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Positive self-concept predicts youth staying in school longer in India

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Abstract

Research based on youth in the United States and Europe has established the importance of noncognitive skills for successful transitions to adulthood. The influence of noncognitive skills may vary by social and economic contexts, though, and nine in ten youth worldwide live in developing countries where noncognitive skills have not been rigorously studied. I specifically examine the role that self-concept plays in predicting education/work status in the transition to adulthood among youth in Andhra Pradesh, India. Using data from the Young Lives study, I investigate the measurement properties of positive self-concept and use structural equation modeling to examine whether this competence in early adolescence (age 11–12) predicts whether youth (age 18–19) are in school, work, both, or are not currently in education, employment, or training (NEET). Findings suggest that positive self-concept is associated with youth staying in school rather than working, and young women staying in school rather than being NEET, and its effect size is comparable to those of cognitive skills. The present study contributes to the field's understanding of a noncognitive skill, self-concept, in a new setting and points to the importance of future work investigating the role noncognitive skills play in the lives of young people in diverse settings, and the conditions under which these skills are influential.

Keywords

soft skills; noncognitive skills; self-concept; transition to adulthood; education; India

INTRODUCTION

Research across disciplines ranging from educational psychology to economics has established the importance of noncognitive skills¹ for youth and their transitions to adulthood. Evidence has shown that noncognitive skills rival the importance of cognitive

¹Researchers across many disciplines study noncognitive skills, but each discipline uses a different lexicon to refer to these competencies. Economists tend to discuss “noncognitive skills,” a term which was made popular by James Heckman and colleagues (2000). More recently, psychologists have criticized the use of this term, as many of the skills do indeed involve cognition (Lundberg 2016). Within psychology, different sub-disciplines use different language. Developmental psychologists talk about social and emotional learning; personality psychologists generally use the Big Five personality traits to describe these constructs; and positive psychologists tend to discuss “character virtues.” In the applied workforce and educational settings, still more terms are used to refer to these skills, including: behavior skills, core skills, employability skills, generic skills, skills, and, perhaps most commonly, soft skills (Duckworth 2015; Lippman, Ryberg, Carney, & Moore, 2015). Despite the diverse language used to refer to these skills, there are many overlaps between the constructs investigated among the disciplines. This paper studies one specific noncognitive skill, self-concept, and uses the term “noncognitive skills” while acknowledging that many of the “noncognitive skills” actually require relatively

ability when predicting economic and social outcomes among youth, including educational attainment, employment status, wages, and occupational level (Heckman, Stixrud, & Urzua, 2006; Kautz et al., 2014). Furthermore, noncognitive skills tend to be malleable through the adolescent years, meaning that they can be improved with targeted interventions (Heckman & Kautz, 2014).

The extant research on noncognitive skills and status attainment has been conducted almost exclusively in developed countries (Lippman, Ryberg, Carney, & Moore, 2015), yet the vast majority of youth around the world live in developing countries. Whether the existing research is applicable to the 89% of youth that live in a diverse set of developing countries (Gupta et al., 2014) remains to be seen.

The current study introduces a life course perspective to the literature on noncognitive skills by examining a specific noncognitive skill, self-concept, and the role that it plays in predicting education/work status in the transition to adulthood for youth living under constrained social conditions, very different from those previously studied.

This paper begins by reviewing existing research linking positive self-concept to educational and workforce outcomes during this time, and then examines aspects of the Indian context that may impact the role of positive self-concept for youth there. Taking advantage of an unparalleled data collection effort following youth for more than 15 years, analyses examine positive self-concept and its predictive power for youth. First, it asks how self-concept is related to education/work status at ages 18 or 19 in Andhra Pradesh, India. This relationship is then investigated separately by gender and caste, and in comparison to cognitive skills.

IMPORTANCE OF SELF-CONCEPT FOR YOUTH TRANSITIONS FROM SCHOOL TO WORK

Self-concept is a particularly important noncognitive skill for youth. It is foundational to other noncognitive skills, in that it serves as a base on which to build other valuable skills such as social skills and higher-order thinking skills (Lippman et al., 2015). Self-concept is a multi-faceted construct reflecting how an individual feels about him or herself (Marsh & Shavelson, 1985), made up of sub-constructs including self-confidence, self-awareness, self-efficacy and self-esteem (Lippman et al., 2015). Self-efficacy and self-esteem are the two most researched of these sub-constructs. While they are typically thought of as conceptually distinct (Chen, Gully, & Eden, 2001; Zimmerman, 2000), they may actually be highly related. A meta-analysis of 127 studies found that generalized self-efficacy and self-esteem are correlated at a level of 0.85 (Judge, Erez, Bono, & Thoresen, 2002). In fact, some psychologists argue that both self-efficacy and self-esteem are influenced by the same underlying latent construct: core self-evaluations. Core self-evaluations contribute to four noncognitive skills: generalized self-efficacy, locus of control, emotional stability, and self-esteem. Generalized self-efficacy and self-esteem load most strongly onto core self-

high levels of cognition. The term “skill” may also be troublesome to some readers, as some of these skills are not explicitly abilities, but still enable an individual to accomplish a task. In this study, noncognitive skills refers to a broad set of competencies that youth may have outside of the traditional cognitive domains of reading, writing, and math, that enable them to succeed in life, including more abstract and internal skills such as self-concept.

evaluation (Bono & Judge, 2003; Erez & Judge, 2001), and this paper focuses on these two constructs, as they are also the most commonly measured. Because I am focusing on two of the four concepts of core self-evaluations, I call their combination positive self-concept, and will investigate their relationship to one another.

Self-efficacy is a future-oriented construct, classically defined as the belief of having “influence over one’s own behavior” (Bandura, 1982, p. 129). It is focused on “task-specific performance expectations” and can vary from domain to domain (Zimmerman, 2000, p. 84). For example, a person can feel very efficacious when it comes to their math abilities, but less so when it comes to salary negotiation.

There is solid evidence from developed countries linking self-efficacy to positive educational outcomes. Students with higher levels of self-efficacy tend to choose more difficult academic tasks, exhibit more energy on tasks, are more persistent, and set higher goals for themselves (Zimmerman, 2000). Altogether, self-efficacy explains “approximately 14% of the variance in students’ academic performance” (Multon, Brown, & Lent, 1991, p. 34). Previous research has also linked self-efficacy to workforce outcomes (Sadri & Robertson, 1993; Stajkovic & Luthans, 1998). Specifically, job-search self-efficacy predicts college students converting interviews into job offers, the number of job offers received, and receiving job offers at favorable firms (Moynihan, Roehling, LePine, & Boswell, 2003).

Self-esteem is a more global assessment of how an individual views themselves, whether favorably or unfavorably (Adler, Stewart, & Psychosocial Working Group, 2004; Rosenberg, 1965), generally based on past experiences. It is frequently operationalized with the Rosenberg Self-Esteem Scale, which asks general questions about self-satisfaction and how proud a person is of their accomplishments (Rosenberg, 1965).

Research based in developed countries has found that self-esteem is correlated with a number of educational performance outcomes that may encourage students to continue their educational careers, including grade point average and achievement test scores (Baumeister, Campbell, Krueger, & Vohs, 2003). The effect sizes of these relationships are modest, however, and the direction of causality has been questioned. As self-esteem is a subjective self-evaluation, it could be the case that doing well in school raises self-esteem, rather than the reverse, or that both are caused by an unobserved third variable such as intelligence or family background (Baumeister et al., 2003). Nevertheless, research and practice continues to focus on the role of self-esteem on educational outcomes and Baumeister et al. have been criticized for being overly pessimistic in their critique of the literature (Swann Jr., Chang-Schneider, & McClarty, 2007). Research also shows positive relationships between self-esteem and a variety of workforce outcomes (Feinstein, 2000; Fortin 2008; Goldsmith, Veum, & Darity 1997; Murnane, Willett, Jay & Yves 2001; Roberts, Caspi, & Moffitt, 2003). For example, self-esteem is positively associated with the number of job offers received according to a US meta-analysis (Kanfer, Wanberg, & Kantrowitz, 2001).

Taken together, this evidence suggests that self-efficacy and self-esteem help students do well at school, which may encourage them to continue their educational careers and stay in school. At the same time, both skills have been linked to success in job searches, and may

help youth obtain jobs once they decide that they are ready to do so, or the opportunity presents itself. Of course, cognitive skills are also important predictors of educational and workforce outcomes. Research shows that intelligence is a very strong predictor of school grades (Roth, et al., 2015) and job performance (Schmidt & Hunter, 1998). Research has also begun to compare the effect sizes of cognitive and noncognitive abilities, showing that the two types of skills have comparable effect sizes when examining work and educational outcomes (Heckman, Stixrud, & Urzua, 2006; Kautz et al., 2014). This type of relative comparison is important for allocating scarce funding and programmatic planning to improve the lives of youth.

This evidence comes from the developed world, however, and the life course principle of historical time and place, the idea that the “individual life course is embedded in and shaped by historical times and places over a lifetime” (Elder, Shanahan, & Jennings, 2015, p. 32), cautions against applying findings from the western world unilaterally to other settings, such as Andhra Pradesh, India. The transition to adulthood in Andhra Pradesh is very different from transitions observed in the developed world. For example, primary education became compulsory only while the current cohort of youth was in school, the workforce is largely informal, and family formation practices are quite different (see Indian Context section below). Due to these differences in the transition to adulthood, it is not obvious that self-concept would play the same role in this setting as the developed countries in which the reviewed research was conducted.

The nascent evidence on noncognitive skills in developing contexts, in fact, indicates that these skills may be particularly important outside of the developed world. Noncognitive skills may be especially important in informal economies, or jobs not covered by formal government protections such as minimum wage or overtime regulations, which are more common in developing nations. Employers in these sectors recruit employees through social networks and have more freedom in hiring. There may also be additional incentives to hire employees that are confident self-starters in sectors without formal guidelines (Burnett & Jayaram, 2012). Consequently, studies based on developed countries may be less relevant when examining the role noncognitive skills play for the majority of the world’s youth who live in less developed contexts (Gupta et al. 2014).

The limited evidence on the role of positive self-concept in the lives of adolescents in India points to its importance for youth. Small-scale cross-sectional studies of adolescents in India generally show a positive correlation between self-esteem and academic achievement, though this relationship is not always consistent between boys and girls, and directionality is an issue, as noted above (Bhagat, 2016; Das & Pattanaik, 2013). Very recent longitudinal mixed-methods work has also pointed toward youth with high self-efficacy and subjective well-being being more likely to remain in school at age 19 (Singh, Kesarwani, & Mukherjee 2018). Turning to workforce outcomes, in interviews about the skills they were looking for in employees, employers in the cities of Mumbai and Bhopal expressed a need for a willingness to learn and positive thinking and attitude, respectively (Burnett & Jayaram, 2012). This evidence is limited, both in quantity and quality. Therefore, additional research on self-concept is needed to rigorously explore the role of this construct in the lives of youth in this context.

INDIAN CONTEXT

Because India is so different from the contexts in which noncognitive skills have traditionally been studied, both economically and culturally, it is important to ground the present study in the context of India, and Andhra Pradesh in particular.

Education and Employment

Education is rapidly expanding in India, and with the passage of the Right to Free and Compulsory Education Act in 2009, education became compulsory through primary school at approximately age 14 (Morrow, 2013b). Secondary school begins with ninth grade. Then, in 10th grade, at approximately age 15, students take entrance exams for higher secondary school, which goes through 12th grade, or approximately age 18. The private education sector is rapidly expanding in India, and in rural Andhra Pradesh about one-third of students attend private schools (Pratham, 2013; Singh, 2013). While government-run public schools are free, private schools tend to charge tuition at low rates that appeal to non-affluent families. Nevertheless, private school students tend to be more advantaged than public school students (Muralidharan & Sundararaman, 2015). For youth in rural areas of Andhra Pradesh, attending secondary school may require migrating and living away from family in a dorm (Morrow, 2013b). Beyond secondary school, India has moderate rates of tertiary education, with about one in four men and one in five women enrolling in college (World Bank, 2016a, 2016b).

Youth who are not in school are either working or classified as not in education, employment, or training (NEET). Youth labor force participation is relatively low in India, compared to other countries with similar income levels. Just over half of young men ages 15–24 (51%) and less than one in five young women (18%) are in the labor force (World Bank, 2016c, 2016d). A large majority (approximately 84%) of the labor force work is in the informal sector and/or informal employment (International Labour Organization, Department of Statistics, 2012). The largest sectors of the economy in Andhra Pradesh are agriculture, manufacturing, and services (Rao, 2015). Agriculture is no longer seen as a field for youth to aspire to in Andhra Pradesh, however, and the labor market that youth enter after schooling is uncertain (Morrow, 2013b).

After secondary school, the majority of men in India are working, while the majority of women are NEET. Fifty-seven percent of women ages 15–24 are NEET in India, compared to less than 15 % of men. The women are likely married and have housekeeping and childrearing duties (OECD, 2012).

Youth in India and their parents feel a tension between traditional obligations to their families on one hand and a fortified emphasis on education based on western ideals on the other. Education is highly valued, and may be linked to social mobility (Vaid, 2014), but requires sacrifice on the part of families, and its payoffs in the local economy are unknown: “Children and parents seem to be balancing the need for survival in the present against anticipated benefits of schooling in the future” (Morrow, 2013b, p. 267). Education may be the way of the future for youth in India, but investment in schooling is not a sure thing in the present. As a result, a sizeable minority of children go to school and work at the same time.

In-depth interviews with youth in Andhra Pradesh have revealed that working while going to school may be a necessity for children's economic survival rather than a choice. Alternatively, school may be of poor quality and push students to work while they are in school. Regardless of rationale, work may negatively affect children's schooling, as it may draw their time and attention away from their studies (Morrow, 2013a).

This tension between work and schooling, and the values placed on each, contrasts with the transition to adulthood experienced by youth in the United States. In the United States, there is a "college-for-all" ethos, and the vast majority of parents aspire for their children to go to college (Lippman et al., 2008; Spera, Wentzel, & Matto, 2009). Higher education is the clear goal for American youth. This is not necessarily the case in India, and there is some uncertainty in the context of Andhra Pradesh as to whether work or education is a more valued outcome in the present, though education appears to be valued for its potential for long-term payoffs.

The first research question addressed by the present study is: How is self-concept related to youth's education and work status in their transition to adulthood at ages 18 or 19 in Andhra Pradesh, India? Based on the literature from developed countries, and the nascent literature focused on India, I hypothesize that positive self-concept will be an important predictor of whether youth are involved in education, work, or are NEET at this age. Specifically, I predict that positive self-concept will be related to increased odds of being a student and/or working at age 18 or 19, and reduced odds of being NEET (Hypothesis 1).

Gender

In India, youth's opportunities are largely shaped by their gender and caste (Saraswathi, T. S., 1999; Verma, 2000). Differences along gender lines have appeared in parents' educational expectations for their children, enrollment rates, and educational spending. In the past, parents expressed lower educational aspirations for their daughters, and daughters were less likely to be enrolled in school. More recently, daughters and sons were equally likely to be enrolled in school, but with more money spent on boys' education (Morrow, 2013b).

The gender differences in employment are also striking for young Indians. While young women complete education at levels comparable to young men, they are much less likely than men to be in the labor market. Young men are more than twice as likely to work compared to young women. This difference may be partially attributable to cultural norms, including early-arranged marriages that limit opportunities for women to enter the workforce.

In India, women's roles are focused almost exclusively outward toward other people, especially males, rather than inward on themselves and their own goals (Bhogle, 1999; Roy & Niranjana, 2004). Girls are socialized from an early age to focus on the feminine roles of wife, mother, and daughter-in-law, rather than on individual-centered roles such as student or worker. Once a girl has reached puberty, she is considered mature and requires special protection to not become a mother before marriage. In southern India, for example, a young woman is restricted in her relationships with men, and assumes greater responsibility in

household duties such as childcare and cooking. In fact, education is frequently seen as a means to obtaining a suitable partner, rather than as a means to a career as it is for men (Morrow, 2013b; Saraswathi, T. S., 1999).

The second research question of this study addresses whether positive self-concept is related to education/work status in the transition to adulthood in the same way for young men and women. Due to the cultural constraints placed on women's roles, I hypothesize that positive self-concept predicts whether young men are students, employed, or NEET, but that such a relationship does not exist for young women (Hypothesis 2).

Caste

In addition to gender, Indian society is stratified by a complex caste system made up of hereditary groups, distinguished from and linked to one another by occupational division of labor, hierarchy, and separation (Bougle 1958, as cited in Dumont, 1970; Ghurye, 1932). To simplify data collection on the plethora of castes, the Indian government developed four groups of castes: scheduled castes, scheduled tribes, other backward castes, and other castes (Vaid, 2014). In 2006, twenty percent of the population belonged to schedule castes, 9% belonged to schedule tribes, 41% belonged to backward castes, and 31% belonged to other castes ("OBCs form 41% of population: Survey," 2007). The schedule castes, formally known as the untouchables, are located at the bottom of the caste hierarchy, and traditionally were not even considered part of it. Schedule tribes are also low castes, made up of nationally recognized indigenous people. They frequently live in areas isolated from mainstream society, such as mountains and forests (Morrow, 2013a). The backward castes are another group of low castes, and the people making up this category are considered to be "backward" in that they are not proportionally represented in education or professions (Government of India Ministry of Law and Justice, 2015; Government of India Ministry of Social Justice and Empowerment, 2009; Vaid, 2014). With the enactment of the Indian Constitution in 1950, the government began protecting these three groups of castes, together known as dalits, to make up for historical discrimination. The government has reserved a certain number of positions in educational institutions and public-sector employment for people from these low castes (Vaid, 2014). All other castes, which are predominantly upper castes, fall into the other caste category (Galub, Reddy, & Himaz, 2008, p. 2).

Despite the loosening of social norms associated with the caste system, and the affirmative action programs and quotas aimed at combatting India's discriminatory history, caste continues to impact the lives of young people in India. Dalits continue to have fewer opportunities than youth from higher castes, both educationally and occupationally. Educational gaps along caste lines are larger than those along gender lines (Pells 2011, as cited in Morrow, 2013b). Youth from lower castes have lower occupational expectations than their peers from higher castes, even when they attend the same post-secondary schools (Deshpande & Newman, 2007). Those in lower castes, for example, are more likely to continue in the occupations that they were assigned at birth which may require less education than occupations reserved for higher castes (Seiter, 2009). Lower caste youth also have more trouble on the labor market, as they encounter questions in job interviews about their family background, and suitability for high-paying jobs (Deshpande & Newman, 2007;

Vaid, 2014). Youth from lower castes, therefore, may have fewer options in what they are doing as adolescents, limiting the influence of their self-concept.

The final research question asks whether youth from higher and lower castes experience a similar relationship between their self-concept and education/work status in the transition to adulthood. I hypothesize that positive self-concept will not be as important in determining whether youth from low castes are employed, in education, or NEET in comparison with youth from upper castes, as they do not have the same opportunities in their lives (Hypothesis 3).

DATA AND METHODS

Data

Young Lives is an ongoing longitudinal survey with face-to-face interviews of two cohorts of children across four diverse developing countries: Ethiopia, India, Peru, and Vietnam, designed to study the causes and consequences of poverty. The study is conducted by the University of Oxford, with local partnerships in each country.² The present study uses data from the first, second, and fourth waves of data in Andhra Pradesh, India, for the older cohort of children, who were born in 1994–1995 (Boyden et al., 2016).³ The first wave of data was collected in 2002 when participants were seven or eight years old; the second wave was collected in 2006 at age 11–12; and the fourth wave was collected in 2013 at age 18–19.

Young Lives uses a complex multi-stage sampling design. Districts, then sentinel sites or mandals within the districts, and then villages within those mandals were semi-purposefully selected based on their levels of economic, human, and infrastructure development, in order to get broad regional representation of a diverse set of urban and rural communities with an overrepresentation of poor communities (Kumra, 2008). Within each village, households with children of appropriate ages were identified and then children were randomly selected to be part of the sample (Young Lives, 2011). Due to the non-random selection of sampling areas, the data from Young Lives are not nationally or regionally representative, and weights are not provided. However, this sampling technique was considered to be successful by Young Lives, who wrote that “the Young Lives sample includes a wide range of living standards akin to the variability found in the Andhra Pradesh population as a whole” and the sample “covers the diversity of children (in) Andhra Pradesh in a wide variety of attributes and experiences” (Kumra, 2008, p. 3). Although not designed to perfectly represent youth in Andhra Pradesh, the purposive inclusion of youth from a variety of locations with different backgrounds provides the opportunity to test whether associations between self-concept and education/work status in the transition to adulthood hold in a diverse group, as well as how these associations might vary by gender and caste.

²Young Lives has been sponsored by a number of European aid agencies including the UK Department for International Development (DFID), Irish Aid, and the Netherlands Ministry of Foreign Affairs. For additional sponsors, see <http://www.younglives.org.uk/who-we-are/funders>. For a list of local partners, see <http://www.younglives.org.uk/who-we-are/young-lives-partners>.

³In 2014, Andhra Pradesh was split into two states: Andhra Pradesh and Telangana. The same sample of youth continues to be followed in these two states.

Another key strength of the Young Lives data is that they contain multiple items corresponding to self-concept, facilitating measurement testing. In addition, its longitudinal format allows self-concept to be measured before an adolescent's transition to adulthood begins. These data provide one of the first tests of how self-concept relates to education/work status during the transition to adulthood from a general population sample in a developing country.

Missing data

Young Lives has relatively low levels of missing data. The attrition rates for Young Lives are much lower than for other longitudinal studies in similar contexts (Outes-Leon & Dercon, 2008; Young Lives, 2014, 2015). Nevertheless, as with any longitudinal study, there are some missing data. In India, 1,008 children were interviewed at age 7–8 (Round 1), 994 children were interviewed in Round 2, and 952 were interviewed in Round 4 at age 18–19, reflecting 94.4% of the original sample (Young Lives, 2014). These 952 children had data for all three rounds of the survey (Rounds 1, 2, and 4). Missing data is addressed using full information maximum likelihood (FIML) techniques, as is default in Mplus.

Measures

Dependent variables.—The dependent variable, “education/work status in the transition to adulthood,” is measured when youth are 18 or 19 years old (Round 4 in 2013). At this age, youth are on the cusp of adulthood in India. More than half of youth in the study have left school. Thirty-seven percent of women are married, and, of these, more than half have become mothers (Singh & Revollo, 2016).⁴

“Education/work status in the transition to adulthood” is a nominal variable indicating whether an individual is a student, a worker, a student worker, or NEET. This variable is constructed based on four items from Round 4. A youth is considered a student if he or she is currently in full-time education and has not worked on a family farm, worked for someone outside of the household, or worked for their own or a family business in the past week. A youth is considered a worker if he/she reports working for at least one hour in the past week either on a family farm, for someone outside of the household, or for their own or a family business. If a youth reports being in school and working in the past week, they are classified as a student worker. If an individual does not participate in school or work, as defined above, he/she is coded as NEET. Youth who are NEET at age 18–19 are considered idle as they are not in education or employment, and are at-risk as they are disengaged from the social structures in society.

Independent variables.—Self-concept is measured when respondents are 11 or 12 years old (Round 2). The items asked in Young Lives are unique to the survey. Survey developers adapted some of the items from the Rosenberg Self-Esteem Scale frequently used in Western contexts (Dercon & Krishnan, 2009), but a comparison of the original and adapted scales shows that they are quite distinct. I focus on two key skills related to positive self-concept: self-efficacy and self-esteem.

⁴Childbearing is not asked of unmarried women, as this is a very sensitive topic.

A variety of combinations of items in the survey, based on theoretical considerations and previous empirical work, were tested in order to develop the most robust measures of self-efficacy and self-esteem. These analyses are detailed in the methodological appendix.

The items included in the final measure are, for self-efficacy: *If I try hard I can improve my situation in life; I like to make plans for my future studies and work; and If I study hard at school I will be rewarded by a better job in the future*; and for self-esteem: *I feel proud to show my friends or other visitors where I live; I feel proud of the job done my [household head] does; and I am proud of my achievements at school*. The self-esteem items here are more materially focused than those in the original Rosenberg scale. Response options are on a four-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree.”. Positively-worded items were recoded so that higher values indicate higher levels of the construct across all items. Many of the available items were only asked of youth who were in school at age 11–12 (Round 2), and, in order to use these items, the sample was limited to youth who were enrolled in school at age 11–12 in 2006 (n=883; 89% of the sample).

Cognitive skills are also included as independent variables, as they are also related to educational and workforce outcomes, and provide a benchmark against which to compare the effect sizes of self-concept. Cognitive abilities are measured at age 11–12 (Round 2), using the Peabody Picture Vocabulary Test (PPVT-III) to assess verbal ability and a 10-item mathematics achievement test to assess math ability. In the PPVT-III, the administrator reads aloud a vocabulary word, and the respondent selects the picture that best corresponds to that word. Most of the items for the mathematics exam were taken from the Trends in International Mathematics and Science Study (TIMSS). Additionally, respondents were asked to multiply two times seven (Cueto, Leon, Guerrero, & Munoz, 2009).

Gender and caste are measured when youth are seven or eight years old (Round 1 in 2002). In *Young Lives*, caste is broken down into the four categories defined by the Indian government: scheduled tribes, scheduled castes, backward castes, and other castes. For the purpose of these analyses, caste has been dichotomized into lower castes or dalits, made up of the government-protected groups of scheduled tribes, scheduled castes, and backward castes; and upper castes made up of other castes.

Control variables.—The demographic background variables are all measured at the first round of data collection, before self-concept is measured and before the transition to adulthood began. They are lagged in order to address any potential reciprocal relationships with the outcome. The control variables include the child’s household wealth index,⁵ urbanicity, household size, and a dummy variable indicating whether their caregiver has completed primary education.

⁵The household wealth index is an average of three indices corresponding to housing quality, consumer durables, and services (including electricity, water, toilet, and cooking fuel). It can range from zero to one, with higher values indicating more wealth (Kumra, 2008).

Sample

One-half (50%) of the participants in the sample are female, and three-quarters (74%) live in rural areas (see Table 1). On average, they live in a household with 5.6 people (including themselves), with a caregiver who has not completed primary education. Just 32% of youth live with a caregiver who has completed primary education. Less than one-quarter of participants (23%) come from a high caste background.

The education/work status in the transition to adulthood varies considerably by gender (See Figure 1). Two-fifths of both young men and women (39% and 41%, respectively) are in school at age 18–19. Approximately one-third (33%) of young men are working, compared with about one-quarter of young women (27%). Being a student worker is more common for young men, at 22% compared to 7% of young women, while being NEET is more common among young women, at 25% compared to 5% of young men.

Analytic Strategy

Confirmatory factor analysis (CFA) is used to examine the factor structure of self-efficacy and self-esteem. Because all of the indicators are categorical in nature, CFA is conducted using the weighted least squares mean variance (WLSMV) estimator and delta parameterization in Mplus version 7 (Muthén & Muthén, 1998). Analyses use cluster-robust standard errors at the smallest level of village (98 clusters) to account for the nested sampling design of Young Lives. All analyses are unweighted.

A number of measurement models were examined before a final model was chosen. The results for all models are presented in the methodological appendix. Results for the final model are presented in the main text.

The present paper also examines the possibility that self-esteem and self-efficacy are part of an underlying latent construct of positive self-concept empirically with a chi-square difference test between unidimensional and bidimensional models. A single dimension of positive self-concept was preferred over a two-dimensional model with self-efficacy and self-esteem. Consequently, Figure 2 portrays a single latent variable representing positive self-concept.

Once the factor structure is established, Hypotheses 1 through 3 are examined using a series of structural equation models carried out using the final measurement model. The first set of models (see Figure 2) examines whether positive self-concept in early adolescence predicts whether students are involved in education, work, both, or are NEET in late adolescence (*Hypothesis 1*). Models are estimated with a multinomial model operationalized using maximum likelihood estimation (MLR). Two models are run: being a student is the reference category in one set of models, and being NEET is the reference category in the other. The multinomial model is more efficient than a series of two-way comparisons, which is used as a sensitivity analysis. Unstandardized results are presented in the results, but standardized coefficients are used in the text when comparing effect sizes between cognitive and noncognitive skills. These are described as changes in the outcome due to standard deviation changes in the skills.

In order to test Hypotheses 2 and 3, measurement invariance must be established by gender and caste, respectively. This is done in an iterative process. First, configural invariance, which corresponds to whether both groups “conceptualize the constructs in the same way” with the same set of items (Cheung & Rensvold, 2002, p. 235) is tested. Next, thresholds of categorical items are constrained to be equal between groups to test whether respondents in both groups interpret the items in the same way (Millsap & Yun-Tein, 2004). Then, factor loadings are constrained to be equal between groups to test whether both groups exhibit the same relationships between the individual items and the latent construct. Finally, both factor loadings and thresholds are constrained between the two groups. If model fit is sufficient, scalar invariance is achieved, and cross-group comparisons can be made (Cheung & Rensvold, 2002).

Once measurement invariance is established, the structural equation model represented in Figure 2 can be tested in two sets of two-group models, once by gender, and once by caste, and the coefficients relating positive self-concept to the outcome can be compared between groups using Wald tests.

All models are identified by the two-step identification process. The measurement model is identified by the two-indicator rule, and the latent variable model is identified by the recursive rule (Bollen, 1989).

Across models, a series of standard fit statistics are used to judge model fit: the Likelihood Ratio Chi-Square Test, the Comparative Factor Index (CFI), the Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA), and the Bayesian Information Criterion (BIC). A non-significant chi-square value indicates good model fit, as does a CFI value greater than 0.95, a TLI value greater than 0.95, a RMSEA less than 0.05, and a negative BIC value (Bollen, 2016). BIC is calculated and interpreted following Raftery (1995). With large sample sizes, a chi-square test is almost always significant, so it is important to examine a variety of fit statistics (Cheung & Rensvold, 2002; Hooper, Coughlan, & Mullen, 2008).

A series of sensitivity analyses are presented in the appendix. First, a series of two-way comparisons using logistic regression between outcome categories are conducted using the WLSMV estimator in Mplus. While a series of logistic regressions are less efficient than the main multinomial analyses, it does provide a larger array of fit statistics in Mplus. These are used to judge model fit for the main model examining the relationship between positive self-concept and education/work status in the transition to adulthood. For the main model, the multiple operationalizations of positive self-concept will be tested. Additionally, models will be estimated using both the unidimensional final model as well as the bidimensional final model. Finally, a model will be run allowing the positive self-concept measure to correlate with the cognitive skill measures, and the cognitive skill measures to correlate with each other.

RESULTS

Confirmatory Factor Analyses

The confirmatory factor analyses reveal that two models fit the data relatively well (see Table 2 and the methodological appendix). Both models are a hybrid between the original theoretical definition of positive self-concept and a previous empirical definition. One model is unidimensional, meaning there is one latent positive self-concept construct, and the other is bidimensional, with separate latent constructs for self-efficacy and self-esteem. Neither have non-significant chi-square values, and the TLI are just below the 0.95 cut-off. Both models have a RMSEA below the threshold for good fit, CFI values above 0.95, and a negative BIC value.

Overall, the fit statistics for the unidimensional indicate a slightly better fit than the bidimensional model. Furthermore, when freely estimated, as in the bidimensional model, the correlation between self-efficacy and self-esteem is very high at 0.93. A chi-square difference test confirms that the unidimensional model fits the data better than the bidimensional model, though the result is marginally significant. In addition, the BIC difference of approximately 4 provides moderate evidence of the unidimensional model fitting better (Raftery, 1995). The odds of the hybrid unidimensional model fitting the data better than the bidimensional model are 6.8. Factor loadings for the six items from the hybrid unidimensional model vary between 0.5 and 0.8 (see Table 3). Due to its superior fit, hypothesis testing will be carried out using the hybrid unidimensional factor structure, which has a single latent positive self-concept construct.

Measurement Invariance

Before proceeding with testing Hypotheses 2 and 3 around gender and caste, we must establish that the measure of positive self-concept works equivalently for each gender and caste group. Tests of measurement invariance by gender and caste are presented in Table 4. The non-significant p-values in the chi-square difference tests indicate that the positive self-concept construct is scalar invariant by caste. This means that a two-group structural equation model can be used to compare the latent variable's relationship to outcomes between groups.

Positive self-concept is only partially invariant by gender, however. Constraining thresholds to be equivalent between males and females results in worse model fit. If two thresholds are allowed to vary, however, the model passes partial scalar invariance and analyses can proceed as planned (Dimitrov, 2010).

Hypothesis Testing

The main model portrayed in Figure 2 is tested using a multinomial analysis. Mplus does not provide the standard fit statistics with this model, however, so a series of models evaluating two-way comparisons were run to examine model fit. Overall, the model fits the data relatively well. See the appendix for a detailed description of fit statistics.

The model parameters are presented in Figure 3 and Table 5. Youth with higher levels of positive self-concept are more likely to be in school than working, more likely to be student workers than NEET,⁶ and may be more likely to be in school than NEET. A one standard-deviation increase in positive self-concept increases the odds that a young person is in school rather than working by 35%, increases the odds that a young person is a student worker rather than NEET by 29% and increases the odds that a young person is in school rather than NEET by 23%. These effect sizes are comparable to those for cognitive abilities. A one standard-deviation increase in vocabulary score increases the odds that a young person is in school rather than working by 1%, and a one standard-deviation increase in math ability increases the odds that a young person is in school rather than working by 14%, is in school rather than being NEET by 21%, and is a student worker rather than being NEET by 26%. There is no relationship between positive self-concept and being a student worker, compared to being in school without working or working compared to being NEET. These findings generally support Hypothesis 1, that positive self-concept increases the likelihood that youth are in school or work, and decreases their chances of being idle, though findings are more strongly related to being a student than being a worker.

A two-group model by gender, allowing two thresholds to vary between groups according to the measurement invariance test presented above, was used to test whether positive self-concept exhibits a similar relationship with education/work status in the transition to adulthood for young men and women. There are no mean differences in positive self-concept between the genders. For young men, positive self-concept is largely unrelated to whether they are working, in school, or NEET, with the exception being that higher levels of positive self-concept actually increase the odds of a young man being NEET rather than working (see Table 5)⁷. For young women, however, positive self-concept reduces the likelihood that a young woman is working or NEET, rather than a student. A one standard-deviation increase in positive self-concept is associated with a 38% increase in the odds that a young woman is in school rather than working and a 59% increase in the odds that a young woman is in school rather than NEET. The difference in coefficients for men and women is nonsignificant for the work versus school comparison, but is significant at the $p < .05$ level for the NEET versus school and NEET versus working comparisons, according to a Wald Test. This finding does not support Hypothesis 2, which predicted that positive self-concept would be more influential for men than women.

Similarly, a multi-group model was used to test whether the relationship between positive self-concept and education/work status in the transition to adulthood varies by caste. Positive self-concept is scalar invariant by caste, so factor loadings and thresholds are constrained to be equal between the two groups. The mean value of positive self-concept is higher among high-caste youth than low-caste youth. For both high and low caste groups, positive self-concept reduces the odds of working rather than being in school at age 18–19, but is not related to being NEET or a student worker relative to being in school. Additionally, positive self-concept increases the odds of being a student worker rather than being NEET for youth

⁶This finding is less stable than the others. See the appendix for sensitivity analyses.

⁷Standardized results (not presented) also show that men with higher levels of positive self-concept are also more likely to be NEET than in school.

from low caste groups. However, there were no significant differences in positive self-concept coefficients between the two caste groups. This finding does not support Hypothesis 3, which predicted that positive self-concept would be more influential for youth from high castes.

DISCUSSION

The confirmatory factor analyses revealed that, among this sample of 11–12 year olds in Andhra Pradesh, the indicators I selected based on the definitions of self-efficacy and self-esteem are best represented as one construct rather than two, as they are frequently operationalized in the Western psychological literature. Positive self-concept is driving young adolescents' responses to questions designed to tap self-efficacy and self-esteem separately. This finding confirms earlier psychometric work (Bono & Judge, 2003; Erez & Judge, 2001; Judge et al., 2002). It could also be evidence of a developmental difference between the young adolescents examined in this study (ages 11–12 when positive self-concept was measured) and the older adolescents and adults for whom the scales that inspired the items used were originally developed. Alternatively, this finding could reflect a cultural difference between the Western contexts where self-esteem and self-efficacy were developed and validated as constructs, and (mostly rural) India where this study took place. In this setting of high poverty, self-efficacy and self-esteem may not be separate constructs. How a person feels about him or herself may be driven by their self-efficacy just as much as their material possessions, as self-esteem is measured in this study. Independent of the source of these differences, it is important for future researchers to consider that items meant to measure distinct noncognitive skills may be more appropriately modeled as one or a few general constructs than a series of related constructs, as they may be so interrelated to introduce multicollinearity problems and hide true relationships.

While I hypothesized that positive self-concept would increase the likelihood that a youth was in school or working rather than being idle, the full set of analyses found that positive self-concept is most related to an increased likelihood of youth being in school. More specifically, positive self-concept increases the likelihood that youth in general are in school rather than working or are student workers rather than NEET, and that young women are in school rather than NEET. This finding could reflect changing norms in India around the value of education. Youth with more positive self-concept may be able to attain the most idealized outcome (continuing education) rather than working which may be more valued in the present moment.

Because Young Lives includes measures of both cognitive and noncognitive skills, this study is able to compare the effect sizes of each domain. In this sample, positive self-concept and cognitive skills, as measured by vocabulary and math test scores, are associated with education/work status in the transition to adulthood with similar magnitudes. A one standard-deviation increase in positive self-concept is associated with a 23 to 35% increase in the odds of youth being in in the overall sample (depending on the reference category), while a one standard-deviation increase in vocabulary or math scores is associated with an increase in the odds of being in school of 1 to 26%. The effect size of positive self-concept, then, is not negligible, especially considering that it was measured in early adolescence, six

years before the outcome. Many resources are devoted to cognitive abilities in resource-poor settings such as this, but this evidence indicates that investments in noncognitive skills may also be fruitful pursuits.

The evidence did not support Hypotheses 2 or 3, that groups with higher social status (young men and youth from high castes) would benefit more from positive self-concept. Rather, positive self-concept was more influential for young women than for young men, and positive self-concept had similar relationships regardless of caste.

Young women are far more likely to be NEET than men, likely as young wives and mothers. Of the young women who are NEET, three-fifths (61%) are married, compared with just one-fifth (19%) of the young women who are not NEET. A girl's self-concept at age 11 or 12 predicts whether or not she is NEET six years later. Girls are treated differently in India than boys. They are expected to orient their lives outward toward others (husbands and family members) rather than focusing on themselves. Their parents may have lower educational expectations for them, and they may be assigned to arranged marriages at an early age. An 11-or 12-year old girl with a high self-concept may be able to push back against her parents' expectations and wishes and postpone her arranged marriage and stay in school longer. Alternatively, there may be an issue of reverse causality, despite the measurement of positive self-concept in early adolescence. It may be that age at 11 or 12 a girl has already internalized her parents' expectations for her, whether that be low educational expectations, or already being assigned to an arranged marriage. Thus, a young girl may feel that she does not have control of her life and may be more likely to drop out of school in the near future.

Studies of noncognitive skills typically examine their influence on undifferentiated samples. The differences in findings by gender found in this study are novel and should be considered in future research. It is important for future research to also consider the measurement invariance of positive self-concept and other noncognitive skills between social groups such as class and gender. Additionally, future work should dig into the mechanisms through which positive self-concept and other noncognitive skills are linked to youth outcomes. This may be best accomplished with in-depth interviews.

This study has a number of limitations. While Young Lives provides one of the first opportunities to rigorously evaluate the role of noncognitive skills outside of the developed world, its data are not perfect. The data were not designed to be representative of India as a whole, or of Andhra Pradesh as a region, limiting the generalizability of the findings presented here. Nevertheless, the data provide a unique opportunity to examine youth as they transition to adulthood. As they are currently undergoing this transition, though, it is impossible to know how positive self-concept will influence their long-term trajectories. As more data are released, it will be important to continue this line of inquiry. Young Lives also has a limited classification scheme for caste. Many diverse people are classified into the "other caste" grouping, and their heterogeneity may mask findings related to caste.

Additionally, the measures of positive self-concept available in Young Lives are not comparable to those frequently used in developed countries. The measures in Young Lives

were not asked of all youth, and therefore this study is limited to youth who were enrolled in school at age 11–12. These youth may be more advantaged than those not enrolled in school, and so these results may not be applicable to the most disadvantaged children. Finally, due to limitations in Mplus, I am not able to obtain fit statistics for the two-group models by gender and caste. Therefore, we do not know whether breaking down analyses by groups improves model fit or is more congruent with the data.

In addition to the future research directions stemming from this study, there are potential practice implications as well. Since self-concept is malleable (Lippman et al., 2015; Wigfield, Eccles, MacIver, Reuman, & Midgley, 1991; Zimmerman, 2000), it could be a point of intervention for programs seeking to improve outcomes for youth, both generally, and with regards to gender equality. Because positive self-concept is more influential for young women than for young men in this sample, programs aimed at increasing women's self-concept may also increase how long they remain in school relative to young men. As education is linked to social mobility, interventions targeting positive self-concept may help young women play more important roles in their society.

The present study builds on work demonstrating the importance of noncognitive skills in the Western world, and contributes to the field's understanding of noncognitive skills in an understudied setting, providing evidence of their link with prolonged education. It is an important first step in understanding the role that noncognitive skills play for the nine in ten youth that live outside of the Western world, but this relationship may be context-specific as it is also gender-specific, and future work should continue to investigate the role that noncognitive skills play in the lives of young people in diverse settings, and under what conditions these skills are influential.

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METHODOLOGICAL APPENDIX

Positive Self-Concept Measure

A series of operationalizations of positive self-concept were examined, based on previous empirical and theoretical work. A previous study using Young Lives operationalized self-efficacy and self-esteem as separate constructs. These constructs were described as “latent variable(s)” (Dercon & Krishnan, 2009, p. 142), but were not treated as such. Instead, items for each construct were standardized and averaged together to form a conventional scale score without examining whether these constructs reflected the underlying structure of the

data. These two constructs were each considered to be multidimensional and related by their creators. Nevertheless, Cronbach's alpha values are reported for these scales, and are not very impressive, at 0.67 and 0.59, respectively. The authors attribute these low values to the idea that each construct is multidimensional, and Cronbach's alpha not being very meaningful (Dercon & Krishnan, 2009). Despite their theoretical ideas that self-efficacy and self-esteem are two related latent multidimensional constructs, the authors do not investigate the potential multidimensionality of their constructs, or the relationship between their constructs through applicable techniques such as structural equation modeling. I have adapted their measures of self-esteem and self-efficacy to exclude items that are not relevant to a large majority of respondents (see Table A1), and examined the factor structure of their constructs.

As an alternative operationalization, I selected items from Young Lives that correspond to each of these skills based on the definitions outlined above, and my theoretical understanding of the constructs. This model is referred to as the "theoretical operationalization" in Table A1. Additional items were considered, but they were only applicable for a small sub-sample of respondents (i.e., those that were employed at age 11–12), so they were not included in analyses. Descriptive statistics for the items that did not make it into the final model are provided in Table A2.

Table A1.

Young Lives items corresponding to self-efficacy and self-esteem

Self-efficacy		Self-esteem	
Dercon & Krishnan operationalization	Theoretical operationalization	Dercon & Krishnan operationalization	Theoretical operationalization
If I try hard I can improve my situation in life	If I try hard I can improve my situation in life Other people in my family make all the decisions about how I spend my time	I feel proud to show my friends or other visitors where I live I am ashamed of my clothes	I feel proud to show my friends or other visitors where I live I am ashamed of my clothes
I like to make plans for my future studies and work		I feel proud of the job done my [household head] does	
If I study hard at school I will be rewarded by a better job in the future	If I study hard at school I will be rewarded by a better job in the future	I am often embarrassed because I do not have the right books, pencils or other equipment for school I am proud of my achievements at school I am worried that I don't have the correct uniform	I am often embarrassed because I do not have the right books, pencils or other equipment for school I am proud of my achievements at school

Note: Bold items were included in the final hybrid operationalization. Items that are struck-through were excluded from analyses in the present study because they do not apply to a large majority of respondents.

Table A2.

Descriptive statistics for positive self-concept items not in final measure

Variable	N	Mean/ Percent	Standard Deviation
Positive self-concept observed items (1=strongly agree; 4=strongly disagree)			
Other people make all the decisions	869	1.68	0.95
Ashamed of clothes	881	3.67	0.77
Embarrassed about school supplies	882	3.30	1.08
Worried don't have correct uniform	870	3.53	0.92
Vocabulary test score	864	93.12	22.42
Math test score	880	5.57	1.88

Source: Young Lives, India 2006–7

Empirically, the operationalization of self-efficacy and self-esteem proposed by Dercon and Krishnan (2009) was examined first. Next, the theoretical model was examined. The results from these two models were used to develop a hybrid model including items from both the Dercon and Krishnan model and the theoretical model. Each operationalization was tested twice in order to test whether self-efficacy and self-esteem are driven by one underlying positive self-concept latent construct.

The confirmatory factor analyses reveal that the operationalization of self-efficacy and self-esteem proposed by Dercon and Krishnan (2009) fit the data poorly (See Table A3).⁸ The theoretical model has better fit, but its CFI, TLI, and RMSEA values are all outside of preferred cutoffs. The hybrid model was constructed by using all items from the Dercon and Krishnan and theoretical models, running a confirmatory factor analysis, and then removing four items that had r-squared values far below the rest of the items, and rerunning the analysis. The hybrid unidimensional model is the final model.

⁸A chi-square comparison test between the nested unidimensional and bidimensional models indicates that the bidimensional structure is superior to the unidimensional structure. However, previous studies have shown that this test can be misleading when a model does not fit the data well, and this finding should not be used as evidence against a unidimensional structure of positive self-concept (Bollen & Grandjean, 1981).

Table A3.

Confirmatory factor analysis model fit

	Chi-square	DF	P-value	CFI	TLI	RMSEA	BIC
Dercon & Krishnan	261.36	26	0.000	0.766	0.676	0.191	84.99
Bidimensional Model							
Dercon & Krishnan	279.91	27	0.000	0.748	0.665	0.103	96.76
Unidimensional Model							
Theoretical	48.98	13	0.000	0.896	0.833	0.056	-39.20
Bidimensional Model							
Theoretical	50.00	14	0.000	0.896	0.844	0.054	-44.97
Unidimensional Model							
Hybrid Bidimensional Model	25.71	8	0.001	0.970	0.944	0.050	-28.56
Hybrid	28.66	9	0.001	0.967	0.944	0.050	-32.39
Unidimensional Model							
Chi-square difference	3.37	1	0.067				

Hypothesis Testing

The main model, portrayed in Figure 2 in the main text, is tested using a multinomial analysis. However, Mplus does not provide the standard fit statistic in this model. To evaluate model fit, a series of logistic regression models were run. Table A4 presents fit indices for this series of models, each a different comparison between being a student and another outcome category. In all except one comparison, the chi-square value is significant. CFI values range from 0.898 to 0.961, and TLI values range from 0.874 to 0.952, almost all below the traditional cutoff of 0.95. However, all of the models have RMSEA values less than 0.05 and negative BIC values. Overall, the model fits the data relatively well.

Table A4.

Model fit for structural equation model relating positive self-concept to education/work status in the transition to adulthood

	N	Chi-square	DF	P-value	CFI	TLI	RMSEA	BIC
School v Work	583	99.48	62	0.002	0.898	0.874	0.032	-295.35
School v NEET	458	91.08	62	0.010	0.935	0.920	0.032	-288.79
School v School & Work	454	85.98	62	0.024	0.921	0.902	0.029	-293.34
School & Work v NEET	244	77.98	62	0.083	0.961	0.952	0.033	-262.84
Work v NEET	373	83.420	62	0.036	0.940	0.925	0.030	-283.72

Sensitivity Analyses

The findings presented above are fairly robust to a number of sensitivity analyses. With two exceptions, the main findings that positive self-concept reduces odds of working, and marginally reduces odds of being NEET compared to being a student or a student worker⁹, is robust across the different operationalizations of positive self-concept explored above (the Dercon and Krishnan model, the theoretical model, and the hybrid model). The exceptions are that while the relationship between positive self-concept and being NEET rather than in school was marginally significant in the main models, it lost statistical significance with the Dercon and Krishnan operationalization of positive self-concept, and that while the relationship between positive self-concept and being NEET rather than a student worker was statistically significant in the main models, it was reduced to marginal statistical significance with the Dercon and Krishnan operationalization. Main effect findings are also generally robust whether analyses are conducted as a series of two-way comparisons using WLSMV or in a multinomial framework using MLR. When run as a series of logits, positive self-concept is not related to being a student worker relative to being NEET, but is negatively related to working rather than being NEET. The effects in the two-group models with the final hybrid operationalization of positive self-concept are also generally comparable between a series of two-way logit comparisons and a multinomial analysis.⁹

I also tested the full structural equation model including self-esteem and self-efficacy as individual constructs, as in the bidimensional confirmatory factor analysis, as an additional robustness analysis. The two dimensions are too highly correlated, however, and the

⁹Findings presented above are based on the multinomial analyses, as it is more efficient. When using a series of logit comparisons, the following changes in statistical significance take place: the relationship between positive self-concept and being in school versus a student worker becomes marginally significant for males and youth from low castes; the relationship between positive self-concept and being a worker versus NEET decreases in statistical significance to marginally significance for men; and the relationship between positive self-concept and being a student worker versus NEET loses significance for youth from low castes. A few control variables gain or lose significance according to the $p < .05$ threshold as well.

estimates of the relationship between the two dimensions and the outcomes and their associated standard errors are highly inflated.

Finally, I tested a model that allows the latent positive self-concept measure to correlate with the cognitive skill measures, and the cognitive skill measures to correlate with one another. In this model, positive self-concept is correlated with the vocabulary score at 0.16, and with the math score at 0.16. The cognitive measures correlate with each other at 0.55. Allowing for these correlations does not change the main results, so the parsimonious model is presented in the text.

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Figure 1.
Education/work status in the transition to adulthood, by gender

Figure 2.
Structural equation model relating positive self-concept to education/work status in the transition to adulthood

Figure 3.
Selected relative risk ratios relating positive self-concept and cognitive measures to
education/work status in the transition to adulthood

Table 1.

Descriptive statistics

Variable	N	Mean/ Percent	Standard Deviation
<i>Control Variables (Round 1)</i>			
Household size	883	5.57	2.09
Wealth index	883	0.42	0.20
Gender (female)	883	50%	
Caregiver education (caregiver has primary education)	883	32%	
Urbanicity (rural)	883	74%	
Caste (high caste)	883	23%	
<i>Independent Variables (Round 2)</i>			
Positive self-concept observed items (1=strongly agree; 4=strongly disagree)			
If I try hard I can improve my situation *	880	3.88	0.39
Like to make plans for future *	872	3.57	0.74
If I study hard I will be rewarded *	875	3.79	0.53
Proud of where I live *	883	3.69	0.67
Proud of job of household head *	862	3.69	0.67
Proud of school achievements *	875	3.47	0.78
Vocabulary test score	864	93.12	22.42
Math test score	880	5.57	1.88
<i>Dependent Variable (Round 4)</i>			
Education/work status in the transition to adulthood			
Worker only	845	30%	
Student only	845	40%	
Worker and student	845	15%	
NEET	845	15%	

* Item was reverse coded so that a higher value indicates more of the concept Source: Young Lives, India 2002, 2006–7, 2013

Table 2.

Confirmatory factor analysis model fit

	Chi-square	DF	P-value	CFI	TLI	RMSEA	BIC
Hybrid Bidimensional Model	25.71	8	0.001	0.970	0.944	0.050	-28.56
Hybrid Unidimensional Model	28.66	9	0.001	0.967	0.944	0.050	-32.39
Chi-square difference	3.37	1	0.067				

N=883

Table 3.

Factor loadings for the hybrid unidimensional model

	Factor Loading	Standard Error
If I try hard I can improve my situation	0.699	0.056
I like to make plans for my future	0.636	0.044
If I study hard I will be rewarded	0.723	0.052
Proud of where I live	0.647	0.043
Proud of household head's job	0.642	0.044
Proud of school achievements	0.573	0.043

N=883

Note: Items were reverse coded so that a higher value indicates more of the concept.

Table 4.

Tests of measurement invariance by gender and caste

Parameters Constrained	Gender										
	Chi-square	DF	P-value	CFI	TLI	RMSEA	BIC	Chi-square difference test			
								Chi-square	DF	P-value	
None (configural invariance)	41.115	18	0.002	0.967	0.946	0.054	-80.552				
Thresholds	63.348	27	0.001	0.949	0.943	0.055	-119.152	24.422 ^b	9	0.004	
Thresholds (partial) ^a	52.370	25	0.001	0.961	0.954	0.050	-116.611	11.383 ^b	7	0.123	
Factor loadings (metric invariance)	40.381	23	0.014	0.976	0.968	0.041	-115.082	5.297 ^b	5	0.381	
Thresholds ^a and factor loadings (partial scalar invariance)	50.535	30	.0109	0.971	0.971	0.039	-152.243	6.987 ^c 13.459 ^d	5 7	0.222 0.062	
Parameters Constrained	Caste										
	Chi-square	DF	P-value	CFI	TLI	RMSEA	BIC	Chi-square difference test			
								Chi-square	DF	P-value	
None (configural invariance)	49.748	18	0.001	0.951	0.918	0.063	-71.919				
Thresholds	60.345	27	0.000	0.941	0.943	0.053	-122.155	10.776 ^b	9	0.291	
Factor loadings (metric invariance)	41.071	23	0.012	0.972	0.964	0.042	-114.392	2.498 ^b	5	0.777	
Thresholds and factor loadings (scalar invariance)	48.362	32	0.032	0.975	0.976	0.034	-167.934	2.427 ^c 8.940 ^d	5 9	0.788 0.445	

^aOne threshold corresponding to each of the following two variables were allowed to vary between the two groups: I like to make plans for my future studies and work; and I am proud of my achievements at school.

These thresholds were identified using modification indices.

^bChi-square difference test compared to the configural model

^cChi-square difference test compared to the threshold model

^dChi-square difference test compared to the metric model

N=883

Table 5.

Relative risk ratios for structural equation models relating positive self-concept to education/work status in the transition to adulthood

	School v Work	School v NEET	School v School & Work	School & Work v NEET	Work v NEET					
Single-group model										
Self-concept	1.26 **	1.17 +	0.90	1.29 *	0.92					
Vocabulary	1.02 ***	1.01	1.01	1.00	0.99					
Math	1.18 *	1.26 **	1.02	1.24 *	1.07					
Household size	0.99	1.00	1.00	1.00	1.01					
Wealth index	10.86 **	15.07 ***	1.28	11.75 **	1.39					
Female	1.35	0.22 ***	3.79 ***	0.06 ***	0.16 ***					
Caregiver educ	2.59 *	1.51	1.76 *	0.86	0.58					
Rural	0.82	2.47 **	0.33 ***	7.44 ***	3.00 **					
High caste	1.26	1.69 *	1.27	1.33	1.34					
Two-group model by gender										
M	F	M	F	M	F					
Self-concept	1.16	1.35 *	0.66	1.35 *	0.80	1.06	0.83	1.27	0.57 *	1.00 *
Vocabulary	1.01	1.03 **	1.00	1.01	1.00	1.01	1.00	1.00	0.99	0.99
Math	1.22 *	1.13	1.35 +	1.26 **	1.03	1.02	1.32 +	1.23	1.11	1.11
Household size	0.96	1.04	0.91	1.07	0.97	1.08	0.94	0.99	0.95	1.03
Wealth index	42.18 **	2.78	10.41 +	9.99 **	4.45	0.11 +	2.34	91.01 **	0.25	3.60
Caregiver educ	2.12 *	3.27 **	1.76	1.50	1.14	6.55 *	1.55 *	0.23 *	0.83	0.46
Rural	1.68	0.26 *	1.88	2.03 +	0.35 **	0.43	5.33 *	4.73 *	1.12	7.69 ***
High caste	0.85	2.03 +	0.71	2.56 **	1.16	1.20	0.59	2.14	0.83	1.26
Two-group model by caste										
Low	High	Low	High	Low	High	Low	High	Low	High	High

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	School v Work	School v NEET	School v School & Work	School v School & Work	School & Work v NEET	Work v NEET
Self-concept	1.23 *	1.43 *	1.20	0.98	1.40 *	0.97
Vocabulary	1.01 *	1.03 *	1.00	1.03 +	1.00	0.99
Math	1.14 +	1.61 **	1.26 *	1.23	1.21	1.10
Household size	0.99	0.93	0.95	1.47 *	0.96	0.96
Wealth index	8.34 **	42.1 +	10.79 **	48.09 *	7.18 +	81.94 *
Female	1.07	4.34 *	0.16 ***	0.58	0.04 ***	0.15 **
Caregiver educ	2.62 **	3.20 +	2.00 +	0.67	1.20	0.32 +
Rural	0.78	0.92	2.82 **	1.87	7.64 **	7.87 **
					3.63 ***	2.04

+ p<.10

* p<.05

** p<.01

*** p<.001

N=862