



University of Sussex
Economics

Working Paper Series

No. 97-2016

Hidden Human Capital: Psychological Empowerment &
Adolescent Girls' Aspirations in India¹

Sanchari Roy², Matthew Morton³ and Shrayana Bhattacharya³

² Department of Economics, University of Sussex

³ World Bank

Sanchari.Roy@sussex.ac.uk

Abstract: This paper studies the role of social-emotional or psychological capital in determining education and employment aspirations of adolescent girls and young women in India. We find that girls' self-efficacy and mental health are important determinants of their educational and employment aspirations, suggesting that these hidden forms of human capital may serve as critical targets for interventions aiming to alter girls' educational and economic trajectories. We also identify factors that correlate with girls' level of self-efficacy, and find that an "enabling" and supportive family and community environment appears to be important.

JEL classification: I20, I31, Z00

Key words: social-emotional skills, self-efficacy, aspirations, adolescents, youth, gender, labor market, education

¹ **Funding and disclaimers:** This material has been funded by UK aid from UK Government's Department for International Development. However, the views expressed here do not necessarily reflect the UK Government's, or the World Bank Group's, official policies.

1. Introduction

The existing literature extensively documents positive correlations between human capital and economic outcomes. Traditionally, such studies of human capital have primarily centered on assets that can be readily observed, such as physical health or documented educational attainment (see Deaton, 2003; Angrist and Lavy, 1999; Duflo, 2001; Miguel and Kremer, 2004; Nehru et al., 1995; Baldacci et al., 2008). This provides a rather limited perspective in light of the broad definition of human capital as the stock of skills that the labor force possesses and is regarded as a resource or asset (Goldin, 2016).

Yet a mounting body of international evidence points to the importance of ‘social-emotional’ or psychological capital, especially among young people, in contributing to various outcomes ranging from academic performance during adolescence (Becker and Luther, 2002) to earnings (see review in Goodman et al, 2015) and lower financial distress in adulthood (Kuhnen & Melzer, 2014). The evidence appears to suggest significant benefits of higher adolescent social-emotional capital for later-life outcomes and opportunities. However, much of this evidence is obtained in the context of developed countries such as the United States, United Kingdom, Germany, Australia, etc. The importance or relevance of such skills in the context of poorer, developing countries remains unclear, and requires further examination, especially given the significant binding constraints individuals in such countries face in terms of access to education and labor markets to begin with.

This paper attempts to contribute to filling this gap by documenting the role played by social-emotional capital in explaining the education and labor market aspirations of the adolescents in India. Our focus on aspirations in these two domains as our key dependent variables, rather than actual attainment, is motivated by the fact that previous studies have argued that adolescent aspirations for the future are important predictors of adult attainment. For example, it has been shown that young people with high employment aspirations are more likely to enter a professional career in adulthood (Clausen, 1993; Mello, 2008; Schoon, Martin, & Ross, 2007; Schoon & Parsons, 2002). Similarly, a number of studies in Australia and the United Kingdom have identified a ‘lack of aspiration’ as being one of the key barriers to participation in further education for poorer students (Bradley et al. 2008; James et al. 2008; Goodman and Gregg, 2010). Hence, despite their subjective nature, focusing on aspirations may be argued to constitute the first step in analyzing the overall impact of social-emotional capital on adult attainments.

The primary dimension of social-emotional capital we focus on in this paper is self-efficacy. In behavioral psychology, self-efficacy refers to an individual’s self-belief that they can accomplish a given task and cope with life’s challenges (Bandura 1977). Self-efficacy has been recognized as an important constituent of psychological empowerment (Ibrahim & Alkire, 2007; Zimmerman, 2000). It can be manifested through various elements of personal behavior, such as how well a person perseveres in the face of adversity, whether they have an optimistic or pessimistic attitude about their future, etc. In addition, we also look at self-reported measures of depression and hope as alternative expressions of social-emotional capital.

We use a recent World Bank survey of 3,942 adolescent girls and young women in the

low-income Indian state of Jharkhand for the purpose of our analysis. It is a well-known fact that like many other outcomes, education and employment outcomes of women lag those of men in India – in part due to unequal access of women to such opportunities, but also due to gender attitudes that often dampen women’s aspirations in these domains. This is particularly true in the northern states of India, including Jharkhand, where patriarchal norms are strong and deeply entrenched. Thus, this survey provides a unique opportunity to explore the role played by individual social-emotional resources in determining adolescent girls’ aspirations and assessing whether they may potentially outweigh negative social attitudes to ultimately boost female outcomes.

In this paper, we also examine the key correlates of socio-emotional capital among adolescent girls and young women. In other words, we focus on understanding the individual, household, and community level determinants of such socio-emotional resources, thereby providing insight into the strategies or interventions that could be designed to effectively target these in order to improve female education and labor market outcomes.

Our key findings are that self-efficacy appears to be one of the key determinants of aspiration among adolescent girls and young women (ages 15-24) in Jharkhand, both for education and employment. A one standard deviation increase in the self-efficacy score is associated with a 0.73 increase in number of years an adolescent girl desires to study, and a 0.07 percentage point increase in the likelihood that an adolescent aspires to be engaged in paid employment outside home as an adult. In terms of key correlates of self-efficacy, individual and household-level factors like age, previous training experience, and an “enabling” environment i.e. one where girls enjoy family/social support, feel connected and have empowered parents and other successful role models to look up to, appear to be important.

As mentioned earlier, evidence on the importance of socio-emotional skills in determining an individual’s life outcomes in a developing country context is scarce. Recent work in psychology has lamented the lack of rigorous evidence on what kind of psychological interventions are effective (Wilson, 2011), while Haushofer and Fehr (2014) point out the great need for such evaluations, especially in the context of developing countries. To the best of our knowledge, only two papers have recently made a foray in this regard: Ghosal *et al* (2015) that studies the impact of mitigating psychological constraints on investment behavior of sex workers in India using a randomized field experiment, and Blattman *et al.* (2015) that combines psychological and cash-based interventions in Liberia. Our paper fits into this nascent literature by providing further evidence on the importance of psychological factors for a specific group of individuals, i.e. adolescent girls and young women. Unlike the other two studies, however, the findings of our paper do not lay any claims to causality.

The remainder of the paper is organized as follows. Section 2 describes the survey design and data collection of the World Bank Adolescent Survey in Jharkhand. Section 3 presents the descriptive statistics from the survey, while Section 4 outlines the empirical methodology used in this paper. Section 5 presents the main findings and discusses their implication. Section 6 concludes.

2. Survey Design and Data

2a. Survey Design

This research is based on a cross-sectional study conducted across the state of Jharkhand over an eight-week period in January to February 2015. Study participants were selected by using a multistage cluster sampling method. To determine an appropriate statewide sample size, we assumed a conservative prevalence of key outcomes such as “NEET” (not in training, education, or employment) and symptoms of depression of 15%. A minimum sample size of 3,057 individuals was needed for an assumed precision level of 5%, 80% power with Type 1 error of 5%, a design effect of 2, and a 10% non-response rate. To allow for subgroup estimates and over-sampling of urban areas for urban estimates, a sample size of 3,900 was targeted, and 3,942 were surveyed. Ultimately, 150 enumeration areas (EA) were randomly selected proportionate to size from a Census 2011 data set, out of which 105 were in villages (rural) and 45 were in towns (urban). Among the 150 selected EAs, one was inaccessible due to Maoist insurgence and was replaced using the same method.

Within each EA, 26 households were selected using a geographic house listing method. In case of large EAs having more than 300 households, EAs were divided into segments of 150 or more households, where one segment was randomly selected for house listing. In the rest of the EAs, the entire households in the EAs were listed. To ensure adequate representation across age groups, listed households were stratified according to the presence of at least one adolescent girl or young woman within the specified age groups (11-14, 15-17, 18-21, and 22-24). Interviewers used a randomization mechanism to pick a direction and the number of dwellings to pass in order to reach the first sampling unit. Interviewers then selected every other dwelling in that direction applying a systematic random sampling method until all 26 surveys within the EAs were completed. A total of 4,559 dwellings were approached; 3,942 (86.5%) participated in the study. All of those that did not participate could not be reached after four attempts.

2b. Data

Experienced interviewers, who were trained over six days on the study objectives and content, use of smartphones and interview technique, conducted one-to-one interviews. Pilot testing and mock interviews were conducted with all instruments. Oral rather than written consent was obtained because of the high illiteracy rate, but each household was left with a consent form with details of the study, respondents’ rights and confidentiality, and contact details in case of any concerns. Interviewers and respondents were always matched based on gender. Supervisors analyzed the collected surveys on a daily basis, identifying outliers, giving feedback on data collection, and addressing any questions.

The survey is a multi-topic one and collected data on several aspects of young women’s and adolescent girls’ lives in Jharkhand. Key individual level demographic characteristics include the adolescents’ age, marital status, education status (attainment, attendance, dropouts), employment status (firm type, place of work, sector, earnings) as well as a host of psychological variables.

The main psychological variables relevant to this paper include education and labor market aspirations, self-efficacy, depression, and hope. Aspiration measures are single

item indicators developed by us, informed by a review of previous surveys with adolescent girls. Education aspirations are measured by asking what level of education girls would like to complete assuming no constraints. Labor market aspirations are measured by asking unmarried girls whether they would like to have a paid job after marriage and asking all girls what they would like to be doing five to ten years from the time of the interview.

The key socio-emotional variables that we consider are self-efficacy, depression and hope. Self-efficacy is measured using the General Self-Efficacy Scale (GSES), a 10-item global measure of self-efficacy, which measures optimistic self-beliefs in one's ability to cope with difficult demands and achieve objectives (Schwarzer & Jerusalem, 1995).¹ Example items include, "I can manage to solve difficult problems if I try hard enough" and "it is easy for me to stick to my goals and reach them." Responses involved a Likert-style scale of five options ranging from "never" to "very often." Answers given to these 10 items are aggregated into a standardized z-score for use in our regression analysis. For mental health, we used the Patient Health Questionnaire-9 (PHQ-9), a 9-item screening tool for symptoms of depression and anxiety (Kroenke & Spitzer, 2002). Respondents were asked to indicate how often they felt bothered by certain problems over the last two weeks and had four response options ranging from "not at all" to "nearly every day." Example items include, "Little interest or pleasure in doing things" and "feeling down, depressed, or hopeless." Answers to these 9 items are aggregated into a standardized z-score for use in our regression analysis. Hope is measured with a three-item scale developed by the Child Trends Positive Indicator Project (Lippman et al., 2014). Example items include, "I expect good things to happen to me" and "I am excited about my future." Response options were the same as those used for self-efficacy. Answers to these three items are aggregated into a standardized z-score for use in our regression analysis.

In order to mitigate the known problems of using Likert-style response options with low-literacy and non-Western populations (Church, 2010), the survey included piloted visual aids that increased respondents' comprehension and response times. The multi-item standardized scales all demonstrated satisfactory internal consistency for the Jharkhand survey sample of girls ages 15-24 (Cronbach's $\alpha = 0.89$ for GSES, 0.78 for PHQ-9, and 0.84 for hope). The present study utilizes data only for the sample of respondents ages 15-24, as validity of some psychosocial instruments used for younger girls was unknown and suspect and therefore key measures for this study were not used with these girls. The remaining sample was 2,425.

We also collected data on the adolescents' social support and networks. We assess positive connectedness of the adolescent to local adults and to schools using brief items developed by Blum and Ireland (2004). Drawing on the Nepal Adolescent Girls Employment Initiative trial baseline items (Chakravarty et al., 2015), the survey also asks about sources of support for different types of problems.

We also collected data on several variables at the household level, including rural/urban location, caste status, religion, gender of head (male/female), primary language,

¹ This study used the National Institutes of Health Toolbox adapted and validated version (CAT Ages 8-12) of the GSES given simpler language for a young sample population with generally low literacy. The version was retrieved from <http://www.nihtoolbox.org/WhatAndWhy/Emotion/Pages/default.aspx>.

household income, asset ownership (to be used for a wealth index); employment, educational, literacy and numeracy status of all members etc.

Data are weighted to account for the differences in probabilities of individual selection across counties and EAs. Weighted estimates are used when presenting descriptive statistics but not for regressions.

3. Descriptive Evidence

3a. Adolescent Girl and Household Characteristics

Mean age of the adolescent girls is 18.6 years. Fifty-six percent of these young women are not in training, education, or employment (NEET). Thirty-four percent are married. Most of them aspire to complete higher secondary schooling, while 86% of them want to work for pay outside home. Half of them know women running own businesses, and most feel moderately connected to the adults in their community.

In terms of characteristics of these adolescent girls' households, most of them have low educated parents and fairly large household size. Almost 90% of them belong to SC/ST or backward castes, while close to 70% are Hindus. 41% of them live in households that own a BPL (Below Poverty Line) card, indicating their low-income status. As a measure of household resources, we use the log of annual household income, and use this to shed light on whether adolescent girls from wealthier households have higher aspirations.

Table 1: Descriptive Statistics for Individual and Household Characteristics of Adolescents (15-24 years)

	Mean	Std. Dev	Min	Max	Count
Education Aspiration	12.99	(2.84)	1	17	2106
Employment Aspiration	0.86	(0.35)	0	1	2388
Age (years)	18.57	(3.00)	14	24	2388
NEET (0/1)	0.56	(0.50)	0	1	2388
Married (0/1)	0.34	(0.48)	0	1	2388
Hope (z-score)	-0.02	(0.99)	-1	2	2103
Self-efficacy (z-score)	-0.00	(1.00)	-1	2	2388
Father's age (years)	46.47	(13.27)	15	100	2388
Mother's age (years)	38.34	(18.30)	0	642	2386
Father's education (years)	4.97	(4.88)	0	17	2388
Mother's education (years)	3.36	(4.52)	0	17	2376
Household size	5.97	(2.35)	1	21	2388
Log annual HH income	10.91	(0.96)	3	16	2193
Caste=SC	0.19	(0.39)	0	1	2381
Caste=ST	0.23	(0.42)	0	1	2381
Caste=OBC	0.47	(0.50)	0	1	2381
Caste=General	0.11	(0.31)	0	1	2381
Religion=Hindu	0.68	(0.47)	0	1	2378
Religion=Muslim	0.20	(0.40)	0	1	2378
Religion=Christian	0.04	(0.18)	0	1	2378
Religion=Sarna	0.09	(0.29)	0	1	2378
Has BPL card	0.41	(0.49)	0	1	2382
Lack of social support (0-9)	1.11	(1.50)	0	9	2388
Knows women in business (0/1)	0.51	(0.50)	0	1	2380
Adult connectedness (0-4)	2.57	(1.06)	0	4	2384
Urban	0.30	(0.46)	0	1	2388
Observations	2388				

4. Empirical Methodology

In order to examine the role of socio-emotional capital on adolescent aspirations, we estimate the following linear regression specification:

$$A_{ihv} = \beta_i X_{iv} + \beta_h X_{hv} + u_{ihv} \quad (1)$$

where, A_{ihv} denotes aspirations of individual i living in household h in village v . X_{iv} and X_{hv} are characteristics of individual i and her household respectively. We cluster standard errors at the enumeration area (EA) level. Later, we also control for EA fixed effects.

The key outcome variables we focus on are education and employment aspirations of 15-24 year old adolescent girls and young women. Education aspiration is measured as the number of years an adolescent would like to study, while the employment aspiration measures whether or not the adolescent is interested in being engaged in paid work outside home in adulthood.

As regards the individual characteristics X_{iv} , the primary ones we focus on are three measures of socio-emotional capital: self-efficacy, depression and hope. Apart from this, we also include various individual and household level control variables e.g. age, marital status, parental age and education, household size, income status, caste, religion and adult connectedness. Finally, we also control for relevant EA level characteristics like relative poverty status, various measures of gender attitudes towards women, presence of schools, crime etc.

Since this is a purely cross-sectional analysis, the results of this paper are not to be interpreted in any causal way. Instead, the aim of the paper is to identify key correlates of education and employment aspirations of youth in India in order to inform the design of interventions aimed at boosting their educational and labor market outcomes.

5. Key Findings

5a. Role of Socio-emotional Capital on Adolescent Aspirations

The results for education aspirations of the adolescent girls are reported in Table 2. Positive/optimistic outlook towards future appears to be a key (individual level) predictor (Column 2). A one standard deviation increase in the hope score is associated with a 0.25 increase in the number of years an adolescent girls would like to study. However, Column 3 shows that the impact of hope primarily works through higher self-efficacy scores, because once self-efficacy is included, hope has no independent significant effect. A one standard deviation increase in the self-efficacy score is associated with a 0.73 increase in number of years an adolescent girls desires to study. This is also robust to controlling for various household and enumeration area (EA) level characteristics (Columns 4 and 5 respectively, as well as to the inclusion EA fixed effects (Column 6).

Table 2. Determinants of Education Aspiration among Adolescent Girls in Jharkhand (15-24 year olds)

	(1)	(2)	(3)	(4)	(5)	(6)
	Education Aspiration					
Age (years)	0.17*** (0.03)	0.16*** (0.03)	0.11*** (0.03)	0.05* (0.03)	0.07* (0.04)	0.02 (0.03)
NEET (0/1)	-1.95*** (0.14)	-1.93*** (0.15)	-1.76*** (0.15)	-1.26*** (0.16)	-1.37*** (0.21)	-1.15*** (0.15)
Married (0/1)	-1.40*** (0.17)	-1.36*** (0.19)	-1.24*** (0.18)	-1.15*** (0.20)	-0.96*** (0.24)	-0.89*** (0.23)
Hope (z-score)		0.25*** (0.07)	0.04 (0.07)	-0.01 (0.07)	0.01 (0.09)	0.02 (0.07)
Self-efficacy (z-score)			0.73*** (0.07)	0.53*** (0.08)	0.48*** (0.09)	0.49*** (0.08)
Father's age (years)				-0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)
Mother's age (years)				0.02*** (0.01)	0.02** (0.01)	0.03*** (0.01)
Father's education (years)				0.05*** (0.02)	0.04** (0.02)	0.04** (0.02)
Mother's education (years)				0.13*** (0.02)	0.10*** (0.02)	0.13*** (0.02)
Household size				-0.02 (0.03)	-0.04 (0.04)	-0.01 (0.03)
Log annual HH income				0.24*** (0.07)	0.21** (0.09)	0.10 (0.08)
Caste=SC				-0.19 (0.24)	0.03 (0.28)	-0.47* (0.28)
Caste=ST				-0.47* (0.25)	-0.27 (0.30)	-0.69** (0.30)
Caste=OBC				0.11 (0.21)	0.31 (0.23)	-0.11 (0.23)
Religion=Muslim				-0.18 (0.19)	0.19 (0.23)	-0.26 (0.27)
Religion=Christian				-0.17 (0.30)	-0.94*** (0.25)	-0.21 (0.38)
Religion=Sarna				-0.23 (0.24)	-0.18 (0.36)	-0.34 (0.28)
Has BPL card				-0.03 (0.13)	0.05 (0.15)	-0.03 (0.13)
No social support (0-9)				0.10** (0.04)	0.06 (0.05)	0.03 (0.04)
Knows women in business (0/1)				0.68*** (0.13)	0.34** (0.17)	0.47*** (0.13)
Adult connectedness (0-4)				0.02 (0.06)	0.11 (0.09)	0.07 (0.07)
EA poorer than rest					-0.29 (0.23)	
EA has women in GP					0.07 (0.20)	
EA thinks married women should work					0.41** (0.20)	
EA thinks son's education more important					-0.18 (0.28)	
EA has primary school					0.12 (0.46)	
EA has high school					-0.04 (0.22)	
EA has crime					0.34 (0.38)	
Urban					0.40* (0.21)	
EA fixed effects	No	No	No	No	No	Yes
Adj. R-sq	0.17	0.17	0.23	0.32	0.30	0.37
N	2106	1843	1843	1668	976	1668

Notes: The sample consists of only adolescent girls 15-24 years inclusive. Standard errors, in parentheses, are clustered at the EA level. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is number of years of education a girl reports to aspiring to if she faced no constraints. The omitted caste group is General Caste and the

omitted religious group is Hindu. The depression variable is a standardized z-score constructed from answers given to the following nine questions on: 'feeling little interest in things'; 'feeling down'; 'trouble sleeping'; 'feeling tired'; 'poor appetite'; 'feeling bad about myself'; 'trouble concentrating'; 'moving/speaking slowly'; 'thoughts of hurting myself'. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

The results for employment aspirations of the adolescent girls are reported in Table 3. Here, too, hope is a key predictor of employment aspirations (Column 2). But so is depression (Column 3). Interestingly, higher reported depression is found to be correlated with higher aspiration to be employed in future. A one standard deviation increase in the depression score is associated with 4 percentage point (pp) increase in the likelihood that the adolescent aspires to engage in paid work outside home in adulthood. A potential explanation for this might be that depression might stem from unhappiness or dissatisfaction with current life situation and hence this finding may represent a desire for these girls to have a better future relative to their present. Inclusion of the self-efficacy measure washes away the hope effect but not the depression effect. Everything else constant, a one standard deviation increase in the self-efficacy score is associated with a 0.07 pp increase in the likelihood of paid work in future. Adding household controls does not change the results qualitatively. The results are robust to including EA fixed effects.

Table 3: Determinants of Employment Aspiration among Adolescent Girls in Jharkhand (15-24 year olds)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Employment Aspiration						
Age (years)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
NEET (0/1)	-0.12*** (0.02)	-0.12*** (0.02)	-0.13*** (0.02)	-0.11*** (0.02)	-0.09*** (0.02)	-0.08*** (0.03)	-0.08*** (0.02)
Married (0/1)	-0.02 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.01 (0.02)	-0.03 (0.02)	-0.06* (0.03)	-0.05 (0.03)
Hope (z-score)		0.02*** (0.01)	0.03*** (0.01)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)
Depressed (z-score)			0.04*** (0.01)	0.04*** (0.01)	0.03*** (0.01)	0.02 (0.01)	0.03*** (0.01)
Self-efficacy (z-score)				0.07*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)
Father's age (years)					-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Mother's age (years)					0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Father's education					0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Mother's education					0.01*** (0.00)	0.00 (0.00)	0.01*** (0.00)
Household size					0.00 (0.00)	-0.00 (0.01)	0.00 (0.00)
Log annual HH income					0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)
Caste=SC					0.04 (0.03)	0.02 (0.04)	-0.02 (0.04)
Caste=ST					0.02 (0.03)	0.02 (0.04)	0.01 (0.04)
Caste=OBC					0.03 (0.02)	0.00 (0.03)	-0.02 (0.02)
Religion=Muslim					-0.01 (0.02)	0.01 (0.03)	-0.05 (0.04)
Religion=Christian					0.03 (0.03)	-0.01 (0.03)	-0.01 (0.04)

					(0.05)	(0.05)	(0.07)
Religion=Sarna					-0.03	-0.03	-0.01
					(0.04)	(0.06)	(0.04)
Has BPL card					0.00	-0.01	0.00
					(0.02)	(0.02)	(0.02)
No social support (0-9)					0.00	0.01	-0.01
					(0.01)	(0.01)	(0.01)
Knows women in business (0/1)					0.08***	0.09***	0.05**
					(0.02)	(0.02)	(0.02)
Adult connectedness (0-4)					-0.01	-0.01	-0.01
					(0.01)	(0.01)	(0.01)
EA poorer than rest						-0.01	
						(0.02)	
EA has women in GP						0.01	
						(0.02)	
EA thinks married women should work						0.03	
						(0.02)	
EA thinks son's education more imp.						0.03	
						(0.03)	
EA has primary school						-0.04	
						(0.03)	
EA has high school						0.03	
						(0.02)	
EA has crime						0.02	
						(0.02)	
Urban						-0.04*	
						(0.03)	
EA fixed effects	No	No	No	No	No	No	Yes
Adj. R-sq	0.03	0.03	0.04	0.07	0.08	0.07	0.09
N	2388	2103	2103	2103	1896	1092	1896

Notes: The sample consists of only adolescent girls 15-24 years inclusive. Standard errors, in parentheses, are clustered at the EA level. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. The dependent variable is a binary variable indicating whether or not a girl aspires to be employed in a job in 5-10 years' time. The omitted caste group is General Caste and the omitted religious group is Hindu. The depression variable is a standardized z-score constructed from answers given to the following nine questions on: 'feeling little interest in things'; 'feeling down'; 'trouble sleeping'; 'feeling tired'; 'poor appetite'; 'feeling bad about myself'; 'trouble concentrating'; 'moving/speaking slowly'; 'thoughts of hurting myself'. The hope variable is a standardized z-score constructed from answers given to the following three questions on: 'expect good things to happen to me'; 'excited about future'; 'trust future will turn out well'. The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

5b. Key Correlates of Socio-emotional Resources Like Self-Efficacy

Given that socio-emotional resources like self-efficacy appear to be one of the key predictors of adolescent women's aspirations, we next explore key correlates of self-efficacy in our data. We begin by analyzing the enumeration area (EA) level correlates of adolescent self-efficacy (Table 4, Column 1). Presence of a high school near the EA and the relative poverty status of the EA appear to be key correlates, but are no longer significant when we add household level correlates (Column 2, 3). Parental education appears to be the key household level correlate, whose effect was probably being picked up earlier by the EA poverty status. Finally, we add individual level correlates (Column 4, 5) and find that age, NEET status, previous participation in training programs, social support, knowing successful women and adult connectedness have independent explanatory power as far as adolescent self-efficacy is concerned.

Table 4: Determinants of Self-Efficacy among Adolescent Girls in Jharkhand (15-24 year olds)

	(1)	(2)	(3)	(4)	(5)
	Self-efficacy (z-score)				
	EA characteristics	EA and HH characteristics	EA, HH and individual characteristics		
EA poorer than rest	-0.21** (0.08)	-0.06 (0.07)	-0.05 (0.07)	-0.05 (0.06)	-0.06 (0.06)
EA has women in GP	-0.03 (0.09)	0.01 (0.07)	0.02 (0.06)	0.03 (0.06)	0.01 (0.06)
EA has primary school	0.01 (0.12)	-0.00 (0.09)	-0.02 (0.08)	-0.01 (0.08)	0.00 (0.08)
EA has high school	0.22** (0.10)	0.13 (0.09)	0.15* (0.08)	0.13 (0.08)	0.12 (0.08)
EA has crime	-0.03 (0.12)	-0.07 (0.09)	-0.06 (0.09)	-0.07 (0.08)	-0.06 (0.07)
EA thinks married women should work	-0.01 (0.08)	-0.11 (0.07)	-0.10 (0.07)	-0.11* (0.06)	-0.12* (0.06)
EA thinks son's education more important	-0.09 (0.11)	-0.15* (0.09)	-0.16* (0.08)	-0.16* (0.08)	-0.18** (0.07)
Father's age (years)		0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Mother's age (years)		0.01 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Father's education (years)		0.02*** (0.01)	0.02*** (0.01)	0.01** (0.01)	0.01* (0.01)
Mother's education (years)		0.04*** (0.01)	0.04*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Household size		-0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)
Log annual HH income		0.08** (0.04)	0.06 (0.04)	0.05 (0.04)	0.03 (0.03)
Urban		0.08 (0.08)	0.07 (0.08)	0.03 (0.07)	0.03 (0.07)
Caste=SC			-0.19 (0.14)	-0.18 (0.13)	-0.14 (0.13)
Caste=ST			-0.19 (0.14)	-0.18 (0.13)	-0.20 (0.14)
Caste=OBC			-0.19* (0.10)	-0.19* (0.10)	-0.19* (0.11)
Religion=Muslim			0.00 (0.11)	0.02 (0.11)	0.05 (0.11)
Religion=Christian			-0.12 (0.17)	-0.12 (0.16)	-0.08 (0.16)
Religion=Sarna			-0.22 (0.13)	-0.24* (0.13)	-0.22* (0.12)
Age (years)				0.05*** (0.01)	0.04*** (0.01)
NEET (0/1)				-0.25*** (0.06)	-0.14** (0.06)
Married (0/1)				-0.10 (0.09)	-0.06 (0.10)
Participated in any training program				0.36*** (0.09)	0.33*** (0.10)
Lack of social support (0-9)					-0.04* (0.02)
Knows women in business (0/1)					0.19*** (0.06)
Adult connectedness (0-4)					0.10*** (0.03)
Adj. R-sq	0.02	0.09	0.10	0.12	0.14
N	1383	1277	1266	1266	1263

Notes: The self-efficacy variable is a standardized z-score constructed from answers given to the following ten questions on: 'can solve difficult problems if try hard enough'; 'can get what I want'; 'can stick to and reach goals'; 'can deal with unexpected events'; 'can handle unexpected situations due to my talent/skills'; 'can solve most problems if try hard enough'; 'can stay calm in difficulty'; 'can find several ways to solve a problem'; 'can think of a solution when in trouble'; 'can handle whatever comes my way'.

Some of the obvious correlates like mother's paid employment status, decision-making power of the adolescent, has children or not, separate earnings - do not have enough variation in the data or have far too many missing values to make their inclusion meaningful.

Thus, the key finding that appears to be emerging from Tables 2-4 is that self-efficacy appears to be one of the key determinants of aspiration among adolescent girls in Jharkhand, both in terms of education and employment. In terms of key correlates of self-efficacy, individual and household factors like age, previous training experience, and an "enabling" environment i.e. one where girls have family/social support, feel connected and have empowered parents and other successful role models to look up to, appear to be important. Consistent with our results, Darolia and Wydick (2011) find that actions such as parental praise designed to foster an increase in self-esteem result in academic achievement in university undergraduates above what natural ability would dictate.

5c. Discussion of Findings

Our results have implications for the design and assessment of programs aiming to alter girls' educational and economic trajectories, especially by boosting their aspirations. Psychological factors like self-efficacy and mental health appear to be important determinants of adolescent girls' educational and employment aspirations, even after controlling for various objective individual and household characteristics. Hence these hidden forms of human capital could potentially serve as novel but critical targets in programs designed to boost the education and labor market outcomes of women. Importantly, an increasing evidence base shows the potential of interventions to increase youth self-efficacy and mental health in India as well as other countries (Barry et al., 2013; Krishnan & Krutikova, 2013; Leventhal et al., 2015). In Jharkhand, our analyses show that modifiable factors with strong correlations to self-efficacy include social supports, participation in training programs, and exposure to successful women.

However, these results also point to the challenges of evaluating any program aimed at altering girls' life aspirations using non-experimental methods. Such interventions are gaining prominence as potential ways to impact actual life achievements (Schoon and Polek, 2011; Schoon and Parsons, 2002; Goodman and Gregg, 2010). However, as our results indicate, selection will play a key role in who participates in such programs and who is likely to benefit most from them. While some dimensions of skills and ability will surely play a role in participation decisions, certain additional non-measured dimensions are also likely to be at play. It is hoped that the findings of this paper, as well as future work with follow-up surveys, will further our understanding about the magnitude and direction of such selection bias in the process of evaluation of these programs.

6. Conclusion

Evidence is accumulating on the importance of psychologically informed development policies and interventions, as underscored by the *World Development Report 2015*

(World Bank, 2014). This study in Jharkhand expands on this evidence base by including social-emotional variables in a youth survey alongside of more conventional aspirations, education, and employment modules to enable more in-depth analysis of the relationships between these factors. We find that individual psychological factors like self-efficacy and mental health are important determinants of girls' educational and employment aspirations. This suggests that such hidden forms of human capital may constitute critical targets for interventions aimed at altering girls' educational and economic trajectories.

We also identify factors that correlate with girls' level of self-efficacy. We find that individual and household level factors like age, previous training experience, and an "enabling" environment—i.e., one where girls enjoy family/social support, feel connected and have empowered parents and other successful role models to look up to, appear to be important in boosting their sense of self-efficacy. We argue that these findings could usefully inform the design of programs aimed to boost female educational and labor market outcomes.

References

Angrist, J. and V. Lavy (1999) "Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement", *Quarterly Journal of Economics*, 114(2), pp. 533-575

Baldacci, E., B. Clements, et al. (2008). "Social Spending, Human Capital, and Growth in Developing Countries." *World Development* 36(8): 1317-1341.

Bandura, A. (1977) "Self-efficacy: Toward a Unifying Theory of Behavioral Change", *Psychological Review*, 84, 191-215

Barry, M. M., Clarke, A. M., Jenkins, R., & Patel, V. (2013). A systematic review of the effectiveness of mental health promotion interventions for young people in low and middle income countries. *BMC Public Health*, 13(1), 1.

Becker, B. E., and Luthar, S. S. (2002) "Social-Emotional Factors Affecting Achievement Outcomes Among Disadvantaged Students: Closing the Achievement Gap." *Educational Psychologist*, 37(4), pp. 197–214

Blattman, C., J. C. Jamison and M. Sheridan (2015) "Reducing Crime and Violence: Experimental Evidence on Adult Non-Cognitive Investments in Liberia", *SSRN Working Paper No. 2594868*

Blum, R. and M. Ireland (2004) "Reducing Risk, Increasing Protective Factors: Findings from the Caribbean Youth Health Survey", *Journal of Adolescent Health*, 35, pp. 493-500

Bradley, D., P. Noonan, H. Nugent and B. Scales (2008) *Review of Australian Higher Education: Final Report*, Department of Education, Employment and Workplace Relations, Canberra

Chakravarty, Shubha; Lundberg, Mattias K. A.; Danchev, Plamen Nikolov; Zenker, Juliane; Lundberg, Mattias K. A. (2015). The role of training programs for youth employment in Nepal: impact evaluation report on the employment fund. Washington, DC: World Bank.

Church, A. T. (2010). Measurement Issues in Cross-cultural Research. In G. Walford, E. Tucker & M. Viswanathan (Eds.), *The Sage Handbook of Measurement* (pp. 152-175). London: SAGE.

Clausen, J. A. (1993) *American lives: Looking Back at the Children of the Great Depression*, Berkeley, CA: University of California Press

Darolia, R. and Wydick, B. (2011) "The Economics of Parenting, Self-esteem and Academic Performance: Theory and A Test" *Economica*, 78(310), pp. 215-239

Deaton, A. (2003) "Health, Inequality, and Economic Development", *Journal of Economic Literature*, Vol. XLI, pp. 113–158, March

Duflo, E. (2001) "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment", *American Economic Review*, 91(4), pp. 795-813

Ghosal, S., S. Jana, A. Mani, S. Mitra and S. Roy (2015) "Sex Workers, Self-Image and Stigma: Evidence from Kolkata Brothels", Working Paper, University of Warwick

Goldin, C. (2016). Human Capital. In: *Handbook of Cliometrics*. Heidelberg, Germany: Springer Verlag.

Goodman, A., H. Joshi, B. Nasim and C. Tyler (2015) *Social and Emotional Skills in Childhood and their Long-term Effects on Adult Life*, Social Mobility and Child Poverty Commission, Cabinet Office

Haushofer, J. and E. Fehr (2014) "On the Psychology of Poverty", *Science*, 344:862867

Ibrahim, S. and S. Alkire (2007). "Agency & Empowerment: A proposal for internationally comparable indicators." *Oxford Development Studies*.

James, R., M. Anderson, E. Bexley, M. Devlin, R. Garnett, S. Marginson and L. Maxwell (2008) *Participation and Equity: Review of the Participation in Higher Education of People from Low Socioeconomic Backgrounds and Indigenous People*, Universities Australia, Canberra

Krishnan, P. and S. Krutikova (2013). "Non-cognitive skill formation in poor neighbourhoods of urban India." *Labour Economics* 24(0): 68-85.

Kroenke, K. and Spitzer, R.L. (2002). The PHQ-9: a new depression diagnostic and severity measure. *Psychiatric annals*, 32(9), pp.509-515

Kuhnen, C. M., & Melzer, B. T. (2014). Non-cognitive abilities and loan delinquency (pp. 1-19). Working Paper.

Leventhal, K. S., Gillham, J., DeMaria, L., Andrew, G., Peabody, J., & Leventhal, S. (2015). Building psychosocial assets and wellbeing among adolescent girls: A randomized controlled trial. *Journal of adolescence*, 45, 284-295.

Lippman, L., Moore, K. A., Guzman, L., Ryberg, R., McIntosh, H., Ramos, M., & Kuhfeld, M. (2014). *Flourishing children: Defining and testing indicators of positive development*. Springer.

Nehru, V., E. Swanson, et al. (1995). "A new database on human capital stock in developing and industrial countries: Sources, methodology, and results." *Journal of Development Economics* 46(2): 379-401.

Mello, Z. R. (2008) "Gender Variation in Developmental Trajectories of Educational and Occupational Expectations and Attainment from Adolescence to Adulthood" *Developmental Psychology*, 44(4), 1069–1080

Miguel, E. and M. Kremer (2004) "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities", *Econometrica*, Vol. 72, No. 1, pp. 159–217

Schoon, I. and S. Parsons (2002) "Teenage Aspirations for Future Careers and Occupational Outcomes", *Journal of Vocational Behavior*, 60(2), 262–288

Schoon, I., P. Martin, and A. Ross (2007) "Career Transitions in Times of Social Change: His and Her Story", *Journal of Vocational Behavior*, 70(1), 78–96

Schoon, I. and E. Polek (2011) "Teenage Career Aspirations and Adult Career Attainment: The Role of Gender, Social Background and General Cognitive Ability", *International Journal of Behavioral Development*, 35(3) 210–217

Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35-37). Windsor, UK: Nfer-Nelson

Wilson, T. D. (2011) *Redirect: The Surprising New Science of Psychological Change*, Penguin Group, London

World Bank (2014) *World Development Report 2015: Mind, Society and Behavior*. World Bank: Washington, D.C.

Zimmerman, M. (2000). Empowerment theory: Psychological, organizational and community levels of analysis. *American Journal of Community Psychology*, Vol. 23, No. 5