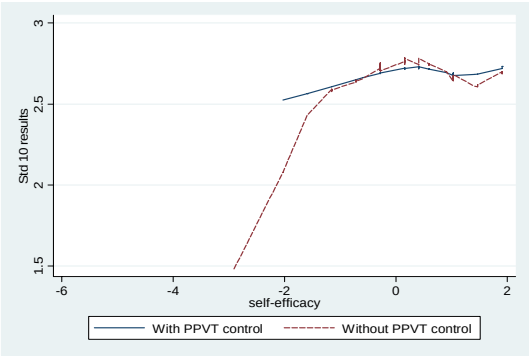
Γ=selection effect = odds ratio of logistic regression of confounder on probability of being treated, Λ=outcome effect = odds ratio of logistic regression of confounder on outcome, *i*=treatment indicator, *j*=outcome indicator (for continuous outcome var – indicates whether outcome is above the mean)

Figure 5: **Twoway Lowess Graph of Standard 10 Results on:**

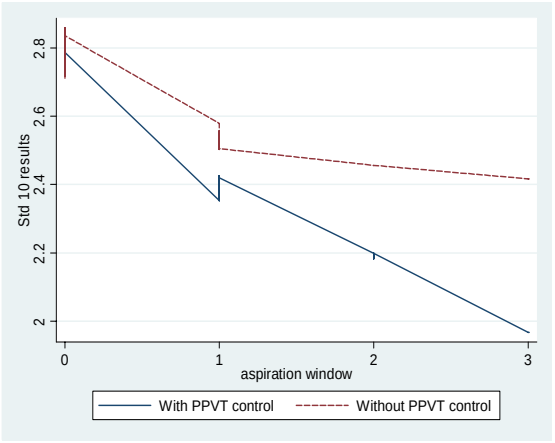
(a)Self-Esteem (standardised mean score)



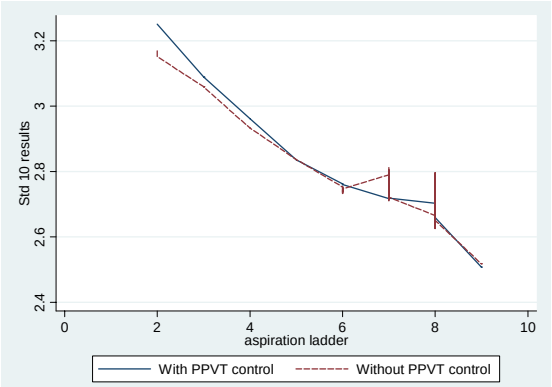
(b) Self-Efficacy (standardised mean score)



(c)Aspirations (wealthier role models outside community)



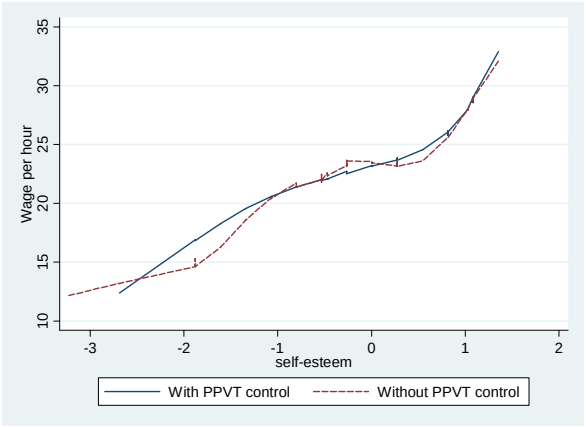
(d)Aspirations (ladder of life in 10 years)



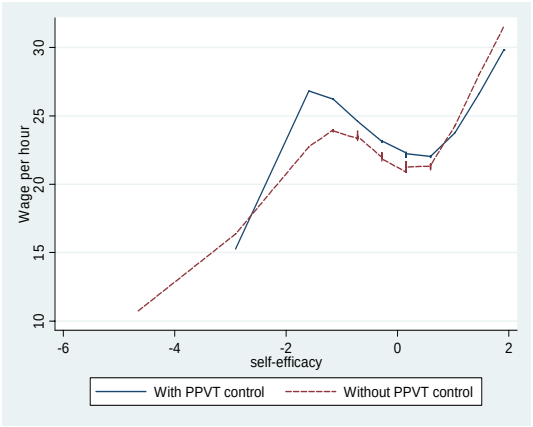
**Standard 10 exam results: 1=Fail, 2=Pass, 3=2nd Class, 4=1st class/Distinction

Figure 6: **Lowess Graph of Wage per hour on:**

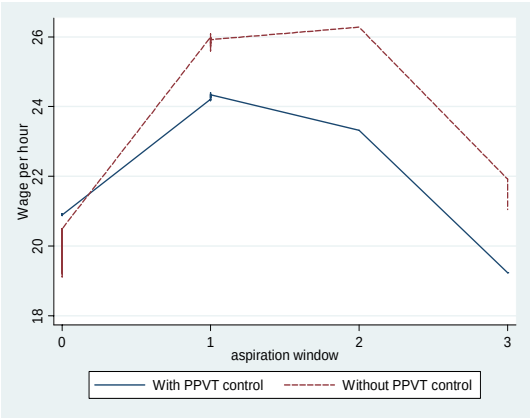
(a) Self-Esteem (standardised mean score)



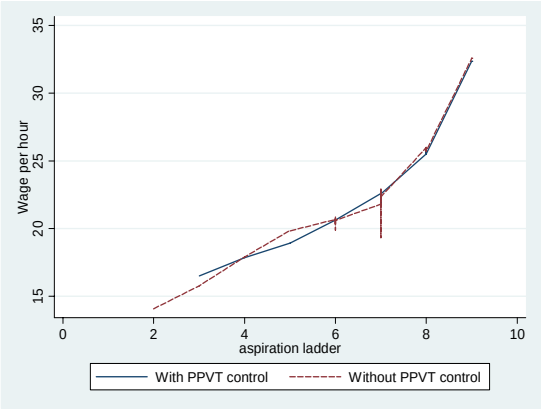
(b) Self-Efficacy (standardised mean score)



(c)Aspirations (wealthier role models outside community)



(d)Aspirations (ladder of life in 10 years)



Appendix: An example lesson at Akanksha

Topic: Self-esteem

Objectives:

- To help students identify personal qualities and unique attributes.
- To help students start to define themselves more clearly as individuals.
- To help students build self-confidence.

Key words: self-esteem, qualities, unique, attribute, confidence

Materials Needed: copies of worksheets, one each per student

Attachments: Who am I?, It's Me…, Personal Qualities, Interest Study

Note to teacher: See general notes on values modules. This module should take one month to complete. Many students have not thought too much about who they are or even how they would like to be. These activities will give them a chance to do so. Plan to complete one worksheet per session. Encourage a lot of discussion, but at the same time encourage them to think for themselves once they have understood what is to be done. Do the wrap-up activity twice – once in the first session and again in the last session. Especially in the last session try to spend adequate time to get the students to think more in depth and make it meaningful. Try to encourage students to think about what they have been defining all month and connect it to confidence.

Introduction: On the board, define together the words attribute, unique, quality. Have students work in pairs. Have them each identify and write at least 5 positive attributes of their partners. Have them share what they have written with each other.

Main Activity: Divide the students into groups of 3-4 to help each other work on these activities. *Note: The vocabulary is complicated, and in many cases translation will be necessary for lower English level students. Try to have other students explain the meanings, but in some cases volunteers or teachers might be required.* Keep all worksheets in the Values section of student files, as they will be needed in later units.

Wrap up: Ask some groups to list ways in which we gain confidence. Ask some groups to list ways in which we lose confidence. Compare the lists. *Note: Encourage them to give specific instances as well as larger issues, such as "When I do something I know that I am good at, I feel confident." "When someone compliments me, I feel confident." "When I don't get good results, I feel less confident." "When I try something new, I feel less confident."*

Other ideas: have students define characters in books or even in the news using these qualities; have them identify personal qualities and interests of famous people; ask students to identify specific ways in which they will actively try to define themselves better or build their own confidence

Name: Date:

Who am I?

Put a tick mark next to all of the words that describe you and your friend. Then complete the next two sections. Think carefully and answer honestly.

I am

- Naughty
- Hardworking
- Honest
- Worried
- Responsible
- Happy
- Curious
- Unsure
- Neat & clean
- Careless

My best friend

- Listens to me
- Plays with me
- Talks to me
- Helps me study
- Comes to my house
- Helps me with work
- Invites me to his house

My best memory:

My worst memory:

Date

It's Me _____ !

If I could choose another name for me, it would be _____ .

I now live in the city of _____. But someday if I could I'd like to

live in_____.

My friends and family think I'm_____ because

_____.

But I wish they would think I was _____ because

_____.

Something my best friends know about me that no one else knows is

_____.

Someday I'd like to meet_____, _____,

and even_____.

I enjoy wearing _____.

When I am free I like to spend my time _____.

A few things I really don't like are _____

_____.

If I could I would like to learn something new about

_____.

List six words other people might use to describe you.

Name: Date:

Personal Qualities

Some things about me, I am…

		Never	**Sometimes**	**Often**	**Always**
1.	Friendly				
2.	Happy				
3.	Successful				
4.	Sad				
5.	Brave				
6.	Scared				
7.	Helpful				
8.	Angry				
9.	Honest				
10.	Shy				
11.	Confident				
12.	Healthy				
13.	Considerate				
14.	Jealous				
15.	Trusted				
16.	Likable				
17.	Cooperative				
18.	Aggressive				
19.	Loyal				
20.	Loved				

I feel that these qualities are my best:

1.
2.
3.

I feel that I should improve these qualities about myself:

1.
2.
3.

Name: Date:

Interest Study

My personal interests

I like the following (rank the activities in order of liking from 1-12):

cooking	cleaning	computers	speeches
sewing	teaching	taking care	gardening
math	sports/PT	solving puzzles	science

I truly feel that…

True or False (write T or F after each of the following statements):

a) I am very shy.

b) I like talking in English.

c) I don't mind traveling.

d) I like to follow instructions.

e) I like to meet new people.

f) I would like to work in another city.

g) I would like to choose my own timings.

h) I like to spend time getting dressed.

i) I like to do the same thing everyday.

j) I like it when Didi talks about new things.

k) I prefer to decide on my own.

l) I would like to work from 9-6 every day.

m) I like to think about better solutions to challenges.