



DIRECTIONS IN DEVELOPMENT
Human Development

Minds and Behaviors at Work

*Boosting Socioemotional Skills for
Latin America's Workforce*

Wendy Cunningham, Pablo Acosta, and Noël Muller



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Abstract

Latin America has shown impressive growth in educational attainment over the past two decades—but that education has failed to yield the expected benefits. A mounting body of research and policy debates suggests that the quantity of education is not an adequate metric of human capital acquisition. Rather, individuals' skills—what people actually know and can do—should stand as policy targets and be fostered across the life cycle. Evidence from around the world suggests that employers require both cognitive and socioemotional skills and that both types of skills are associated with a range of positive employment and educational attainment outcomes.

Minds and Behaviors at Work: Boosting Socioemotional Skills for Latin America's Workforce synthesizes original empirical research on the role of cognitive and socioemotional skills in shaping adults' labor market outcomes in Bolivia, Colombia, El Salvador, and Peru. This work is put in perspective with insights from similar studies in other Latin American countries and high-income countries. The findings show that cognitive skills matter for reaping labor market gains in terms of higher wages and job formality in Latin America but so do socioemotional skills. Moreover, socioemotional skills seem to have a particularly strong effect on labor force participation and tertiary education attendance as a platform to build knowledge. *Minds and Behaviors at Work* also presents a policy framework for developing skills by providing insights from developmental psychology about when people are neurobiologically, socioemotionally, and situationally ready to develop socioemotional skills and provides examples of interventions that combine socioemotional learning and cognitive development.

This book will be of importance to policy makers, researchers, and anyone else interested in human development, in Latin America and beyond. In particular, this book will be most valuable for the curious minds wondering how our mental abilities and behaviors shape our education and employment trajectories, and how to foster these abilities along our lives.

Acknowledgments

“No one can whistle a symphony,” said Halford E. Luccock, an American Methodist minister. “It takes a whole orchestra to play it.” This volume is no exception and would not have been possible without the contributions of a number of colleagues.

This volume builds on a series of background papers prepared by a core research team and other contributors. Wendy Cunningham, Pablo Acosta, and Noël Muller led the World Bank regional study and prepared this volume (unless stated otherwise, contributors were World Bank staff at the time of publication). In addition to the main authors, the core research team included Juan D. Barón, Ana María Oviedo, Mónica Parra Torrado (National Department of Planning of Colombia), and Miguel Sarzosa (Purdue University, USA).

Several other people also made valuable contributions, which are gratefully acknowledged. Nancy Guerra (University of Delaware, USA) and Kathryn Modecki (Murdoch University, Australia) cowrote the background paper on the PRACTICE taxonomy of socioemotional skills. Paula Villaseñor (Undersecretariat of Upper-Secondary Education of Mexico) drew policy directions in the background paper on employers’ demand for skills. Sergio Urzúa (University of Maryland, USA) provided suggestions on and meticulously reviewed the early development stage of the study methodology. Alexandría Valerio and María Laura Sanchez Puerta coordinated the World Bank’s STEP survey collection and provided technical assistance with the data. Natalia Millán contributed to the data collection of Colombia’s STEP Household survey and preliminary data analysis. José Mola (Universidad Tecnológica de Bolívar, Colombia) provided research assistance for the background paper on skills and labor outcomes in Bolivia.

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Executive Summary

Parents, teachers, and economic theory tell us that if we study hard, we will get good jobs, earn high salaries, and achieve professional success. Like the rest of the world, Latin American countries subscribe to this assumption. Countries of the region witnessed tremendous progress in education attainment over the past two decades. Between 1990 and 2010, the proportion of people entering the labor force (age 20–24) who had completed secondary education increased from 35 percent to 55 percent, and the average years of schooling of the labor force increased from 8.2 in 1990 to 10.2 in 2010 (Barro and Lee 2013; Bruns and Luque 2014).

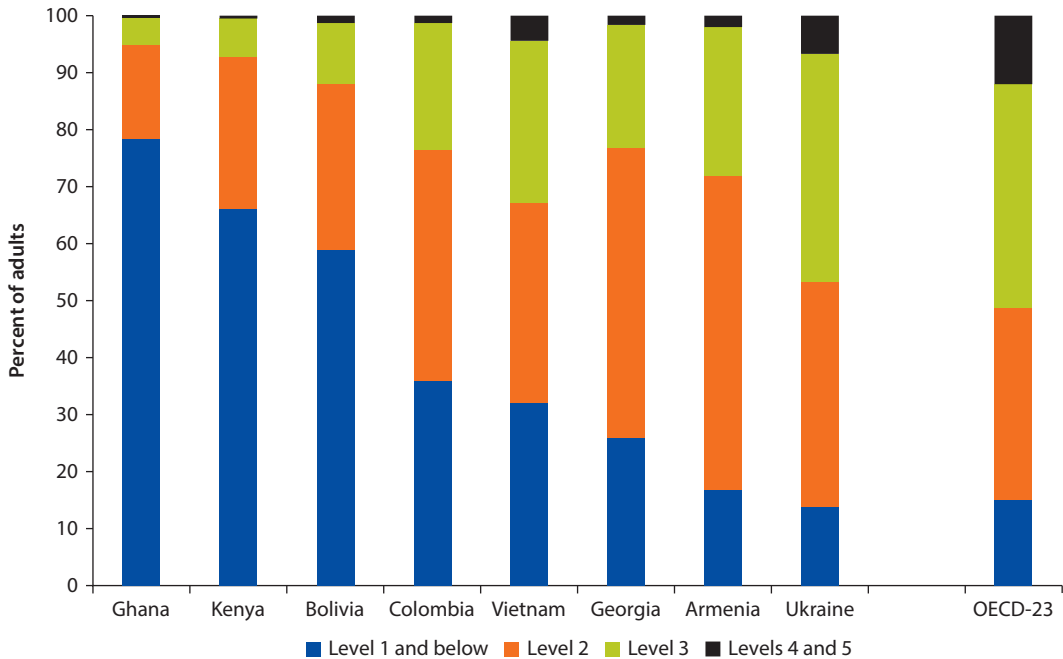
But recent evidence suggests that more schooling may not deliver the benefits promised. The rewards to acquiring higher levels of education actually declined in most Latin American countries over the past two decades, and workers in the region did not substantially improve their productivity (Pagés 2010; Aedo and Walker 2012; Gasparini and others 2011). Employers around the world, including in Latin America, lament the lack of adequate skills of current and prospective employees.

Are Skills Deficits the Problem?

A tweak to the traditional advice may be necessary: Perhaps it is more and better skills, rather than more education, that matter (Hanushek and Woessmann 2008; Hanushek 2015).

New data from Bolivia and Colombia suggest that years of education only partially reflect what people can actually do. For example, half of Bolivian tertiary school graduates have the same level of reading proficiency as do half of those who only graduated from secondary school.

International assessments of adults' skills show that, despite the surge in schooling, Latin America's labor force is lagging. The ability of adults in Bolivia and Colombia to understand and reflect on written texts remains lower than that of their peers in countries at similar levels of economic development: A third of Colombian adults display only a basic level of proficiency (that is, they can perform reading tasks only from short pieces with no or little competing information) (figure ES.1), compared with only 15 percent of adults in Ukraine (where per capita GDP is 30 percent lower than that of Colombia) and member countries of the Organisation for Economic Co-operation and Development (OECD).

Figure ES.1 Adult Reading Proficiency Levels in Selected Countries, 2012–13

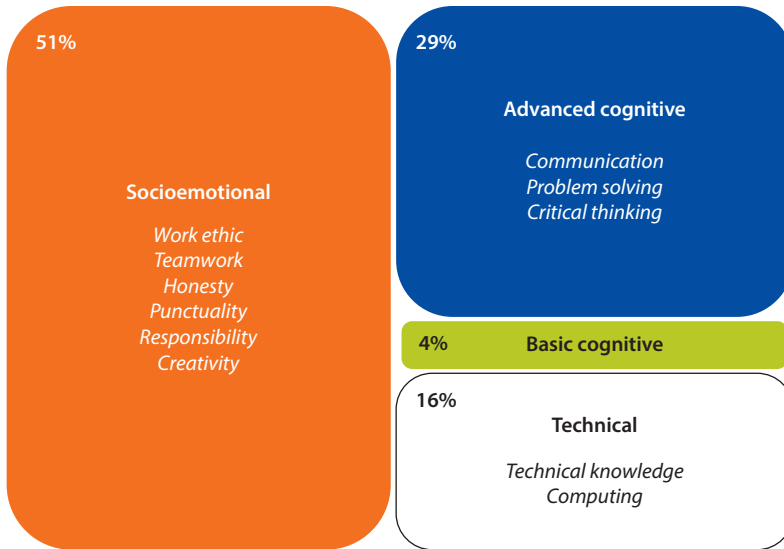
Sources: World Bank's STEP Household Surveys (2012–13) and OECD's Program of International Assessment of Adult Skills (PIAAC) data (2013).

Note: Each score level corresponds to a set of reading and analytical abilities measured by the test. Level 1 and below is the lowest level; level 5 is the highest level. Higher levels of proficiency indicate the ability to perform more complex tasks on longer and harder written materials. See ETS (2014) and table 2.1 for details of the reading proficiency levels.

The concept of skills itself may need to be reexamined in the context of the rapidly changing nature of work. Jobs are changing, the tasks required by those jobs are evolving, and workers are frequently changing jobs. Skills therefore no longer refer only to job-specific knowledge but rather to a set of attributes needed to navigate across life situations and jobs that are increasingly complex in nature. In Brazil, Chile, Costa Rica, and the United States, the number of jobs that require predominantly routine manual skills has decreased since the 1980s, while the number of jobs using nonroutine analytical skills has grown (Aedo and others 2013). Around the world, employers report greatly valuing the skills needed for these emerging jobs—not only basic academic knowledge and technical skills but also advanced cognitive skills (including critical thinking, efficiency, and leadership) and a set of behaviors, attitudes, personality traits, and values (referred to collectively as *socioemotional skills*), including honesty, teamwork, punctuality, and responsibility, among others (figure ES.2).

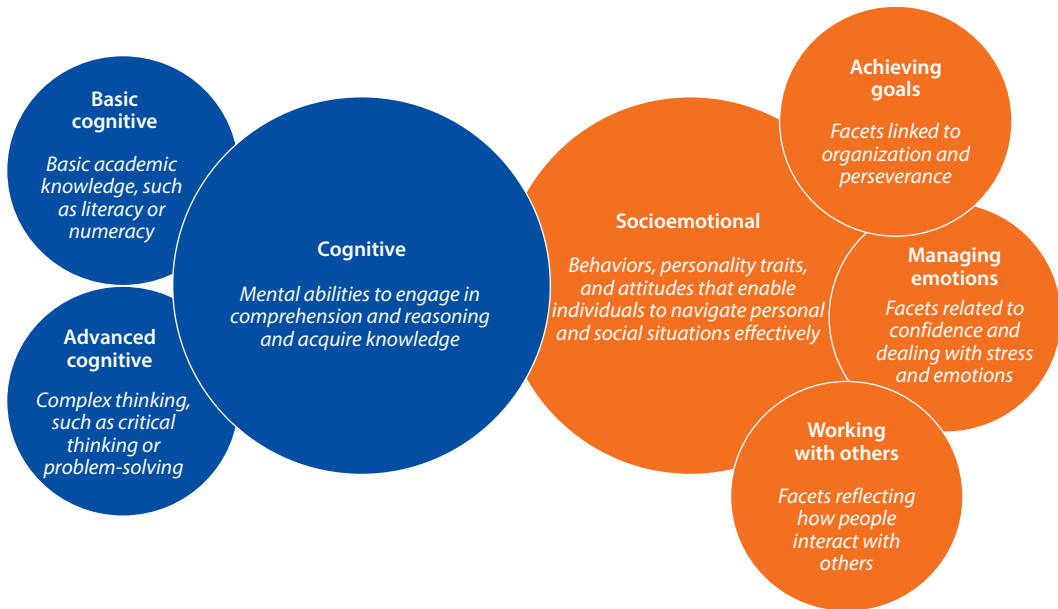
Policy makers need to think about skills more broadly and recognize their multidimensionality. They commonly equate skills with cognitive skills (intelligence or the ability to perform mental tasks) (figure ES.3).¹ But at least as important for one's success are socioemotional skills.² People use socioemotional skills, associated with achieving goals, managing emotions, and working with others, to transform cognitive skills into outputs (figure ES.3).

Figure ES.2 Skills Most Valued by World Employers, 2010s



Source: Cunningham and Villaseñor 2016.

Figure ES.3 Framework for Cognitive and Socioemotional Skills



Sources: Almlund and others 2011; SEMS 2014; World Bank 2014; and OECD 2015.

Cognitive and Socioemotional Skills Influence Labor Market Outcomes

Both cognitive and socioemotional skills play important roles in shaping employment and tertiary education outcomes in Latin America and high-income countries. A myriad of studies from the United States and other high-income countries shows that for a given level of education and other characteristics, children with higher levels of either type of skills become more successful students and workers (see for example Heckman, Stixrud, and Urzúa 2006; Nyhus and Pons 2005; Mueller and Plug 2006; Carneiro, Crawford, and Goodman 2007; Lindqvist and Vestman 2011; OECD 2015). Similar findings have been found for young adults (25–30) in Argentina and Chile (Bassi and others 2012).

New evidence produced for this study for Bolivia, Colombia, El Salvador, and Peru confirms that adults with higher levels of cognitive or socioemotional skills are more likely to enjoy better labor market outcomes and pursue tertiary education, as compared to those with lower levels of skills.³ Those with higher levels of cognitive or socioemotional skills scores earn higher wages and are more likely to attend a tertiary education institution than similar people with lower scores (table ES.1). Socioemotional skills are highly correlated with being employed in Latin America, while cognitive skills are particularly important for employment in the OECD.⁴ Cognitive skills are strongly correlated with better jobs—formal job and being in a high-skilled occupation—in Latin America while socioemotional skills play a smaller, yet still significant, role.

Specific subfacets of socioemotional skills are correlated with different labor market and educational outcomes. Across the four Latin American countries studied

Table ES.1 Strength of Correlations between Adults' Skills and Labor Market and Education Outcomes in Selected Countries in Latin America and the OECD, circa 2012

| Outcome | <i>Bolivia, Colombia, El Salvador, and Peru (age 15–64)</i> | | <i>OECD countries (age 25–30)</i> | |
|--|---|------------------------------|-----------------------------------|------------------------------|
| | <i>Cognitive skills</i> | <i>Socioemotional skills</i> | <i>Cognitive skills</i> | <i>Socioemotional skills</i> |
| Wages | High | Medium | High | Low-medium |
| Formal job | High | Low-medium | n.a. | n.a. |
| High-skilled occupation | High | Low-medium | n.a. | n.a. |
| Wage workers | Medium | Medium | n.a. | n.a. |
| Employed | Low | Medium | High | Low-medium |
| Active in the labor market or studying | Medium | High | n.a. | n.a. |
| Tertiary education attendance | High | High | High | Medium |

Sources: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013); Peru: ENHAB (2010); OECD data are from OECD 2015.

Note: n.a. = Not applicable (outcome not studied). Thresholds are based on regression tables of skills on outcomes (see appendixes C and D).

(Bolivia, Colombia, El Salvador, and Peru), all three dimensions of socioemotional skills—achieving goals, managing emotions, and working with others—are correlated with higher wages. Specific underlying skills include openness to experience (appreciation for learning and a variety of experiences); conscientiousness (being organized, responsible, perseverant, and hardworking); agreeableness (being cooperative and unselfish); and resilience (being calm, containing emotional reactions, and making decisions carefully).

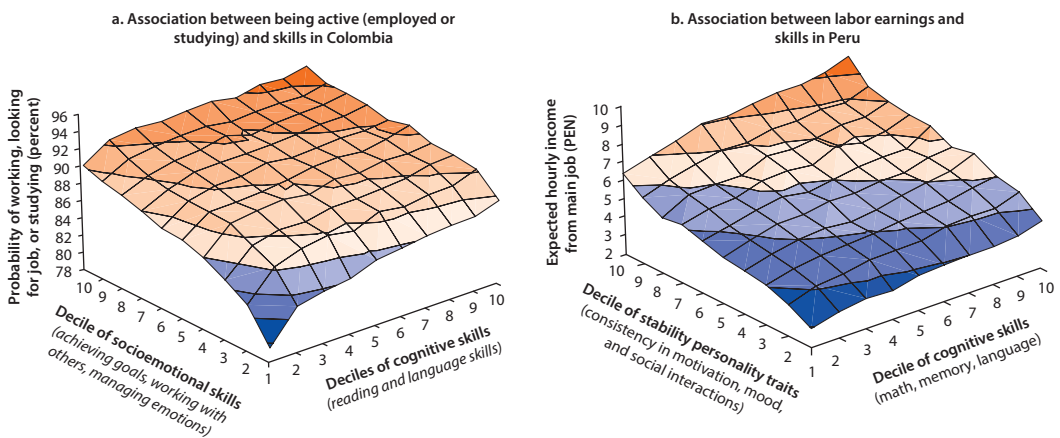
The Combined Effect of Cognitive and Socioemotional Skills Is Stronger than the Individual Effects

The two types of skills interact in a positive way; their combined effect is greater than the sum of their individual effects. In Colombia, for example, almost all people with the highest levels of both cognitive and socioemotional skills are engaged in a productive activity while people with highest levels of only one type of skills are less so (panel a of figure ES.4). In Peru the highest wage earners are people with the highest cognitive skills and a range of strong socioemotional skills (panel b of figure ES.4). These highly skilled workers earn three times the hourly wage as those with the highest level of cognitive skills and the lowest level of socioemotional skills.

Socioemotional Skills Differ Only Slightly across Sex and Age Groups

Given the importance of a range of skills in labor market success, it is comforting to observe that the skills levels are similar across demographic characteristics. Only slight differences between men and women are observed in socioemotional skills related to achieving goals (conscientiousness and grit, defined as

Figure ES.4 Combined Effect of Cognitive and Socioemotional Skills on Labor Outcomes in Colombia and Peru



Sources: Colombia: STEP Household Survey (2012); Peru: ENHAB (2010).

perseverance and passion for long-term goals) and managing emotions (decision making and hostility toward others). The only notable difference is that in all four countries, men tend to be more resilient than women.

In all four countries, youth are less likely than adults to display behaviors associated with working with others (extroversion and agreeableness) and achieving goals (persevering). In Bolivia, Colombia, and El Salvador, they display some greater skills in managing emotions: specifically they are less likely than adults to perceive hostility in others.

Cross-Country Differences Could Be Explained by Cultural Factors, Labor Market Structure, or Survey Discrepancies

Specific skills associated with a given outcome vary across countries, especially for socioemotional skills.

Although the determinants of these variations cannot be unambiguously untangled, some factors may explain cross-country patterns. Distinct cultural contexts may affect both the ways certain behaviors are rewarded in the workplace and the manner in which participants respond to survey questions on socioemotional skills. The country-specific structure of employment and differential rewards of some skills by occupations may lead to heterogeneity in returns to skills. Given the slight differences in the number of questions about socioemotional skills and the different cognitive skills measured across surveys, differential returns may reflect imperfect comparability across country surveys. Measurement error could also be at play.

Public Interventions Can Foster Socioemotional Skills in a Variety of Settings and Must Target Optimal Development Periods

The formation of skills is a cumulative process. Because it is affected by the environment and investments, programs for developing socioemotional skills are best implemented at particular times in the life cycle.

Three factors need to be taken in to consideration in designing socioemotional development programs. First, the developmental age of the child, in terms of psychological, neurobiological, and social readiness to learn and practice concepts, is key. Just as very young children are not ready to read, they are not ready to develop social problem-solving skills until they have the psychosocial wiring needed for empathy.

Second, different actors can help develop skills at different ages and in various contexts. For very young children, parents and caregivers play the main role. Among adolescents, peers and school play the dominant role. Families, higher education institutions, and the workplace shape the skill formation of adults.

Third, skills should be identifiable and malleable to be successfully taught. The personality traits analyzed in this study are a combination of a set of underlying skills and thus are a challenge to isolate, measure, and change. However, the socioemotional skills that employers identify as important are measurable and

malleable to policy interventions. Thus, we can map the socioemotional skills analyzed in this study to the behaviors and attitudes identified by employers, leading us to a policy framework.

The PRACTICE taxonomy groups more than 140 skills that employers in 28 countries identify as important for labor market success.⁵ Table ES.2 maps the three sets of socioemotional skills analyzed in this study to the PRACTICE taxonomy and indicates the appropriate stage of development for acquiring them.

Much work has been done on teaching socioemotional skills to very young (0–5) children; less is known about teaching such skills in middle childhood, adolescence, and early adulthood. However, there is growing evidence that these skills can be taught in the classroom environment. They may emerge from teachers modeling behaviors that they themselves have learned, a positive and safe school climate that fosters and rewards positive socioemotional behaviors, teaching methods that use socioemotional skills in the learning process, or specific curricula to teach these skills. Table ES.3 provides some examples. For both in- and out-of-school adolescents, after-school activities have shown to be beneficial (Tierney and Baldwin Grossman 2000; Boys & Girls Clubs of America 2004), as are programs that blend job training and socioemotional skills training (Ibarrarán and others 2014; Vezza and others 2014).⁶

The international evidence shows that these skills can be taught via existing institutions. The main challenge is to organize the actors and the pedagogical pathways to do so, thereby setting up Latin American workers for greater productivity and success.

Table ES.2 Optimal Stages of Development of Socioemotional Skills

| Dimension of socioemotional skills | PRACTICE taxonomy | Stage of development and key actors | | | |
|------------------------------------|------------------------|-------------------------------------|---------------------------|--------------------------|--------------------------------------|
| | | 0–5 (parents) | 6–11 (parents, school) | 12–18 (school, peers) | 19–29 (school, family, workplace) |
| Achieving goals | Achievement motivation | | Optimal | Reinforcement | |
| | Ethics | Foundational | Optimal | Optimal | |
| | Initiative | Optimal | Optimal | Optimal | Optimal |
| | Problem solving | Foundational | Optimal | Optimal | Reinforcement |
| Working with others | Teamwork | Optimal | Optimal | Reinforcement | |
| Managing emotions | Confidence | Foundational | Optimal | Optimal | Reinforcement |
| | Control | Optimal | Optimal | Optimal | Reinforcement |
| | Resilience | Optimal | Optimal | Reinforcement | |

Source: Guerra, Modecki, and Cunningham 2014.

Note: PRACTICE is a taxonomy of socioemotional skills that summarizes a long list of socioemotional skills that employers recognize as very important in workers. The acronym stands for Problem solving, Resilience, (Achievement) Motivation, Control, Teamwork, Initiative, Confidence, and Ethics. “Foundational” refers to the initial skill-building process that will predominately occur in a following period. “Optimal” refers to periods of maximum sensitivity when it is easiest for individuals to acquire specific skills. “Reinforcement” means that intense practice is necessary to master the skill.

Table ES.3 Examples of Interventions Fostering Socioemotional Skills at School

| <i>Intervention</i> | <i>Example</i> | <i>Country</i> |
|---|---|--|
| Developing teachers' socioemotional skills so that they can model them in the classroom | Escuela Amiga (Friendly School) program (Paredes 2014) | Peru |
| Strengthening the school climate, to provide a safe place for practicing positive social behaviors | School-Wide Positive Behavior Support model (Bradshaw, Mitchell, and Leaf 2012) | Australia, Canada, Mexico, Norway, United States |
| Creating and implementing a socioemotional curriculum to explicitly teach and reinforce behaviors | Incredible Years program (Webster-Stratton, Reid, and Stoolmiller 2008) | United States |
| Incorporating socioemotional skills, such as teamwork and problem-solving, into teaching and presentational methods | Facing History, Facing Ourselves model (Barr 2010) | 110 countries |

Sources: CASEL 2013, 2015.

Notes

1. Cognitive skills can be grouped into two categories: basic cognitive skills (basic academic learning, including memory, numeracy, literacy, and evaluation of written information) and advanced cognitive skills (more complex mental tasks, such as critical thinking, advanced problem solving, and time management). Technical skills—the specific knowledge needed to carry out a task—can be thought of as a subset of cognitive skills (Almlund and others 2011). They are not studied specifically in this study.
2. Although these skills involve some level of cognition, economists refer to them as *noncognitive skills*, in order to differentiate them from academic or learning skills. *Traits* are characteristics or patterns of thought and action that are relatively stable across the life cycle. *Behaviors* are performance in response to stimulation. *Attitudes* comprise beliefs and values that guide skill formation and behavior.
3. The data used for this study do not permit unambiguous causal links to be established between skills and labor outcomes. Most studies based on longitudinal data in high-income countries robustly establish causal links between cognitive and socioemotional skills on the one hand and labor and education outcomes on the other (see for example Heckman, Stixrud, and Urzúa 2006; Nyhus and Pons 2005; Mueller and Plug 2006; Carneiro, Crawford, and Goodman 2007; Lindqvist and Vestman 2011; OECD 2015). Although high-income countries are different contexts, the studies based on data from these countries suggests that skills could lead to better labor market outcomes in Latin America, as well.
4. In particular, more conscientious adults (goal-oriented and self-disciplined) and those showing higher grit (perseverance and passion for long-term goals) are more likely to be employed in the four Latin American countries studied.
5. PRACTICE is a taxonomy of socioemotional skills that summarizes a long list of socioemotional skills that employers recognize as very important in workers. The acronym stands for Problem solving, Resilience, (Achievement) Motivation, Control, Teamwork, Initiative, Confidence, and Ethics (Guerra, Modecki, and Cunningham 2014).
6. Guerra, Modecki, and Cunningham (2014) discuss evidence-based interventions for specific ages.

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Abbreviations

| | |
|----------|---|
| Bs | Bolivian Boliviano |
| CAF | Development Bank of Latin America |
| CBT | Cognitive Behavioral Therapy |
| CIDAC | Centro de Investigación para el Desarrollo (Research Center for Development) |
| Col\$ | Colombian Peso |
| ENHAB | Encuesta Nacional de Habilidades (National Skills Survey) |
| ETS | Educational Testing Services |
| FIEL | Foundation for Latin American Economic Research |
| GDP | Gross Domestic Product |
| GED | General Education Degree |
| GNP | Gross National Product |
| ISCO | International Standard Classification of Occupations |
| IQ | Intelligence Quotient |
| IZA | Institute for the Study of Labor |
| KIPP | Knowledge Is Power Program |
| OECD | Organisation for Economic Co-operation and Development |
| OLS | Ordinary Least Square |
| O*NET | Occupational Information Network |
| PEN | Peru Nuevo Sol |
| PIAAC | Program for the International Assessment of Adult Skills |
| PISA | Programme for International Student Assessment |
| PRACTICE | Taxonomy of socioemotional skills including (social) Problem solving, Resilience, Achievement Motivation, Control, Teamwork, Initiative, Confidence, and Ethics |

| | |
|-------|--|
| SEMS | Subsecretaría de Educación Media Superior de México (Undersecretariat of Upper Secondary Education of Mexico) |
| STEP | Skills Toward Employment and Productivity |
| SWPBS | School-Wide Positive Behavior Support |

All dollar amounts are U.S. dollars.

Introduction

Parents, teachers, and economic theory tell us that people who study hard get good jobs, earn high salaries, and achieve professional success. But recent evidence suggests that more schooling may not deliver the benefits promised. Latin American countries witnessed tremendous progress in education attainment over the past two decades. Between 1990 and 2010, the proportion of people entering the labor force (age 20–24) who had completed secondary education increased from 35 percent to 55 percent, and the average years of schooling of the labor force increased from 8.2 years in 1990 to 10.2 in 2010 (Barro and Lee 2013; Bruns and Luque 2014). Over the same period, returns to tertiary education actually declined in most Latin American countries (Gasparini and others 2011; Aedo and Walker 2012), and labor productivity did not improve significantly (Pagés 2010). Meanwhile, employers around the world, including in Latin America, lament the shortage of appropriate skills: A 13-country study reports that only 42 percent of employers believe that youth are prepared for the labor market (curiously, 72 percent of educators think they are [Mourshed, Farrell, and Barton 2012]).

The increase in education attainment and the dissatisfaction of employers suggests that a tweak to the traditional advice may be necessary: Perhaps greater skills, rather than more education, improve labor market outcomes (Hanushek and Woessman 2008). This definitional change breaks with the practice of equating years of schooling with skills acquired, but data support the revision. In 2012 only 33 percent of Brazilian 15-year-olds who completed ninth grade had acquired sufficient math skills to be able to solve basic problems; in Colombia and Peru only a quarter of students could do so (OECD 2013; Bruns and Luque 2014). The evidence in Latin America thus points to a serious mismatch between years of education and skills acquired.

Many observers blame the low level of skills in Latin America on weak learning outcomes (as evidenced in headlines of low scores on international benchmarks, such as the Programme for International Student Assessment [PISA]) as well as on documented deficiencies in teacher qualifications (Bruns and Luque 2014). The expansion of enrollment without sufficient investment in infrastructure or human resource preparedness and weak regulation may partially explain

the regional mismatch between additional years of education and actual cognitive skills acquired (Levy and Schady 2013).

The types of skills valued by the labor market are also changing. A multicountry study that included Brazil, Chile, and Costa Rica finds that the use of routine manual skills decreased over the past three decades while the use of nonroutine analytical skills increased (Aedo and others 2013). A similar trend has emerged in the United States (box 1.1).

Box 1.1 Changes in the Skill Content of Occupations in Latin America

Technology has changed dramatically over the past decades, and so have jobs. Pioneering research documents the shift in the United States away from occupations that require workers to execute a range of predictable tasks toward jobs requiring nonroutine, nonmanual tasks (Autor, Levy, and Murnane 2003; Acemoglu and Autor 2011). Skills required for nonroutine and nonmanual tasks include a mix of what this study categorizes as advanced cognitive and socioemotional skills.

The U.S. government's Occupational Information Network (O*NET) database provides detailed descriptions of task requirements by occupations. Each occupation is assigned a score that reflects the typical intensity of skill use for each category of skills. Information on job skill requirements can be coupled with survey data on the occupational structure of a country to yield national scores for skill categories.

Following this methodology, Aedo and others (2013) examine the skill content of occupations in 30 middle-income countries and the United States circa 2010, providing time series for a subset of countries. Six Latin American countries are included in the cross-sectional analysis (Brazil, Chile, Costa Rica, El Salvador, Mexico, Nicaragua, and Peru), and time series are provided for Brazil (1981–2009), Chile (1992–2009), and Costa Rica (2001–08).

The cross-country analysis shows that the intensity of use of manual skills (both routine and nonroutine) is lower and the intensity of routine and nonroutine (analytical and interpersonal) cognitive skills is higher in countries with higher gross national product (GNP) per capita. Given their level of GNP per capita, all Latin American countries in the sample except Nicaragua have lower than average intensities of nonroutine cognitive analytical skills.

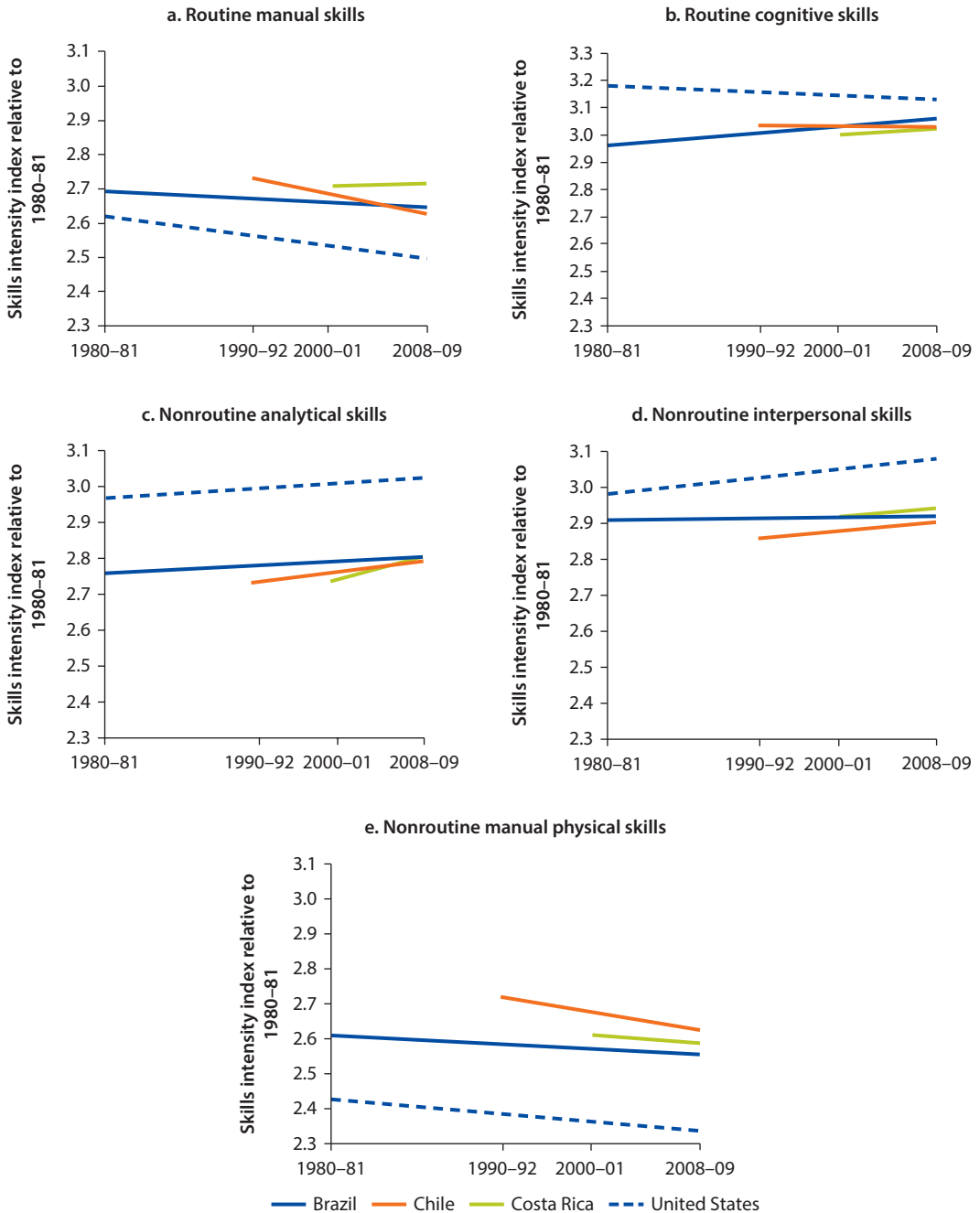
Time series data for Brazil (30 years), Chile (20 years), and Costa Rica (10 years) show patterns similar to but less pronounced than those observed in the United States. In all three countries, the intensity of use of nonroutine skills (interpersonal and analytical) and routine cognitive skills increased monotonically over time while the intensity of nonroutine manual physical skills decreased, except in Costa Rica, where it remained stagnant (figure B1.1.1).

This analysis has limitations, particularly because it applies the degree of skills use in the United States to middle-income countries, implicitly assuming that they have the same task requirements for each occupation. Despite technical adjustments in the computation, this assumption is very likely to cause an upward bias toward skills that are more prevalent in the United States—namely, advanced cognitive and socioemotional skills.

box continues next page

Box 1.1 Changes in the Skill Content of Occupations in Latin America *(continued)*

Figure B1.1.1 Intensity of Use of Manual, Routine Cognitive, Analytical, and Interpersonal Skills in Brazil, Chile, Costa Rica, and the United States, 1980–2009

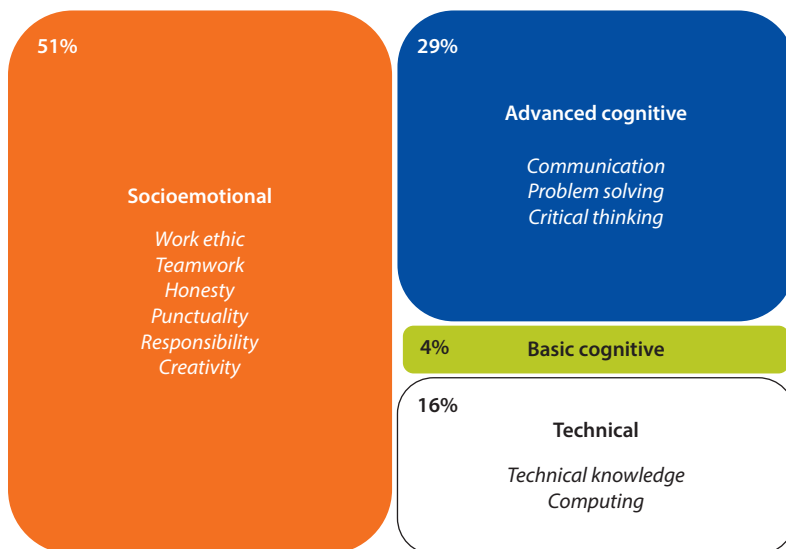


Source: Aedo and others 2013.

Employers seek a broader range of skills than reading, writing, and basic technical skills; they look for workers who have also mastered values, behavioral, and thinking skills. Evidence from 27 studies reveals remarkable consistency in the skills demanded around the world (Cunningham and Villaseñor 2016).¹ Although employers value all skill sets, demand is greater for socioemotional and advanced cognitive (complex thinking) skills than for basic cognitive (general knowledge) or technical skills (figure 1.1). More than three-quarters of the 27 studies cite a socioemotional skill as the most valued, and half identify a socioemotional skill among the top five preferred. Among the preferred socioemotional skills are work ethic, interpersonal skills, honesty, teamwork, attitude, integrity, punctuality, and responsibility. In addition, in nearly 30 percent of the studies, an advanced cognitive skill—primarily critical thinking, communication, or problem solving—is among the top five. These results are robust across different economy sizes, levels of development, sectors, export orientation, and occupations.

Latin American employers reflect the same preferences as global employers. In a 2012 survey, employers from Argentina, Brazil, and Chile uniformly ranked socioemotional skills as most desirable, followed by cognitive skills and technical skills (Bassi and others 2012). A survey of Latin American executives ranked critical thinking, problem solving, and life skills as the top three skills they seek in new employees (Ogier 2009). Mexican employers specify teamwork, communications, and leadership as preferred skills for both managers and workers (CIDAC 2014). Peruvian employers specify teamwork and interpersonal skills (World Bank 2011). Employers in St. Kitts and Nevis cite honesty, work ethic,

Figure 1.1 Skills Most Valued by World Employers, 2010s



Source: Cunningham and Villaseñor 2016.

Note: Results are based on meta-analysis of 27 studies.

and problem solving (Blom and Hobbs 2008). All of these surveys included technical and basic cognitive skills on the list of potential preferences for employers to choose from but employers clustered to the socioemotional and advanced cognitive skills.²

The results from Latin America and global studies are reflected in more extensive research from developed countries, where the market rewards a range of skills, not just years of education. A 13-country sample estimates that a one standard deviation increase in an individual's literacy score (a cognitive skill) increases earnings by an average of 9.3 percent and that the effect of years of schooling on earnings falls by 30 percent after controlling for literacy scores (Hanushek and Zhang 2009). Numerous other studies also find that socioemotional skills strongly influence earnings and labor supply (Muller 2014), and some research finds that the impact of these skills on earnings exceeds the impact of cognitive skills (Heckman, Stixrud, and Urzúa 2006). The value placed on socioemotional skills may be related to a decline in jobs that require routine manual skills and the rise of nonroutine analytical jobs that require more complex skills (Aedo and others 2013).

A range of socioemotional and basic cognitive skills are required to develop advanced skills. Schools are privileged places to foster cognitive skills, but socioemotional skills also influence schooling decisions and educational outcomes (Almlund and others 2011). One study using longitudinal data for the United States estimates that socioemotional measures explain 12 percent of the variation in educational attainment and cognitive ability measures explain 16 percent (Cunha, Heckman, and Schennach 2010). Just as accumulated levels of basic cognitive skills (such as math, reading, and attention skills) at a young age define children's school readiness and predict their capacity to remain in school through the tertiary level (Duncan and others 2007), socioemotional skills also accumulate and affect future education success.

In a region where economic growth prospects promise to be far less robust in the near future than in past decades, improvements in education and employment outcomes may well be at the top of Latin American policy makers' priority lists, whether for productivity or equity reasons. One way to advance these goals is to equip children, adolescents, and adults with the attributes that will help them persevere and learn at school and look for, find, and hold good jobs.

Objectives and Value Added of the Study

This study has two main objectives. The first is to provide a deep-dive analysis of the role of socioemotional skills in labor market performance in Latin America. In addition to measuring the correlations, the study aims to assess the role of socioemotional skills relative to basic cognitive skills, to compare the Latin America trends to trends in member countries of the Organisation for Economic Co-operation and Development (OECD), and to generate more robust evidence than exists by taking advantage of richer data from a multicountry analysis and

using various methodologies to triangulate results. The second objective is to provide a framework that links the supply of and demand for socioemotional skills and to draw insights from the emerging evidence of policies/interventions on developing socioemotional skills.

This study tests two hypotheses derived from the international literature. The first is that a broader range of skills than those currently taught are valuable for labor market success in Latin America. The second is that socioemotional skills can be taught through existing institutions in Latin American countries.

This study summarizes the findings of all previous studies that directly measure the role of socioemotional skills in labor market success in Latin America. It relies on four background studies that use newly collected household data for urban areas of Bolivia, Colombia, El Salvador, and Peru (see appendix A). It complements earlier work on the link between a set of cognitive and socioemotional skills and labor market outcomes for youth in the urban areas of Argentina and Chile (Bassi and others 2012). Given the high levels of urbanization of Latin American countries, the findings are likely to apply to most of the working-age population in the region.³ The literature documenting the role of skills in U.S. and Western European labor markets is also reported, to put the results for Latin American countries in a global perspective.

This study makes five additional contributions. First, it explores the skills of the entire working-age population, not just youth, as in the only other comprehensive study of socioemotional skills and Latin America's labor markets (Bassi and others 2012). Second, it considers how combinations of skills affect labor market outcomes (Heckman, Stixrud, and Urzúa 2006). Third, it unpacks the effects of cognitive and socioemotional skills on labor market outcomes, in contrast to evaluations that consider only the package of skills (such as youth employment program evaluations). Fourth, it complements the conventional methodology for calculating these relationships with a second method that more precisely measures the relationship by reducing measurement bias. It employs traditional and advanced econometric techniques to measure correlations between labor market success—higher wages, increased chances of employment, formal sector employment, employed (or self-employed) status, and white-collar employment—and a range of skills. In this way, the analysis presents the cleanest possible correlation between skills (as opposed to education) and a range of labor outcomes. The results are consistent with those estimated with U.S. and European data, which present the cleanest evidence to date on the role of cognitive and socioemotional skills following individuals over time. Fifth, the study proposes a policy framework for facilitating the acquisition of a broader range of skills. It considers the biology, psychology, and sociology of the learning process to provide specific policy advice for the development of skills that are not usually in the curriculum but that matter for today's labor market: socioemotional skills. It also presents pedagogical methods that are employed primarily for teaching cognitive skills but that also provide guidance for the development of socioemotional skills.

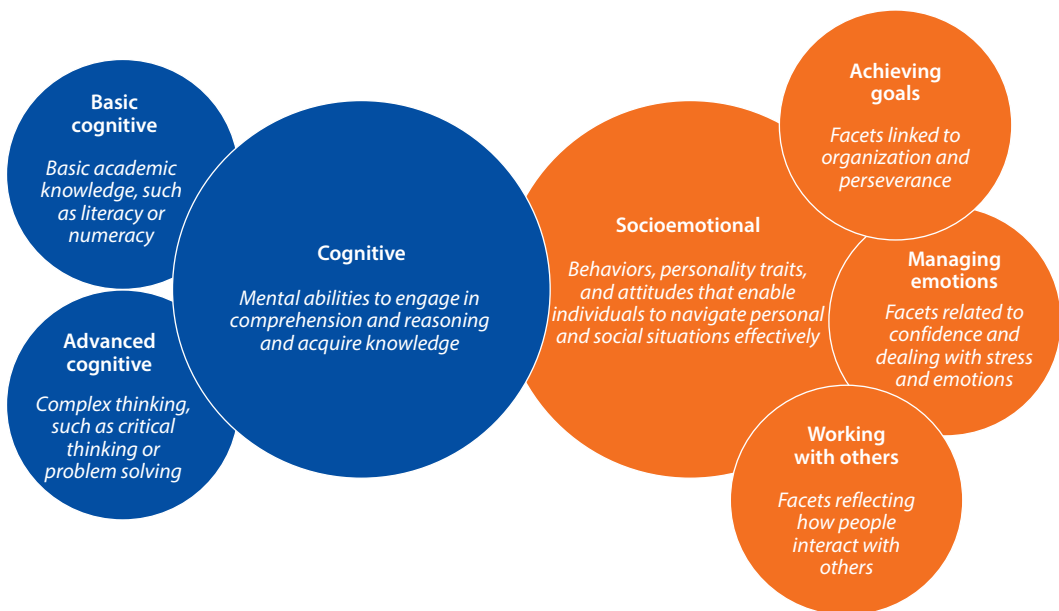
Definitions of Skills and Data for Skills Measurement

We define skills as the ability to perform a specific task. We classify them into two broad, overlapping subgroups: cognitive skills and socioemotional skills (figure 1.2).

Cognitive skills can be defined as the “ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, and to overcome obstacles by taking thought” (Neisser and others 1996, 77). These skills can be thought of as intelligence or mental tasks, such as reasoning and information processing. Cognitive facets can be categorized into two dimensions: basic cognitive skills (basic academic knowledge, such as literacy or numeracy) and advanced cognitive skills (more complex mental tasks, such as critical thinking, advanced problem solving, and time management). This study focuses on basic cognitive skills, which capture basic academic learning, including memory, numeracy, literacy, and evaluation of written information. The policy section includes a discussion of advanced cognitive skill development.⁴

Socioemotional skills are behaviors, attitudes, and personality traits that determine how people do things.⁵ They transform cognitive skills into output, complementing knowledge with grit, teamwork, organization, commitment, creativity, and honesty, among other attributes. The data collected for the study measure a wide range of socioemotional skills (table 1.1 and box 1.2).⁶ For ease of presentation we group them into three categories: achieving goals, working with others, and managing emotions.⁷ We refer to the specific underlying skills when they are useful to elucidate a point.

Figure 1.2 Framework for Cognitive and Socioemotional Skills



Sources: Almlund and others 2011; SEMS 2014; World Bank 2014b; OECD 2015; and authors' elaboration.

Table 1.1 Definitions of Skill Measures

| <i>Type of skill</i> | <i>Dimension</i> | <i>Specific skill</i> | <i>Definition</i> | <i>Survey measure</i> |
|----------------------|--|--------------------------|---|------------------------------------|
| Basic cognitive | Basic academic knowledge and reasoning | Memory | Short-term memory, representative of working memory | Direct assessment (test) |
| | | Math ability | Ability to perform basic arithmetic operations, such as addition, subtraction, multiplication, division, and percentage | |
| | | Reading proficiency | Ability to understand, evaluate, use, and engage with written texts | |
| | | Verbal ability | Receptive vocabulary and verbal ability of adults | |
| | | Verbal fluency | Speed and ease with which words are accessed from memory | |
| Socioemotional | Achieving goals | Conscientiousness | Tendency to be organized, responsible, and hardworking | Aggregation of self-reported items |
| | | Openness to experience | Appreciation for art, learning, unusual ideas, and variety of experience | |
| | | Grit | Perseverance and passion for long-term goals | |
| | Working with others | Agreeableness | Tendency to act in cooperative, unselfish manner | |
| | | Extroversion | Sociability, tendency to seek stimulation in company of others, talkativeness | |
| | Managing emotions | Emotional stability | Predictability and consistency in emotional reactions; absence of rapid mood changes | |
| | | Hostile attribution bias | Tendency to perceive hostile intents in others | |
| | | Decision making | Manner in which decision situations are approached | |

Sources: John and Srivastava 1999; Cueto, Muñoz, and Baertl 2010; Almlund and others 2011; ETS 2014; SEMS 2014; World Bank 2014a, 2014b; and OECD 2015.

Box 1.2 Measures of Socioemotional Skills Using the “Big Five” Classification

This study uses the Big Five Model (Goldberg 1993), a widely accepted taxonomy, to measure personality traits. The five traits are openness to experience (also called intellect or culture), conscientiousness, extroversion, agreeableness, and emotional stability (referred to as “resilience” in this study). Each trait comprises many specific personality characteristics, behaviors, and beliefs.

Unlike cognitive skills, socioemotional skills are not necessarily monotonically increasing in desirability. Conscientiousness, for example, is a desirable trait: People who score high on this facet may be self-disciplined, plan, and deliver on time. However, highly conscientious individuals may score low on spontaneity, which might be a crucial characteristic for successful performance in certain jobs. Agreeable people may be considerate and generous, but their

box continues next page

Box 1.2 Measures of Socioemotional Skills Using the “Big Five” Classification *(continued)*

personality might not lend itself to making controversial decisions. Other traits, such as extroversion, are simply different ways of processing the world: Extroverts draw energy from being with others, whereas introverts draw energy from internal stimulation. Some terms, such as emotional stability, have connotations that may lead observers to read more into them than they represent. People who score high on “neuroticism” (the opposite of emotional stability) are not (necessarily) clinically neurotic. They are simply more anxious and reactive than people at the other end of the scale.

It is thus useful to understand the Big Five traits as measures of where a person is located along the continuum of a personality facet as opposed to a measure of trait desirability. The continuum (low to high score) for each facet can be understood as shown in box table B1.2.1.

In addition to the Big Five personality traits, the study also measures behaviors and beliefs such as grit (the perseverance and motivation to achieve long-term goals [Duckworth and others 2007]); hostile attribution bias (the tendency to perceive others’ actions as hostile and react aggressively in consequence [a mix of resilience and agreeableness] [Dodge 2003]); and decision making (the manner in which individuals cope with the stress of decision situations, a subfacet of resilience) (Mann and others 1997).

Table B1.2.1 Interpretation of Low and High Scores of Big Five Personality Traits

| <i>Big Five personality trait</i> | <i>Low score</i> | <i>High score</i> |
|-----------------------------------|-----------------------------------|-----------------------------------|
| Openness to experience | Routine, straightforward | Complex, experimental |
| Conscientiousness | Spontaneous | Self-disciplined, planned |
| Extroversion | Energized by internal stimulation | Energized by external stimulation |
| Agreeableness | Self-interested, suspicious | Kind, willing to compromise |
| Emotional stability | Anxious, reactive | Resilient, calm |

The data underpinning this report were collected through four surveys (box 1.3). Household and labor force surveys usually include educational attainment and labor force behaviors. They do not include information on skills, partly because appreciation of the role skills play in a range of behaviors is only recent and partly because of the complex (and costly) methods needed to collect and report skills data.

The rest of this book is organized as follows. Chapter 2 presents the cognitive and socioemotional skills profile of the labor force in the four countries under study and explores the level of skills of various groups, including by comparing cognitive skills in Latin American countries and countries outside the region. Chapter 3 identifies skills that are correlated with labor market outcomes in Latin America and compares the results with the results for high-income countries. Chapter 4 presents a framework for offering policy recommendations. Chapter 5 summarizes the results of the study and compares them with findings from high-income countries.

Box 1.3 How Data Were Collected for This Study

Four data sets were collected for this study, derived from two survey instruments designed by the World Bank. Data on Peru come from the 2010 Peruvian Encuesta Nacional de Habilidades (National Skills Survey), which supplements the annual Peruvian household survey by adding modules that measure cognitive skills (verbal fluency, verbal literacy, math, and memory) and personality traits. The sample includes 1,394 adults age 18–50 in four urban areas of Peru.

Data for Bolivia, Colombia, and El Salvador come from the STEP Household Surveys, a multicountry measurement initiative asking a range of background questions typical to labor force surveys, including modules on personality traits and skills usage (World Bank 2014b). For Bolivia and Colombia, data on reading proficiency (a construct capturing the ability to read, process, evaluate, and use written information [ETS 2014]) are also included. The El Salvador Skills Survey does not include direct assessment of cognitive skills. These surveys cover the working-age population (15–64) living in urban areas, with sample sizes of 2,439 in Bolivia, 2,617 in Colombia, and 2,335 in El Salvador.

Each survey measures the skills variables slightly differently. The Peruvian survey assigns the total number of correct answers on each cognitive test as a value for each observation. Personality traits are created by conducting a principal components analysis of the 58 questions surveyed to construct six factors that mirror Goldberg's Big Five model plus two factors to measure grit (Cueto, Muñoz, and Baertl 2010).

The reading proficiency variable for the STEP Household Survey for Bolivia and Colombia is based on a range of plausible scores that are a function of the test results and a set of background characteristics (see ETS 2004 and Von Davier, Gonzalez, and Mislevy 2009 for methodological discussion). Socioemotional skills constructs in the STEP Household Survey are derived by computing an inter-item average of the values across 24 questions to represent each of the Goldberg Big Five traits, the grit trait, and behavioral gauges capturing hostile attribution bias and decision-making style (World Bank 2014b).

The El Salvador Skills Survey includes measures of the intensity of use of cognitive skills and a socioemotional skills module similar to the one in the STEP survey; it includes 26 questions covering the same facets.

The limited number of questions on socioemotional skills in the Bolivia, Colombia, and El Salvador data sets may raise concerns about a lack of precision in measurement that could influence the relationships with our outcomes of interest. The data do not permit assessment of whether some of the results reflect true associations or measurement issues. Other large-scale surveys, like the German Socio-Economic Panel survey, have implemented similar modules with reliable estimates (Lang and others 2011; World Bank 2014b).

Notes

1. The meta-evaluation classifies more than 140 skills that emerged from 27 studies into four groups: socioemotional, basic cognitive (basic knowledge and problem solving), advanced cognitive (more complex thinking), and technical skills.
2. To test whether the remarkable consistency in employer demand for socioemotional and advanced cognitive skills reflects management fashion rather than true

preferences, CIDAC (2014) compares the skills prioritized in an employer survey with the skills used by headhunters to identify job candidates or assess workers. The significant overlap between the skills employers claim to value and those they pay headhunters to measure and identify suggests that the stated preferences reflect true preferences.

3. In 2013 the proportion of the population living in urban areas in the four countries was 65 percent in El Salvador, 68 percent in Bolivia, 76 percent in Colombia, and 78 percent in Peru (World Bank 2015).
4. Technical skills can be thought of as a subset of cognitive skills (Almlund and others 2011). They can be defined as those abilities that are associated with the specific knowledge to carry out one's occupation—the ability to repair a car muffler, the knowledge to identify specific bacteria under a microscope, the know-how to assemble dozens of shirts per hour. Analysis of the formation and influence of specific technical skills on outcomes is beyond the scope of this study.
5. Although these skills clearly involve some level of cognition, economists have designated them as “noncognitive skills” to differentiate them from academic or learning skills. “Traits” are characteristics or patterns of thought and action that are relatively stable across the life cycle. “Behaviors” are performances in response to stimulation. “Attitudes” encompass beliefs and values that guide skill formation and behavior.
6. Table 1.1 does not include advanced cognitive skills (which may be understood as critical thinking, such as application of knowledge, analysis, synthesis, and evaluation [Bloom and others 1956]), because they were not measured in the data used in this study or in the other Latin American studies that measures skills. They are briefly discussed in the policy chapter, because employers place great importance on them.
7. Many taxonomies for summarizing socioemotional skills exist. This categorization is used for two reasons. First, it mirrors the taxonomy in OECD (2015), which facilitates the comparison of the results from the two studies. It represents a small step toward finding a common language in the analysis and policy discussion of these skills. Second, it reflects a taxonomy being developed and implemented in Latin America. Peru's Ministry of Education uses this taxonomy as the organizing framework for a range of programs, including *Escuela Amiga* (Friendly School). The Undersecretariat of Upper Secondary Education of Mexico uses this framework as the basis of its nationwide program *Construye-T* (Build Yourself) (SEMS 2014; World Bank 2014a).

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Cognitive and Socioemotional Skills Profile of the Latin American Workforce

This chapter profiles the cognitive and socioemotional skills mix in the urban working-age populations of four Latin American countries: Bolivia, Colombia, El Salvador, and Peru.¹ The profiles reveal the extent to which skills differ by age, gender, and education level. They can be helpful in developing intuition and basic interpretations about skills levels and how they are distributed across the population. The descriptive statistics do not take into account other factors that could influence the skills distribution or untangle their respective effects.

The chapter yields four main findings:

- Skills are not synonymous with years of schooling.
- Skills distributions are roughly similar across different groups of the working-age population within countries (defined by age, gender, or education level). Within-country similarities may help even the playing field for some groups—such as women and youth—but they point to failures for others, such as better-educated people whose cognitive scores are not higher than those of people with less education.
- Socioemotional skills distributions vary widely across countries, with cognitive skills showing fewer disparities.
- The cognitive skills of the labor force in Latin America severely lag those of other regions, even after accounting for the level of economic development (proxied by GDP per capita). The disparity threatens to grow even wider in the future.

Mapping the Distribution of Cognitive Skills

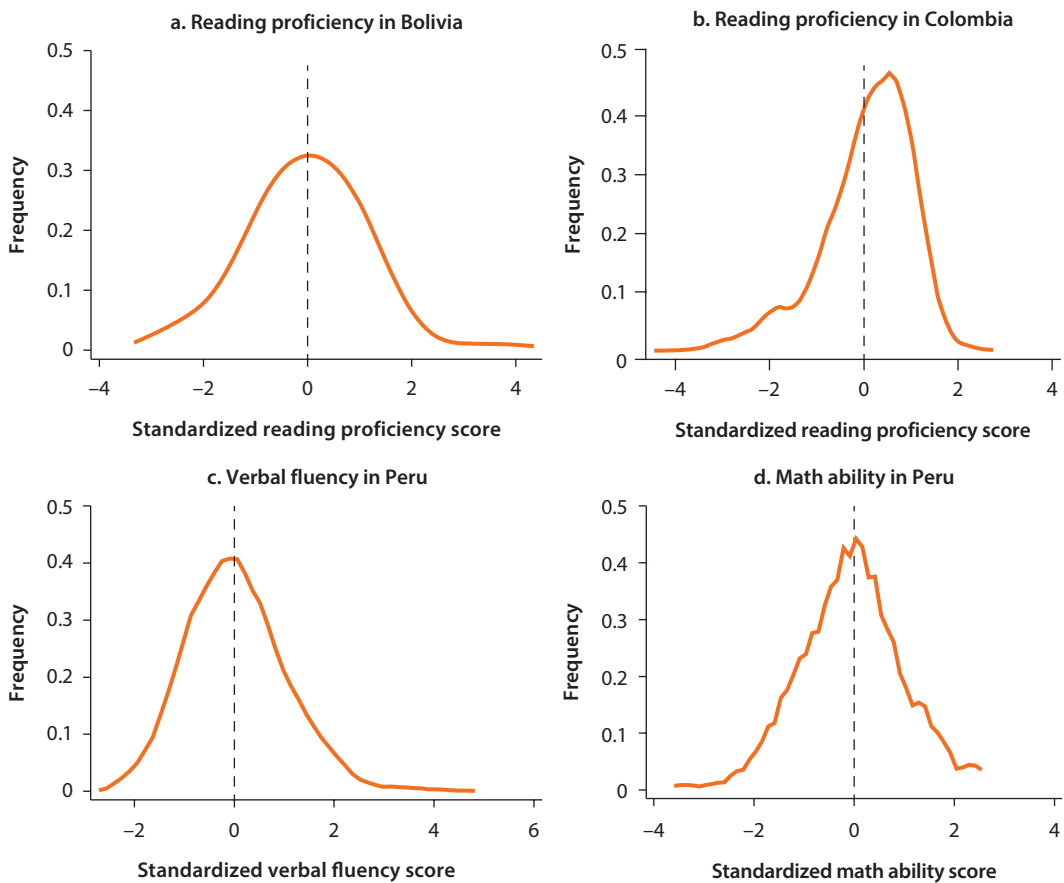
The distribution of each measured cognitive skill is similar across the four countries, except when the distribution is disaggregated by age groups. Figure 2.1 shows the distribution of three types of cognitive skills: math ability,

verbal fluency, and reading proficiency (see table 1.1 for definitions). The distribution of these skills is normal (with a similar number of adults above and below the average score), with some slight deviations. Verbal fluency in Peru has a longer right tail, indicating lower than average verbal fluency for the population and only a smaller number of Peruvians demonstrating high verbal fluency (figure 2.1, panel c). Reading proficiency reveals a slightly bimodal pattern in Colombia.

Cognitive skills are similar across genders: The differences between men’s and women’s cognitive skills in Bolivia, Colombia, and Peru are either small or not statistically significant.

The relationship between age and cognitive skills is less consistent across countries. Bolivian and Colombian youth (15–24) are more proficient at reading, evaluating, and analyzing written texts than their elders, with the largest gap with the oldest age group (50–64). By contrast, Peruvian youth (18–24) have lower

Figure 2.1 Distribution of Test Scores of Cognitive Skills in Bolivia, Colombia, and Peru



Sources: Bolivia and Colombia: STEP Household Surveys (2012). Peru: ENHAB (2010).

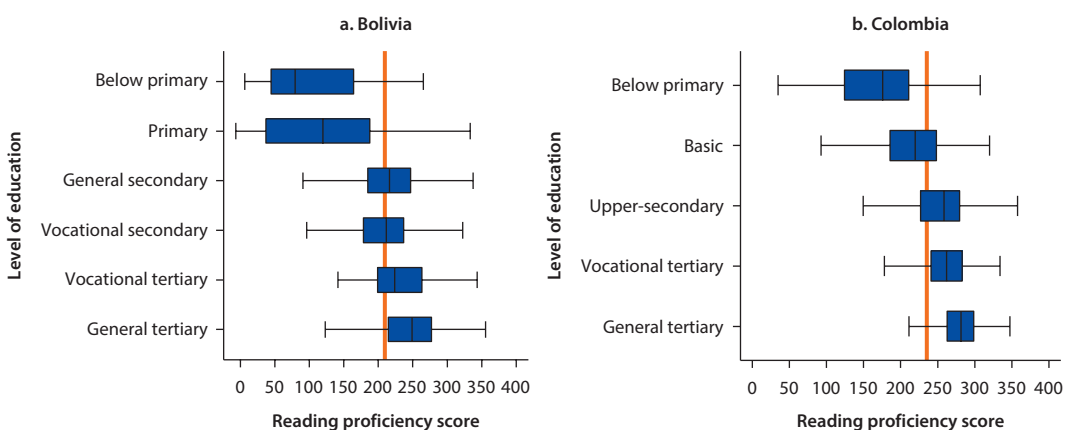
Note: Frequencies are computed as Kernel densities.

verbal skills than older adults; their levels of math ability are about the same and their working memory is slightly better.

In El Salvador, where the survey measured the application of cognitive skills, significant differences are evident between men and women and people in different age groups in the use of reading, math ability, and writing. For example, 47 percent of urban men but only 32 percent of urban women use intermediate or advanced math ability.

The distribution of cognitive skills for any educational level heavily overlaps that of other education levels, suggesting that years of education are not a good proxy for skills acquired. The increment in skills is not uniformly increasing with years of education, especially at the secondary level and beyond; the range of basic cognitive skill levels among adults who completed a particular level of education is wide. For instance, Bolivian adults with some secondary school who attained above-average reading proficiency scores do about as well as low-performing Bolivian adults with some university education (figure 2.2). In Peru the distribution of verbal, memory, and math abilities overlaps across all educational levels, although the overlap is smaller between people who completed primary school and people who are less and more educated (Cunningham, Parra-Torrado, and Sarzosa (2016)). These patterns are also evident in Colombia, although the distribution of skills increases with education level more there than it does elsewhere. The wide heterogeneity in reading proficiency scores across educational levels may also reflect variation across age cohorts, which experience very different education systems; the quality of services offered in different educational institutions; or both.

Figure 2.2 Distribution of Reading Proficiency Scores in Bolivia and Colombia, by Educational Level



Source: Bolivia and Colombia STEP Household Surveys (2012).

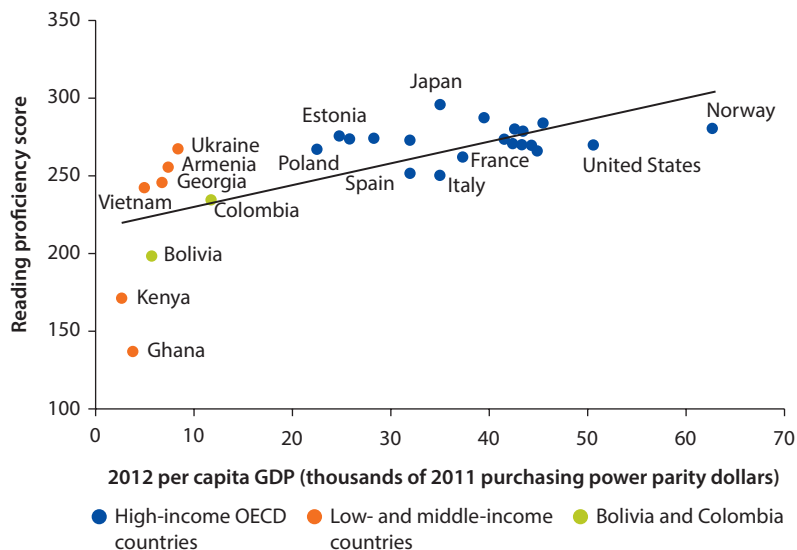
Note: Vertical line indicates sample average. Boxes and whiskers show values of key points of the distribution in reading proficiency scores. The left and right sides of the box are respectively the value of the 25th percentile of skills and the 75th percentile; the inside bar of the box is the median value (half of the respective education group is above the value and the other half is below). The extreme left and right adjacent lines represent respectively the lowest datum still within 1.5 times the length of the box from the 25th percentile and the highest datum still within 1.5 times the length of the box from the 75th percentile. Figures exclude outliers, which are values above or below adjacent lines.

Reading proficiency scores from the STEP Household Surveys can be compared across dozens of low- and middle-income countries and with 23 Organisation for Economic Co-operation and Development (OECD) countries that participated in the 2012 Program of International Assessment of Adult Skills (PIAAC) survey. Doing so is not without bias, however, as the STEP surveys were conducted only in urban areas, whereas the surveys in the other countries are nationally representative. Differences across countries were not tested for statistical significance.

Of the countries shown in figure 2.3, Bolivia and Colombia, the two Latin American countries covered by the STEP surveys, have lower reading proficiency scores than all countries except Kenya and Ghana. Bolivia's score is 200 and Colombia's is 235 (table 2.1 describes the abilities associated with each score level). More worrisome is the fact that Bolivia underperforms relative to its per capita GDP by about 25 points. Colombia does as well as expected for its level of development, although its scores are lower than the scores of some countries with lower incomes, including Ukraine, Armenia, Georgia and Vietnam.

The country averages mask the dire lack of reading proficiency in Latin America. When reading proficiency scores are grouped into six achievement

Figure 2.3 Correlation between Adult Reading Proficiency Scores and Per Capita Income in Selected Countries, 2012



Sources: OECD countries: OECD (2013a), based on PIAAC data (2012–13); Bolivia and Colombia: STEP Household Surveys (2012); other countries: STEP Household Surveys (2012–13). Per capita GDP data are from World Bank (2015), based on World Bank's International Comparison Program database.

Note: STEP data for middle-income countries are representative only of urban areas (adults 15–64). PIAAC data cover the national population (adults 15–65). Reading proficiency scores range from 0 (lowest) to 500 (highest). Average for the 23 OECD countries is 273.

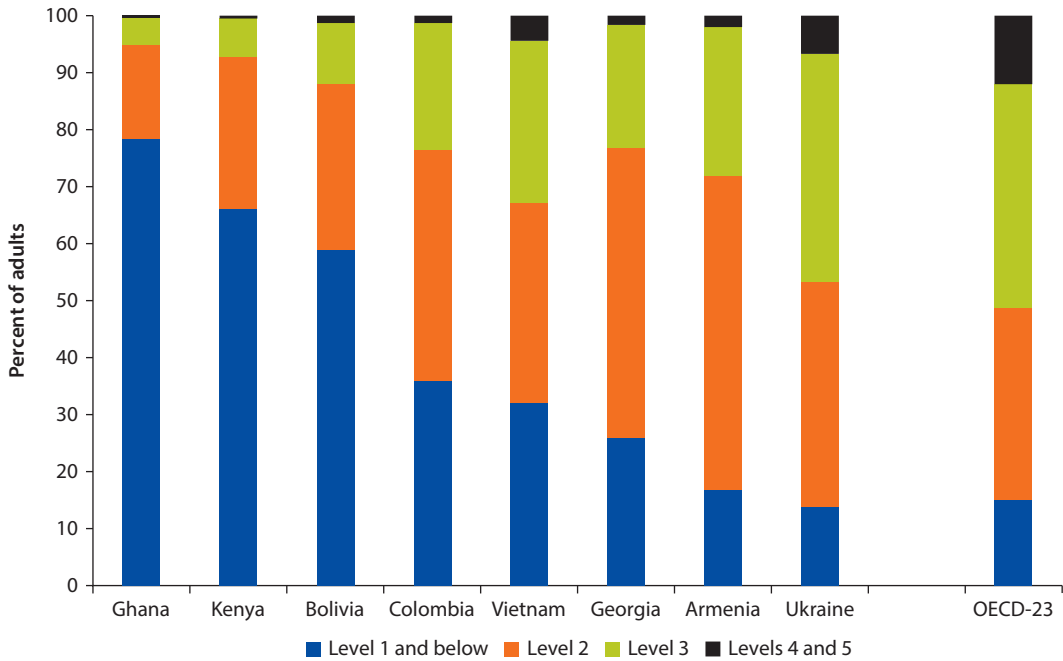
Table 2.1 Description of Reading Proficiency Levels in the PIAAC and STEP Surveys

| <i>Level (score range)</i> | <i>Description</i> |
|----------------------------|---|
| Below 1 (0–175) | Respondent reads brief texts on familiar topics to locate single piece of specific information. Only basic vocabulary knowledge is required. |
| 1 (176–225) | Respondent reads relatively short texts to locate single piece of information that is similar to information given in question. Knowledge and skill in recognizing basic vocabulary, evaluating the meaning of sentences, and reading of paragraph text are expected. |
| 2 (226–275) | Complexity of text increases. Respondents match text and information, paraphrase, and make low-level inferences. Competing pieces of information may be present. |
| 3 (276–325) | Texts are dense or lengthy, including multiple pages. Understanding text and rhetorical structures becomes more central to successfully completing tasks. Many tasks require respondent to construct meaning across larger chunks of text or perform multistep operations in order to identify and formulate responses. |
| 4 (326–375) | Respondents perform multistep operations to integrate, interpret, or synthesize information from complex or lengthy texts. Many tasks require identification and understanding of one or more specific, noncentral ideas in the text in order to interpret or evaluate subtle evidence claim or persuasive discourse relationships. |
| 5 (376–500) | Respondents search for and integrate information across multiple, dense texts. Application of logical and conceptual models of ideas is required to accomplish tasks. Tasks often require respondents to be aware of subtle rhetorical cues and to make high-level inferences or use specialized background knowledge. |

Sources: OECD 2013c; ETS 2014; World Bank 2014.

categories (see table 2.1), about 60 percent of urban Bolivian adults display only a basic level of proficiency (at or below level 1). Readers at this level can perform reading tasks only from short pieces with no or little competing information (figure 2.4). In contrast, just 32 percent of adults in Vietnam, an economy with lower per capita GDP, perform at this level. In wealthier Colombia, 36 percent of workers read at the same basic level, compared with 14 percent of Ukrainian and 15 percent of adults in high-income OECD countries. At the other end of the scale, just 11 percent of Bolivians and 23 percent of Colombians can understand complex texts (levels 3–5), compared with 33 percent of Vietnamese, 47 percent of Ukrainians, and 52 percent of adults in high-income OECD countries (figure 2.4).

The weak cognitive skills of Latin America's labor market are not a passing phenomenon, as shown by the poor performance of youth, who are soon to be the newest wave of workers. International comparisons of student achievements do not presage brighter prospects in coming years (box 2.1).

Figure 2.4 Adult Reading Proficiency Levels in Bolivia, Colombia, and Selected Other Countries, 2012

Sources: OECD countries: OECD (2013a) based on PIAAC data (2012–13); Bolivia and Colombia: STEP Household Surveys (2012); other countries: STEP Household Surveys (2012–13).

Note: STEP data for middle-income countries are representative only of urban areas (adults 15–64). PIAAC data cover national population (adults 15–65). Reading proficiency scores range from 0 (lowest) to 500 (highest). Average for the 23 OECD countries is 273. For description of levels, see table 2.1.

Box 2.1 How Do Cognitive Skills of Future Labor-Market Entrants in Latin America Compare with Their Peers from Outside the Region? Results from the PISA

Every three years since 2000, the OECD's Programme for International Student Assessment (PISA) tests 15-year-olds on basic cognitive skills such as math, reading, and science to determine whether students can process and reason from written and numerical information in a multitude of test-based situations (OECD 2013b). Eight Latin American countries—Argentina, Brazil, Chile, Colombia, Costa Rica, Mexico, Peru, and Uruguay—are among the 65 high- and middle-income countries surveyed.

Latin American countries perform poorly in all three disciplines, especially given their level of national wealth. In 2012 all eight Latin American countries were in the bottom third of countries surveyed (Bos, Ganimian, and Vegas 2013; OECD 2013a). Average learning performance on all international tests over the past 40 years is lower in Latin America than in every region except Sub-Saharan Africa and below the mean for their level of per capita GDP (Hanushek and Woessmann 2012). Except in Chile, whose performance stands out in

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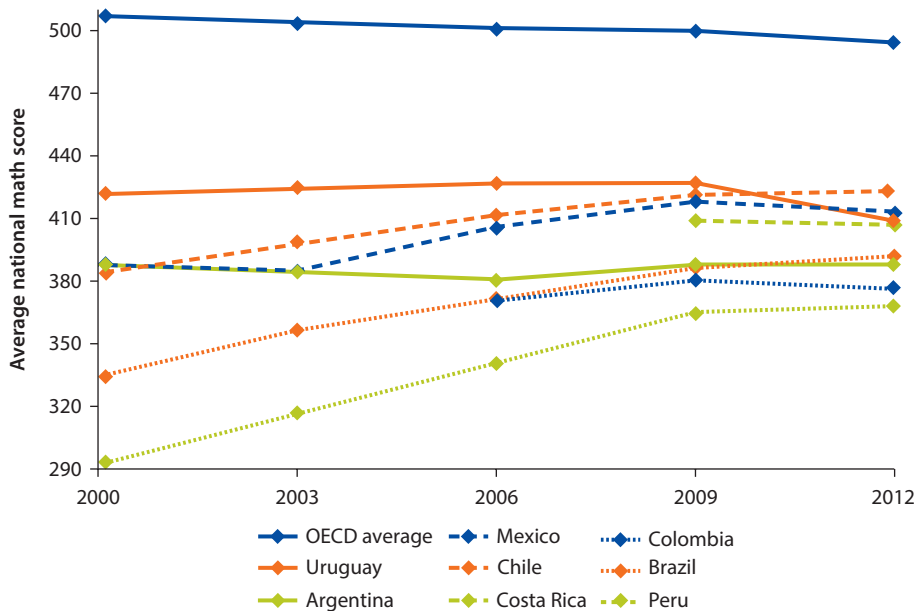
Box 2.1 How Do Cognitive Skills of Future Labor-Market Entrants in Latin America Compare with Their Peers from Outside the Region? Results from the PISA (continued)

the region, typical Latin American students achieve only the minimum level of proficiency. They cannot interpret or recognize questions that require more than direct inference; they cannot use basic algorithms, formulas, or procedures to solve problems using whole numbers and interpret results literally. The current gap in math performance between the average for OECD and Latin American countries represents a disparity equivalent to more than two full years of math education (Bruns and Luque 2014). Differences in performance are considerable both across and within countries in the region (Bos, Ganimian, and Vegas 2013; Bruns and Luque 2014).

Some Latin American countries are making progress in closing disparities with OECD countries, but stunning gaps remain. Between 2000 and 2012, Chile, Brazil, and Peru registered some of the biggest improvements in the entire contingent of PISA-surveyed countries (Hanushek, Peterson, and Woessmann 2012; Bruns and Luque 2014) (figure B2.1.1). In contrast, Argentina and Costa Rica reported no significant changes, and the performance of Uruguayan students declined (Bos, Ganimian, and Vegas 2014).

The absence of other Latin American countries and school dropouts in the PISA sample suggests that the actual gap in cognitive skills between the region and high-income countries is even larger. Regional student assessments indicate that the average learning

Figure B2.1.1 PISA Math Scores in Latin American Countries and OECD, 2000–12



Source: Bruns and Luque 2014, based on OECD 2013b.

Note: The OECD average excludes Chile and Mexico, which are OECD member countries.

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Box 2.1 How Do Cognitive Skills of Future Labor-Market Entrants in Latin America Compare with Their Peers from Outside the Region? Results from the PISA *(continued)*

performance in countries that did not participate in the PISA (including Bolivia, Honduras, and República Bolivariana de Venezuela) is substantially lower than performance in the eight countries that did participate (Bruns and Luque 2014). In addition, given that a larger share of all 15-year-olds have already dropped out of school in Latin America than in the OECD, the actual gap in skills is even larger than the PISA results suggest (De Hoyos, Rogers, and Székely 2015).

Weak performance is not solely the result of school characteristics or teaching quality at the time students are tested; it originates from deficits created in early life. Students' family background and home environment (parents' education and socioeconomic status, access to books at home) and deficits in children's development during their earliest years greatly affect cognitive development (Knudsen and others 2006; Schady and others 2015). Because the development of cognitive skills is a continuous and cumulative process, early cognitive deficits have adverse impacts on children's readiness and capacity to learn (Almond and Currie 2011).

Pedagogical factors also play a role in student performance. In addition to socioeconomic background (gender, age, student and school socioeconomic status) and school structure (class size, teachers' education, whether a school is public or private), factors such as classroom time and teacher expectations of students affect performance both in Latin America and OECD countries (OECD/CAF/ECLAC 2014; Avendaño and others 2016).

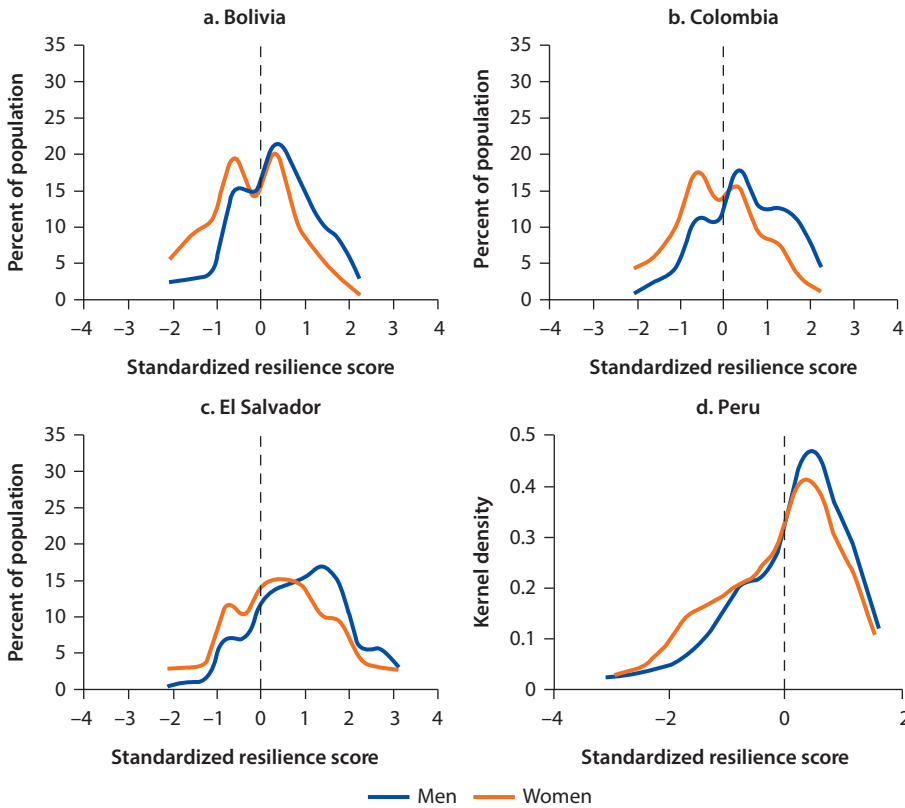
In sum, mean scores on reading, math, and science tests improved in some but not all Latin American countries, significant gaps remain with other high- and middle-income countries, and divergences within countries are considerable. The gaps in cognitive skills of future labor market entrants in Latin America is even bigger when considering countries that do not participate in PISA and the out-of-school youth. In addition, PISA captures only a subset of skills (basic cognitive skills); it does not address socioemotional skills that help students remain in school and learn better.

Mapping the Distribution of Socioemotional Skills

There is little difference in the distribution of socioemotional skills by gender or age group. There are only slight differences in the distribution of skills associated with achievement of goals (conscientiousness, grit) and managing emotions (decision making and hostile attribution bias) between men and women. The only notable difference is that in all four countries, resilience, a trait associated with managing emotions, tends to be higher among men than women (figure 2.5).

Across countries youth (defined here as people 15–24) and adults display different levels in some dimensions of socioemotional skills. In all four countries youth are less extroverted and persevering than young adults (defined as people age 25–49); they also appear less agreeable (less generous, polite, or forgiving). However, youth in Bolivia, Colombia, and El Salvador are less likely to perceive

Figure 2.5 Distribution of Resilience among Men and Women in Bolivia, Colombia, El Salvador, and Peru



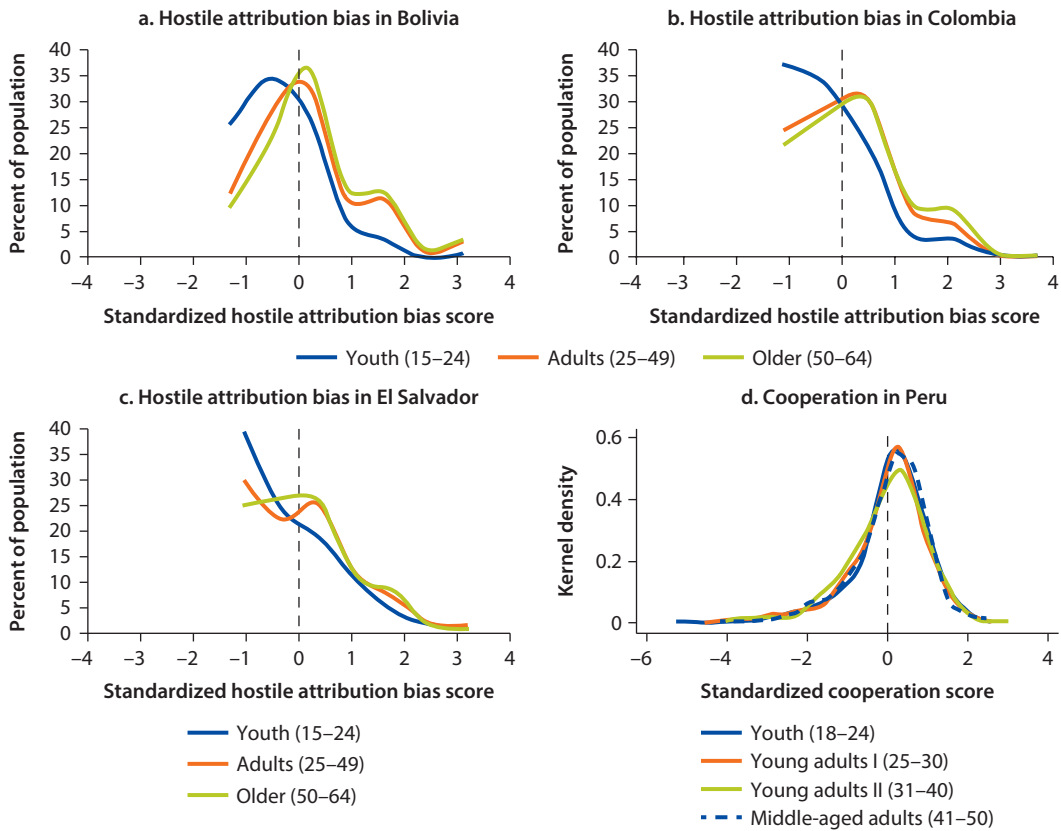
Source: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013); Peru: ENHAB (2010).
Note: Data cover urban adults (15–64). Individuals with high levels of resilience have predictable and consistent emotional reactions and do not rapidly change moods.

hostility in others than are young adults. In Peru youth are as likely as young adults to be cooperative (figure 2.6).

Less-educated individuals and their more educated peers have different socio-emotional skills across all three categories (achieving goals, managing emotions, and working with others). In Bolivia, Colombia, and Peru, people with little or no formal education often have fewer skills for managing emotions (fewer decision-making skills and less resilience) and working with others (they are less open to experience and more introverted) (figure 2.7). Differences across educational levels are much less marked in El Salvador.

The extent to which in-country similarities in skills levels and between-country gaps translate into labor market success depends on the extent to which each of these skills affect labor market outcomes. The next chapter identifies the skills that seem to be associated with higher wages and more and better-quality employment.

Figure 2.6 Distribution of Hostile Attribution Bias in Bolivia, Colombia, and El Salvador and Cooperation in Peru, by Age Group



Source: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013); Peru: ENHAB (2010).
Note: People with higher levels of hostile attribution bias tend to perceive hostile intents in others and to react hostilely as a result. People with higher levels of cooperation tend to collaborate better with others and are defined as more agreeable.

Figure 2.7 Distribution of Openness to Experience in Bolivia, Colombia, El Salvador, and Peru, by Educational Level

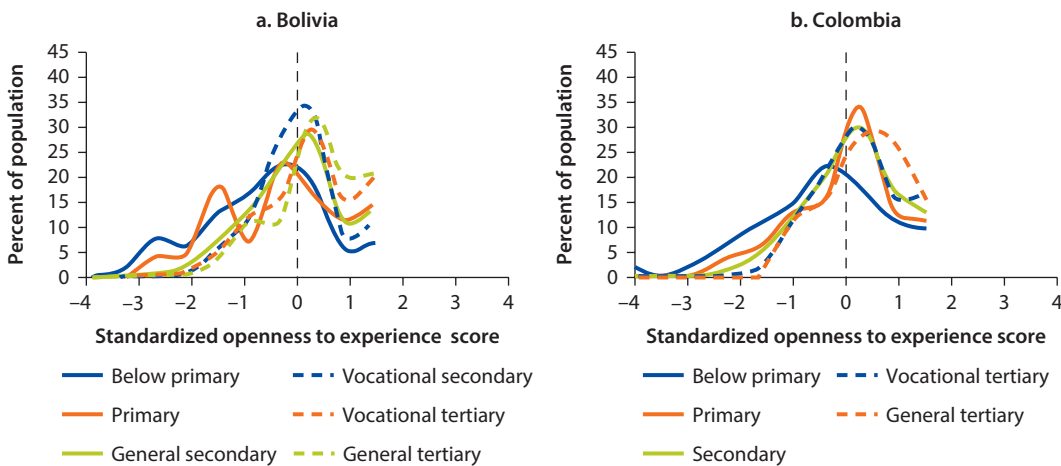
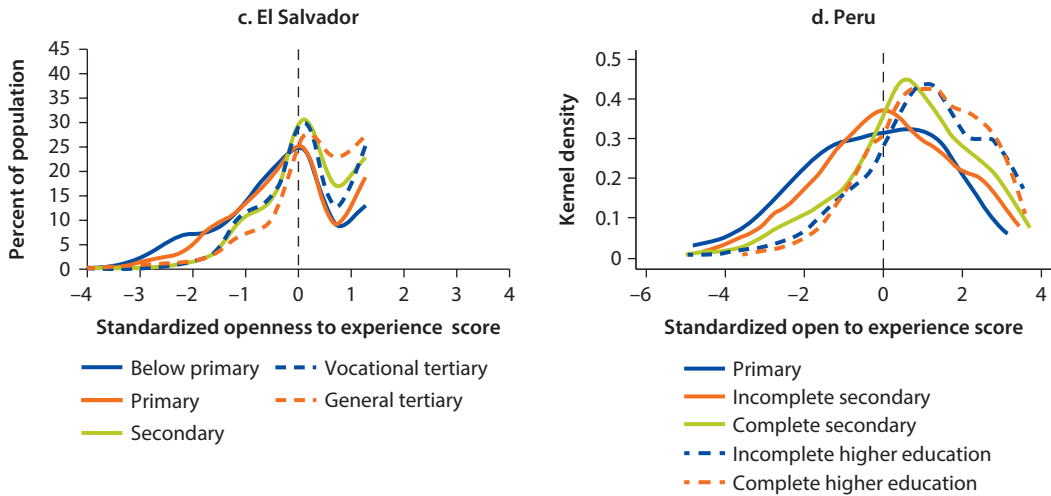


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Figure 2.7 Distribution of Openness to Experience in Bolivia, Colombia, El Salvador, and Peru, by Educational Level (continued)



Source: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013); Peru: ENHAB (2010).

Note

1. The results in this chapter are drawn from four background papers prepared for this study: Barón, Sarzosa, and Mola (2015) for Bolivia (2015); Acosta, Muller, and Sarzosa (2015) for Colombia; Oviedo and Muller (2015) for El Salvador; and Cunningham, Parra Torrado, and Sarzosa (2016) for Peru.

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Do Skills Affect Labor Market and Tertiary Education Outcomes in Latin America?

This chapter offers insights into the cognitive and socioemotional skills that may affect employment and labor earnings. It also considers the skills development process, identifying fundamental skills that are valuable for building advanced skills, particularly through tertiary education, and explores the joint effect of multiple skill sets on labor force and tertiary education outcomes.

The chapter draws on cross-sectional analyses of Bolivia, Colombia, El Salvador, and Peru, contextualizing the results by referring to studies that use data from high-income countries and other countries in Latin America.¹ The range of labor market outcomes discussed is broader than usually considered in similar exercises: Not only labor earnings but also employment and type of employment (salaried versus self-employment, formal versus informal) are assessed. The goal is to take a comprehensive look at the role played by cognitive and socioemotional skills in the labor market.

The chapter offers three main findings:

- Both cognitive and socioemotional skills are correlated with a range of labor market outcomes.
- Different socioemotional skills correlate with different labor market and education outcomes in the four countries studied (Bolivia, Colombia, El Salvador, and Peru), although cross-country trends are similar.
- The skills that emerge as statistically significant, the sign of the correlation, and the order of magnitude are similar, though not identical, in Latin America and countries in the Organisation for Economic Co-operation and Development (OECD).

Cognitive and Socioemotional Skills Are Correlated with Labor Earnings

Greater cognitive abilities are associated with higher labor earnings in Latin America (table 3.1). In Peru various cognitive skills—verbal fluency, verbal ability, math ability, and memory (see table 1.1 for definitions)—are very strongly correlated with labor earnings, even after controlling for demographic and industry characteristics. Math abilities are particularly important; verbal ability plays a weaker role. In Bolivia and Colombia, reading proficiency (the ability to read, process, and use written information) is strongly correlated with earnings (math ability and memory data were not collected for these countries). The size and statistical significance of these correlations are stronger than those estimated in a study of young workers (age 25–30) in Argentina and Chile (Bassi and others 2012). That study, which measured analogical reasoning and task planning, did not find significant payoffs for those skills.

The new results align with results on high-income countries. Cognitive abilities, generally proxied by test scores, significantly contribute to labor earnings in Canada, the United Kingdom, and the United States (Finnie and Meng 2001; McIntosh and Vignoles 2001; Heckman, Stixrud, and Urzúa 2006; Carneiro, Crawford, and Goodman 2007; OECD 2015). For example, a longitudinal study in the United States shows that the net impact of cognitive abilities on earnings ranges from 11 to 30 percentage points, depending on the level of schooling (Heckman, Stixrud, and Urzúa 2006). The magnitude of the returns to basic cognitive skills varies considerably across countries, however: Countries with the highest returns to cognitive skills (the United States, Ireland, and Germany) have

Table 3.1 Skills Correlated with Labor Earnings in Bolivia, Colombia, El Salvador, or Peru

| <i>Type of skill</i> | <i>Dimension</i> | <i>Disaggregated measures</i> | <i>Aggregated measures</i> |
|----------------------|--|---|---|
| Basic cognitive | Basic academic knowledge and reasoning | <ul style="list-style-type: none"> • Reading proficiency (ability to understand, evaluate, use, and engage with written text) • Math ability (basic math operations) • Verbal ability (vocabulary) | Cognitive skills (reading, language, and math ability) |
| Socioemotional | Achieving goals | <ul style="list-style-type: none"> • Conscientiousness (tendency to be organized, responsible, and hardworking) • Openness to experience (appreciation for art, learning, and unusual ideas) • Grit (perseverance and passion for long-term goals) | Stability personality traits (consistency in motivation, mood, and social interactions; include resilience, agreeableness, and conscientiousness) |
| | Working with others | <ul style="list-style-type: none"> • Agreeableness (–) (prosocial behaviors, cooperative orientation to others) | |
| | Managing emotions | <ul style="list-style-type: none"> • Hostile attribution bias (–) (tendency to perceive hostile intents in others) • Resilience (ability to manage negative emotions) | |

Sources: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013); Peru: ENHAB (2010).

Note: All skills listed in the table show correlations with labor earnings that were statistically significant (at the 10 percent, 5 percent, or 1 percent levels) for at least one of the four countries studied; see appendix D for details by country. Disaggregated measures were generated using ordinary least squares (OLS) or logit regressions; aggregated measures are based on a structural estimation of latent skills factors and OLS. Associations are positive unless marked (–). Calculations control for a range of characteristics (see appendix D and background papers for details).

returns roughly twice as large as countries with the lowest returns (Sweden, Norway, the Czech Republic) (Hanushek and others 2015). Differences in labor market contexts, such as labor regulations and wage-setting mechanisms, may explain this heterogeneity.

All three dimensions of socioemotional skills—achieving goals, working with others, and managing emotions—play significant roles in explaining labor earnings in Latin America, but their effect is more nuanced than cognitive skills. Three of the skills associated with achieving goals are positively correlated with labor earnings. Conscientiousness (self-discipline, planning) is positively correlated with labor earnings in El Salvador, and grit (effort, persistent interest) is positively correlated with labor earnings in Bolivia and Peru. Both are also the personality traits most associated with higher labor earnings in OECD countries (Nyhus and Pons 2005; Almlund and others 2011). These findings are consistent with the results of a cross-sectional study of young people (25–30) in Argentina and Chile. That study finds that self-efficacy (belief in one’s own abilities), a behavior related to “achieving goals,” has a stronger correlation with higher labor earnings than cognitive skills (Bassi and others 2012).

Being more open to experience—being more comfortable with complex, unfamiliar, and ambiguous work situations—is strongly positively correlated with labor earnings in Bolivia, Colombia, and El Salvador, but not in Peru. These mixed effects are in line with evidence from high-income countries, in which the association between this trait and labor earnings varies across contexts and studies. For example, labor earnings increased 4 percent for men (3 percent for women) for every standard deviation increase in openness to experience in the United Kingdom (Heineck 2011). However, a German study finds a positive correlation between openness to experience and labor earnings for women but the opposite effect for men (Heineck and Anger 2010).

Some of the measured skills associated with working well with others affect labor earnings in the Latin American sample. Agreeableness is strongly negatively correlated with labor earnings in El Salvador, Peru, and some OECD countries. Peruvian workers who display less kindness and cooperation than average earn higher labor earnings than do kinder and more agreeable workers.² A similar result is found among German women (Heineck and Anger 2010). In contrast, in the United States more agreeable men and women earn higher labor earnings (Mueller and Plug 2006).

Extroversion is the only socioemotional skill that does not correlate with labor earnings for any of the countries in this study; it plays only a minor role in high-income countries, as well. A plausible explanation for this finding is that the reward for extroversion likely depends on occupation: Extroversion may be beneficial for sales representatives or teachers but not accountants or scientists (Nyhus and Pons 2005).

Two skills underlying the “managing emotions” category are correlated with higher labor earnings. Resilience correlates positively with labor earnings in many Latin American and OECD countries. Workers in El Salvador and Peru who are more resilient earn significantly more than workers who are anxious, reactive,

and pessimistic. Controlling for cognitive skills, several empirical studies in high-income countries find that greater resilience is statistically significant in determining job performance and labor earnings (Bowles, Gintis, and Osborne 2001; Judge and Hurst 2007; Drago 2011). Greater hostility attribution bias (low resilience) is negatively correlated with labor earnings in Bolivia. The labor markets in Colombia do not appear to place the same value on this trait.

Given that some socioemotional skills positively correlate with labor earnings and others are negatively correlated, it is perhaps not surprising that the full set of skills only weakly correlates with higher earnings. Of the three countries for which the joint role of socioemotional skills was tested (Bolivia, Colombia, and Peru), only Peru shows a weakly positive correlation with labor earnings.

The combined effect of cognitive and socioemotional skills on labor earnings is greater than the effect of either skill set separately (figure 3.1). On average, Bolivian workers who are highly proficient in reading and language (score in the 10th decile) but have weak socioemotional skills (score in the 1st decile) earn 2.4–2.5 Bolivian Sol (Bs) an hour, whereas workers in the 10th decile for both types of skills earn more than Bs 2.5.

The joint effect of the two skills types is stronger in Peru. Although the increase of one standard deviation of socioemotional skills only weakly correlates with extra labor earnings, when taking into account its interaction with cognitive skills, it is highly correlated with higher labor earnings. The highest wage earners are in the top decile for both cognitive skills and a set of socioemotional skills. The wage gradient for socioemotional skills is steeper than for cognitive skills, suggesting that workers whose cognitive skills are high but socioemotional skills are low earn less than workers who have lower levels of cognitive skills but exhibit greater stability personality traits (consistency in motivation, mood, and social interactions).

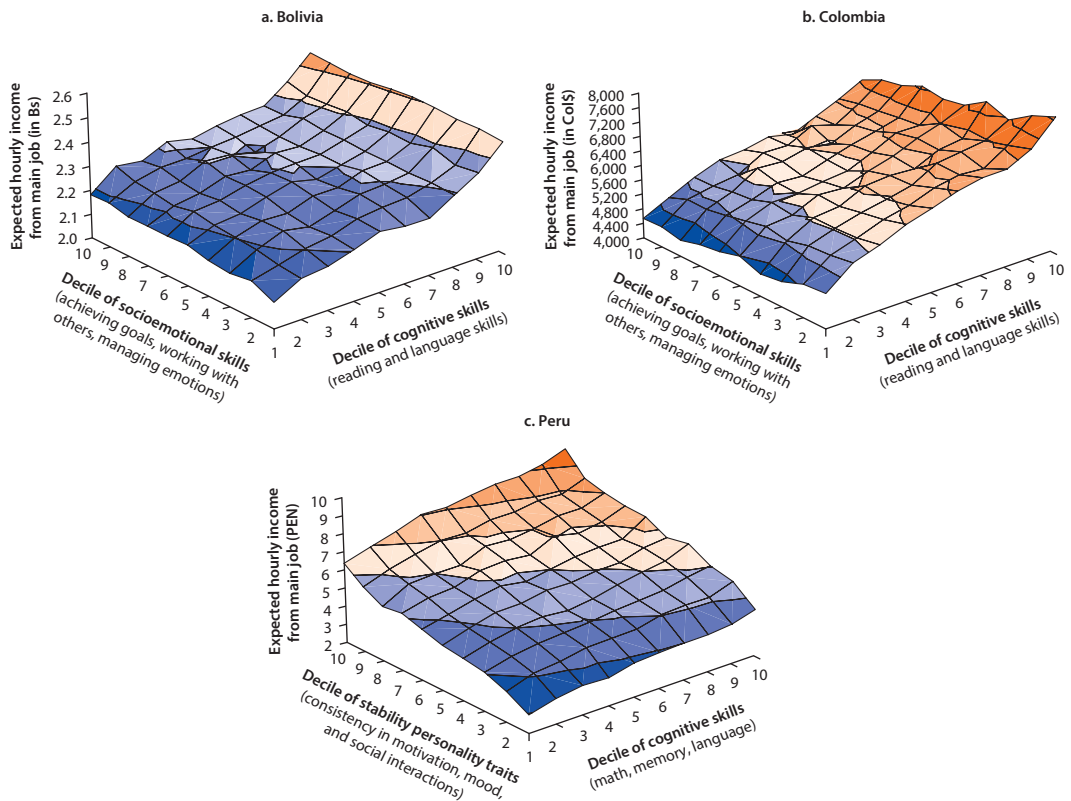
The interaction does not emerge in all cases, though. For example, the full set of socioemotional skills does not jointly affect earnings in Colombia (panel b, figure 3.1). Only higher cognitive skills are associated with higher earnings.

Socioemotional Skills Are Correlated with Employment and Productive Activity

By and large, socioemotional rather than cognitive skills determine labor force participation in Latin America. Cognitive skills do not correlate with employment in the four countries studied, although verbal fluency skills are weakly correlated with increased employment in Peru. Greater cognitive skills are correlated with higher labor force participation of young adults in Argentina (Bassi and others 2012).

Socioemotional skills associated with achieving goals are positively correlated with having a job in Latin America: Workers are more conscientious and have higher degrees of grit than nonworkers in Bolivia, Colombia, El Salvador, and Peru. Conscientiousness also seems to be the main skill associated with young adults' labor force participation in Argentina and Chile (Bassi and others 2012).

Figure 3.1 Correlation between Labor Earnings and Cognitive and Socioemotional Skills in Bolivia, Colombia, and Peru



Source: Bolivia and Colombia: STEP Household Surveys (2012); Peru: ENHAB (2010).

Note: Simulations are based on structural estimations of latent skills factors, using Sarzosa and Urzúa (2016). The socioemotional-cognitive skill combinations that share a wage range are denoted in the same color in each graph.

This finding mirrors those from high-income countries, where conscientiousness appears to have a large and positive effect on labor participation in the United States and Germany.³

Other socioemotional skills are barely correlated with labor force participation in Latin America. None of the skills associated with “working with others” correlates with the likelihood of holding a job (table 3.2). In the “managing emotions” category, only Bolivians who score low in agreeableness and Salvadorans who have difficulty making decisions are more likely to be in the labor force. A combination of a set of socioemotional skills (extroversion and openness to experience) is associated with higher employment in Peru, but the correlation is not significant in Bolivia or Colombia.

Similarly to the findings for Peru, extroversion (a component of working with others) and resilience (a component of managing emotions) are correlated with

Table 3.2 Skills Correlated with Employment in Bolivia, Colombia, El Salvador, or Peru

| <i>Type of skill</i> | <i>Dimension</i> | <i>Disaggregated measures</i> | <i>Aggregated measures</i> |
|-----------------------|--|---|--|
| Cognitive skills | Basic academic knowledge and reasoning | <ul style="list-style-type: none"> • Verbal fluency (how quickly and easily individuals access words from memory) | None |
| Socioemotional skills | Achieving goals | <ul style="list-style-type: none"> • Conscientiousness (tendency to be organized, responsible, and hardworking) • Grit (perseverance and passion for long-term goals) | Plasticity personality traits (striving toward personal growth; include extroversion and openness to experience) |
| | Working with others | None | |
| | Managing emotions | <ul style="list-style-type: none"> • Hostile attribution bias (–) (tendency to perceive hostile intents in others) • Decision making (–) (How individuals approach decision situations) | |

Sources: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013); Peru: ENHAB (2010).

Note: All skills listed in the table show correlations with labor earnings that were statistically significant (at the 10 percent, 5 percent, or 1 percent levels) for at least one of the four countries studied; see appendix D for details by country. Disaggregated measures were generated using ordinary least squares (OLS) or logit regressions; aggregated measures are based on a structural estimation of latent skills factors and OLS.

Associations are positive unless marked (–). Calculations control for a range of characteristics (see appendix D and background papers for details).

employment status in high-income countries, though significant results emerge in only a few studies. Both are strongly correlated with male labor participation in Germany and the United States (Barrick and Mount 1991; Heckman, Stixrud, and Urzúa 2006; Wichert and Pohlmeier 2010). For example, a 30-year-old man in the United States who is in the 75th percentile for resilience is 15 percent more likely than a man in the 25th percentile to be employed (Heckman, Stixrud, and Urzúa 2006).

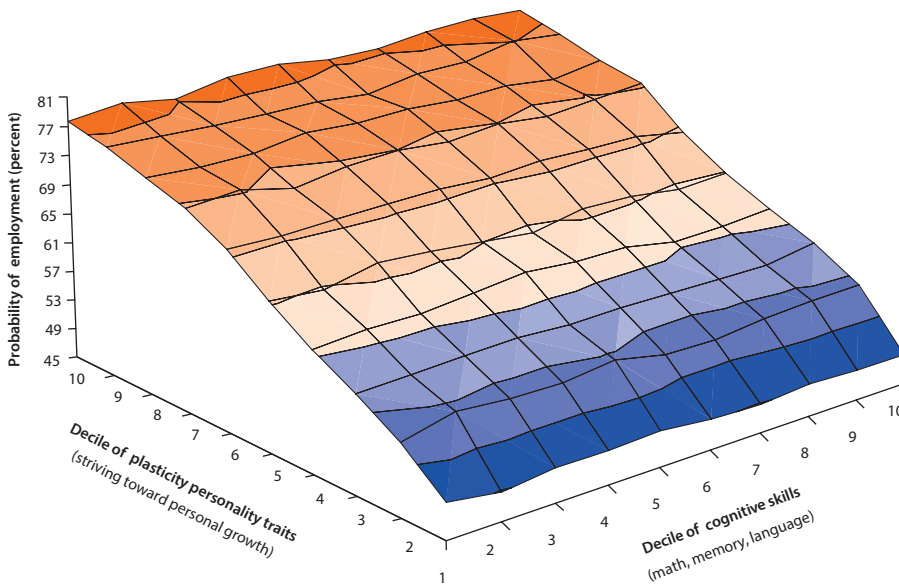
Even when considering the joint effect of cognitive and socioemotional skills, cognitive skills have little effect on the likelihood of employment. Among people in Peru with low socioemotional skills, for example, a person with low cognitive skills is as likely to be employed as a person with high cognitive skills (figure 3.2).

Both socioemotional and cognitive skills play roles in engaging in productive activities, which includes working, looking for a job, and studying. In Colombia activity rates are higher among people with higher cognitive or (especially) socioemotional skills (figure 3.3). Given the lack of correlation between cognitive skills and employment and the small number of unemployed people in the sample, students are probably driving this correlation. This finding suggests that students with strong cognitive skills are more likely to stay active if they also have strong socioemotional skills.

Both Types of Skills Are Correlated with Job Type

Not only may certain skills be correlated with being employed or otherwise active, they also may determine the type of job that a person may hold. The skills required to be a formal sector worker may differ from those needed for informal

Figure 3.2 Correlation between Employment and Cognitive and Socioemotional Skills in Peru



Source: Peru: ENHAB (2010).

Note: Simulations are based on structural estimations of latent skills factors, using Sarzosa and Urzúa (2016). The socioemotional-cognitive skill combinations that share a wage range are denoted in the same color in each graph.

sector jobs. Similarly, those who select self-employment may have different strengths than those who are wage employees.

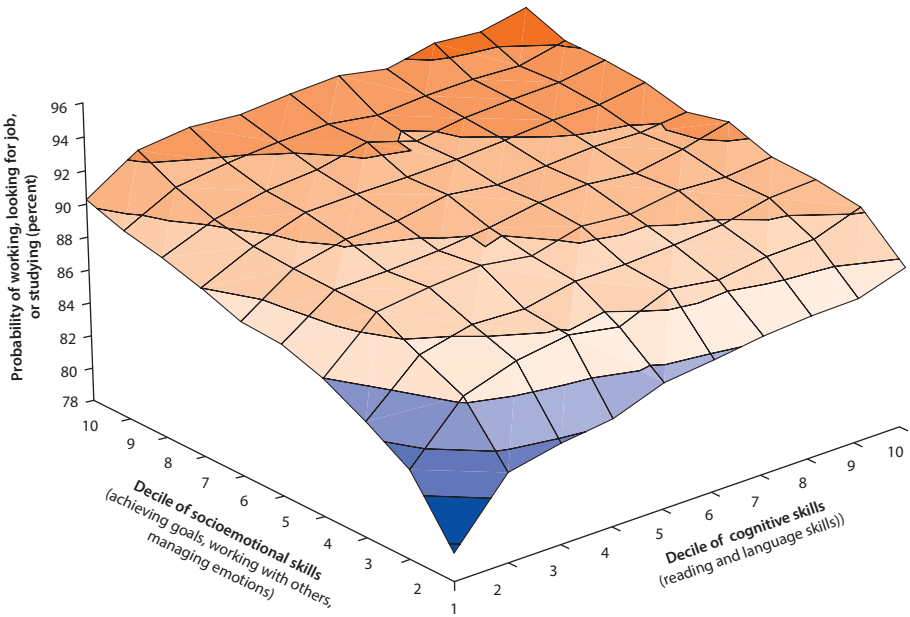
Cognitive and Socioemotional Skills Increase the Likelihood of Working in the Formal Sector

In Bolivia, Colombia, and Peru, greater cognitive ability is associated with a greater likelihood of holding a job with benefits. Verbal ability and reading proficiency are the driving factors in all three countries (table 3.3). No OECD comparisons can be presented, because the OECD studies do not explore the role of skills in determining formal employment.

Socioemotional skills are weakly correlated with formal sector employment. In Bolivia, formal workers have higher levels of all the socioemotional skills included in the analysis, as compared to informal workers. However, no single skill can be identified as the driving factor for informality. Formal sector workers in El Salvador display greater goal achievement (conscientiousness and openness to experience) and ability to manage emotions (resilience) than their informal sector peers, although the correlations are weak at best.

The interactive effects of the two skills types may or may not correlate with the probability of being a formal sector worker. Both socioemotional and cognitive skills are correlated with a higher probability of formal sector employment in Bolivia, with socioemotional skills playing a particularly important role

Figure 3.3 Correlation between Any Productive Activity (Working, Looking for Job, or Studying) and Cognitive and Socioemotional Skills in Colombia



Source: Colombia STEP Household Survey (2012).

Note: Simulations based on structural estimations of latent skills factors, using Sarzosa and Urzúa (2016). The socioemotional-cognitive skill combinations that share a wage range are denoted in the same color in each graph.

Table 3.3 Skills Correlated with Formal Employment in Bolivia, Colombia, El Salvador, or Peru

| Type of skill | Dimension | Disaggregated measures | Aggregated measures |
|-----------------|--|--|---|
| Basic cognitive | Basic academic knowledge and reasoning | • Reading proficiency (ability to understand, evaluate, use, and engage with written text) | Cognitive skills (reading, language, and Math ability) |
| | | • Verbal ability (receptive vocabulary) | |
| Socioemotional | Achieving goals | • Conscientiousness (tendency to be organized, responsible, and hardworking) | Socioemotional skills (achieving goals, working with others, managing emotions) |
| | Working with others | • Openness to experience (Appreciation for art, learning, and unusual ideas) | |
| | | • Agreeableness (–) (prosocial behaviors, cooperative orientation to others) | |
| | Managing emotions | • Hostile attribution bias (–) (tendency to perceive hostile intents in others) | |
| | | • Resilience (ability to manage negative emotions) | |

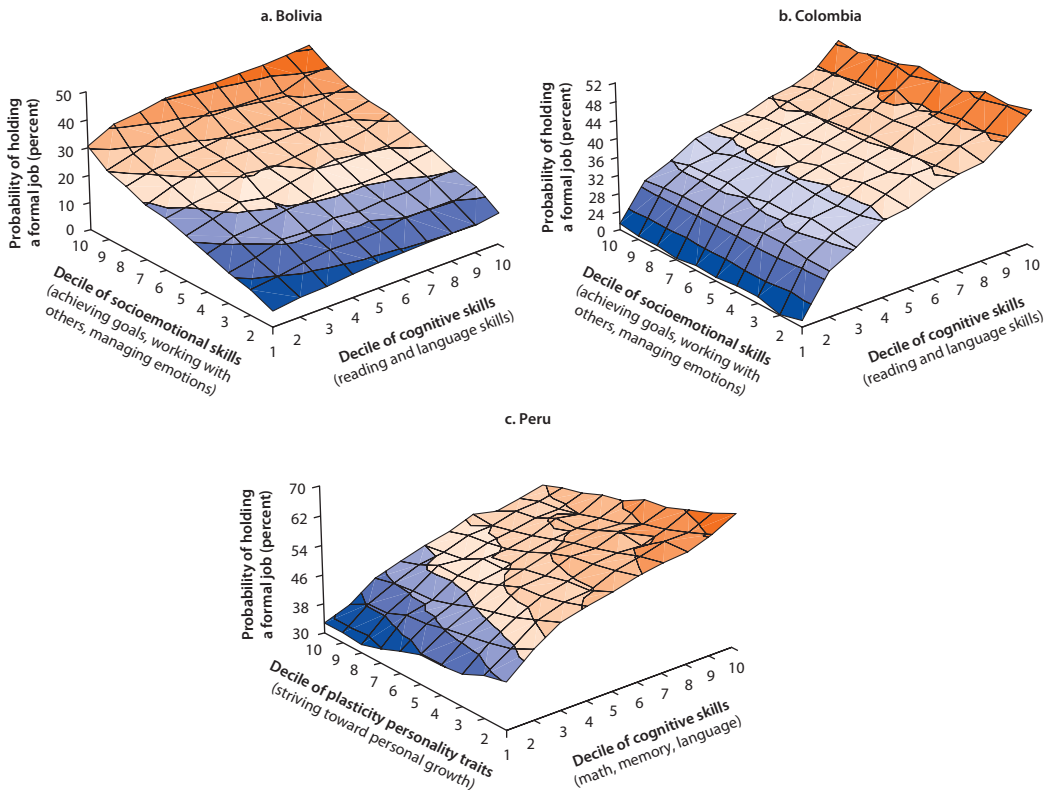
Sources: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013); and Peru ENHAB (2010).

Note: All skills listed in the table show correlations with labor earnings that were statistically significant (at the 10 percent, 5 percent, or 1 percent levels) for at least one of the four countries studied; see appendix D for details by country. Disaggregated measures were generated using ordinary least squares (OLS) or logit regressions; aggregated measures are based on a structural estimation of latent skills factors and OLS. Associations are positive unless marked (–). Calculations control for a range of characteristics (see appendix D and background papers for details).

(figure 3.4, panel a). Among people in the top cognitive decile, the probability of being a formal sector worker ranges from 10 percent for workers with very low socioemotional skills to 50 percent for people with very high socioemotional skills. For people in the lowest decile of socioemotional abilities, higher cognitive skills have barely any impact on their ability to get a formal job. The interactive effects reveal no nuanced patterns in Colombia. Cognitive skills are the only skill set correlated with the probability of being a formal sector worker (figure 3.4, panel b).

Socioemotional skills are not correlated with the likelihood of formal sector employment in Peru, but lower levels of socioemotional skills (agreeableness, conscientiousness, and extroversion) are associated with formal employment for each cognitive skill level (figure 3.4, panel c). The highest likelihood of formal employment occurs among workers with the highest cognitive and lowest socio-emotional skills.

Figure 3.4 Correlation between Formal Employment and Cognitive and Socioemotional Skills in Bolivia, Colombia, and Peru



Sources: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013); Peru: ENHAB (2010).

Note: Simulations are based on structural estimations of latent skills factors, using Sarzosa and Urzúa (2016). The socioemotional-cognitive skill combinations that share a wage range are denoted in the same color in each graph.

Skills Play a Limited Role in Sorting Workers into Self-Employed and Wage-Earning Categories in Latin America

There is not a consistent pattern of skills that correlate with being a wage earning employee rather than self-employed. People with higher cognitive skills are more likely to be wage-earning employees—rather than self-employed—in Colombia and Peru, but no correlation is evident in Bolivia or El Salvador (table 3.4). Verbal abilities are particularly important in Peru. Only socioemotional skills associated with achieving goals are correlated with being a wage earner rather than self-employed: Colombians who are more open to experience and Peruvians with greater grit are more likely to be wage earners. Decision making, a skill under the dimension of managing emotions, is only modestly important, with a weak correlation in Bolivia and no correlation in the others.

In contrast, a small body of literature shows that cognitive abilities and personality traits may matter in becoming a successful entrepreneur. In the United States, for instance, people with higher learning aptitudes (advanced cognitive skills, which are not measured in our data), a tendency to “break the rules” (as measured by the degree to which they engaged in illicit and risky activities before the age of 22), and high self-esteem in adolescence (which, like the tendency to break the rules, may be correlated with achieving goals) are more likely to become successful incorporated entrepreneurs (Levine and Rubinstein 2013).

The joint effects of both skills groups do not show any correlations with being a wage worker rather than self-employed. This result is perhaps not surprising given the weak role skills play in determining wage versus self-employed employment.

Table 3.4 Skills Correlated with Wage Employment in Bolivia, Colombia, El Salvador, or Peru

| <i>Type of skill</i> | <i>Dimension</i> | <i>Disaggregated measures</i> | <i>Aggregated measures</i> |
|-----------------------|--|---|---|
| Cognitive skills | Basic academic knowledge and reasoning | • Verbal ability (receptive vocabulary and verbal ability of adult subjects) | Cognitive skills (reading and language skills) |
| | | • Verbal fluency (how quickly and easily individuals access words from memory) | |
| Socioemotional skills | Achieving goals | • Openness to experience (appreciation for art, learning, and unusual ideas) • Grit (perseverance and passion for long-term goals) | Perseverance personality traits (perseverance of effort and goals, and consistency of interest) |
| | Working with others | • None | |
| | Managing emotions | • Decision making (–) (how individuals approach decision situations) | |

Sources: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013); Peru: ENHAB (2010).

Note: All skills listed in the table show correlations with labor earnings that were statistically significant (at the 10 percent, 5 percent, or 1 percent levels) for at least one of the four countries studied; see appendix D for details by country. Disaggregated measures were generated using ordinary least squares (OLS) or logit regressions; aggregated measures are based on a structural estimation of latent skills factors and OLS. Associations are positive unless marked (–). Calculations control for a range of characteristics (see appendix D and background papers for details).

Both Skills Types Positively Correlate with Tertiary School Attendance

High levels of cognitive skills are related to a high probability of pursuing tertiary education in Bolivia, Colombia, and El Salvador (this outcome was not studied for Peru), consistent with findings from high-income countries. This is consistent with a study of 11 OECD countries that shows that in all of them but Belgium, greater cognitive skills have a strong impact on tertiary attendance and that the effect is stronger than the impact of greater socioemotional skills (OECD 2015). This finding may illustrate the fact that selection criteria for tertiary-education institutions rely on high school graduation certificates, grades, or achievements, which capture mainly cognitive skills. Once accepted, socioemotional skills, such as persistence, may be useful for students to persevere and complete their studies.

A wider range of socioemotional skills is correlated with tertiary education in Latin America than in OECD countries. An achieving-goals skill—openness to experience (linked to spontaneity and flexibility)—is correlated with tertiary education in Bolivia, Colombia, and El Salvador (this outcome was not analyzed for Peru). In Colombia and the United States managing emotions skills, such as resilience, are correlated with tertiary education attainment.⁴ Working with others skills show mixed effects in the three Latin American countries studied: The correlation between agreeableness and tertiary education enrollment is positive in El Salvador but negative in Colombia. Similarly, higher levels of skills associated with achieving goals—specifically conscientiousness and grit—are the socioemotional skills most highly correlated with tertiary education completion in European samples (Almlund and others 2011).⁵

Table 3.5 Skills Correlated with Tertiary Education Attendance in Bolivia, Colombia, or El Salvador

| <i>Type of skill</i> | <i>Dimension</i> | <i>Disaggregated measures</i> | <i>Aggregated measures</i> |
|----------------------|--|---|---|
| Basic cognitive | Basic academic knowledge and reasoning | • Reading proficiency (ability to understand, evaluate, use, and engage with written text) | Cognitive skills (reading and language skills) |
| | | • Math ability (basic math operations) | |
| Socioemotional | Achieving goals | • Openness to experience (appreciation for art, learning, and unusual ideas) | Socioemotional skills (achieving goals, working with others, managing emotions) |
| | Working with others | • Agreeableness (–) (prosocial behaviors, cooperative orientation to others) | |
| | Managing emotions | • Decision making (how individuals approach decision situations) • Hostile attribution bias (–) (tendency to perceive hostile intents in others) • Resilience (ability to manage negative emotions) | |

Sources: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey (2013).

Note: All skills listed in the table show correlations with labor earnings that were statistically significant (at the 10 percent, 5 percent, or 1 percent levels) for at least one of the four countries studied; see appendix D for details by country. Disaggregated measures were generated using ordinary least squares (OLS) or logit regressions; aggregated measures are based on a structural estimation of latent skills factors and OLS. Associations are positive unless marked (–). Calculations control for a range of characteristics (see appendix D and background papers for details).

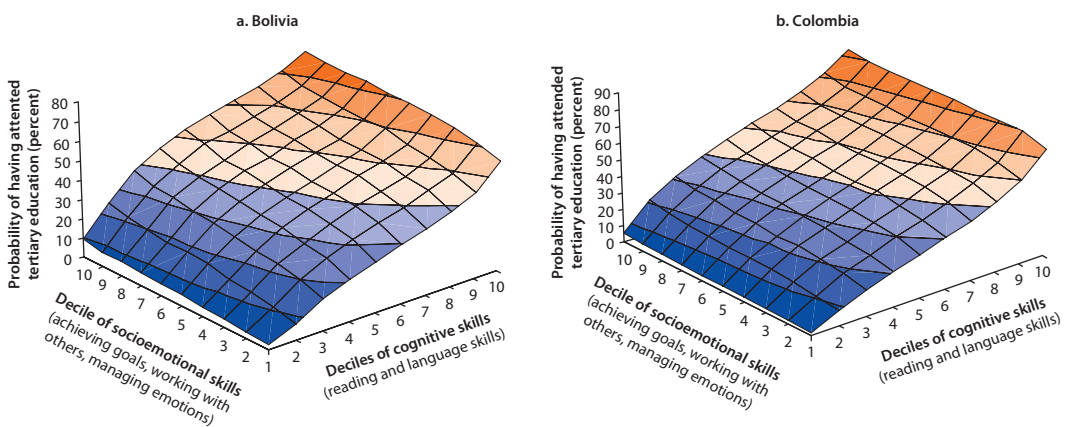
When combining both cognitive and socioemotional skills, again the data confirm that cognitive skills play the primary role in tertiary school attendance (figure 3.5). In Colombia a person with socioemotional skills in the top decile has a 17 percent higher probability of attending or having attended college than someone in the bottom decile; the increase rises to 71 percent when cognitive skills are considered. A similar pattern is observed in Bolivia. These findings are consistent with the idea that a solid cognitive knowledge base is a prerequisite to effectively transitioning to tertiary education and that certain traits can help maximize the chance of doing so. Socioemotional skills also matter: In Colombia a person in the highest reading proficiency decile but a low socioemotional decile has a 60 percent chance of attending tertiary education; the likelihood rises to 85 percent for a person in the highest decile of the socioemotional scale.

Interpretation of Cross-Country Variations

Both cognitive and socioemotional skills are correlated with more favorable labor force and tertiary education outcomes in Bolivia, Colombia, El Salvador, and Peru. These findings confirm results from Argentina and Chile and are overall consistent with findings from the United States and other OECD countries using longitudinal data and establishing causal effects.

Different cognitive skills are positively associated with better jobs (jobs that pay more and require higher qualifications). Reading proficiency (in Bolivia, Colombia, and El Salvador) and verbal fluency and math ability (in Peru) are

Figure 3.5 Correlation between Tertiary Education Attendance and Cognitive and Socioemotional Skills in Bolivia and Colombia



Sources: Bolivia and Colombia STEP Household Surveys (2012).

Note: Simulations based on structural estimations of latent skills, using Sarzosa and Urzúa (2016). The socioemotional-cognitive skill combinations that share a wage range are denoted in the same color in each graph.

positively correlated with higher labor earnings and formal employment. Cognitive skills do not affect employment in any of the four countries studied, however.

Socioemotional skills are associated with employment and a broader range of labor market outcomes. In all four countries (as well as higher-income countries), skills associated with achieving goals (being conscientious and having grit) are the only skills correlated with employment. This finding has also been found in higher-income countries. Nearly all the measured skills that comprise achieving goals, working with others, and managing emotions—namely, openness to experience, conscientiousness, agreeableness, resilience, grit, decision making, and hostile attribution bias—are correlated with higher labor earnings and, to a lesser degree, formal employment and wage employment. Only one measured skill that can be classified as working with others (extroversion) was not correlated with any labor market outcome.

In Bolivia, Colombia, and El Salvador, as in higher-income countries, socioemotional skills are correlated with tertiary education. All the measured socioemotional skills predict whether students seek tertiary education; achieving goals, measured by perseverance, plays a particularly large role.

The skills associated with a given outcome vary greatly across countries; the range is particularly wide for socioemotional skills. For example, conscientiousness is correlated with labor earnings in El Salvador but not in other countries; it is correlated with employment in all countries but Peru. Although the determinants of these variations cannot be unambiguously untangled, some factors could explain cross-country patterns. First, different cultural contexts may influence both the ways certain behaviors are rewarded in the workplace and the manner in which survey respondents answer questions related to socioemotional skills. Second, the structure of employment differs across countries; given that some skills may not be rewarded equally across occupations (extroversion, for example, probably matters in some fields but not others), the distribution of occupations may result in some skills being valued over others. Third, differences in the methodology to generate the socioemotional skills measures and in the questions used to measure cognitive skills may account for some of the observed differences between the four countries in our sample and with results from OECD and the other Latin America analysis (Bassi and others 2012). Finally, measurement errors could arise from the limited number of questions on socioemotional skills surveyed for Bolivia, Colombia, and El Salvador.

Because the data used for this study were observed at a single point in time, they do not allow causal links between skills and labor outcomes to be established. However, the bulk of evidence from high-income countries use longitudinal data and robustly establish causal links between cognitive and socioemotional skills and labor and education outcomes (see, for example, Heckman, Stixrud, and Urzúa 2006; Carneiro, Crawford, and Goodman 2007; Lindqvist and Vestman 2011; Segal 2013; and OECD 2015). Although the contexts

in high-income countries are different from those in low- and middle-income countries, the result in high-income countries suggests that better skills could cause better labor market outcomes.

In addition, the psychology literature suggests that socioemotional skills, particularly skills that are measured in the surveys used here, are relatively fixed in adult populations. As these samples are randomly distributed across the working age population, the skills measured today are likely to be very similar (at least in terms of rank-order) to the skills respondents had when they established their work patterns.

Although our results do not establish a causal relationship, evidence from other studies suggests that the estimated correlates can be interpreted as signaling that both cognitive and socioemotional skills are inputs in the labor market success process. They should be fostered, using skill development strategies described in chapter 4.

Notes

1. The results in this chapter are drawn from the following background papers prepared as part of this study: Barón, Sarzosa, and Mola for Bolivia (2015); Acosta, Muller, and Sarzosa (2015) for Colombia; Oviedo and Muller (2015) for El Salvador; and Cunningham, Parra Torrado, and Sarzosa (2016) for Peru (for descriptions of these papers, see appendix A). The empirical analysis uses two different methods in order to present a fuller picture of the relationship between skills and work. Method A allows a nuanced exploration of the different types of skills, but at the cost of estimation bias. Method B corrects for measurement error but aggregates variables of interest. Appendix B describes both methods (for details, see the background papers). For ease of presentation, we do not distinguish between the methodologies used to derive each result in this chapter. Appendix D reproduces the regression results reported in the background papers.
2. The data from Peru generate two variables (“kindness” and “cooperation”) that are similar to the Goldberg Big Five trait of “agreeableness.” One might argue that people who are more agreeable tend to sort themselves into the caring professions, which tend to be lower paid. The case study of Peru controls for industry of employment.
3. Counterintuitively, a higher score for openness to experience—a behavior within the achieving goals category—is negatively correlated with employment in Germany; this skill does not emerge as significant in other studies.
4. Heckman Stixrud, and Urzúa (2006) explore how self-esteem and self-control, both facets of resilience, affect college graduation. According to them, the relationship between resilience and schooling does not appear to be monotonic in the United States.
5. Psychology research shows that self-discipline and grit are crucial determinants of adolescent academic success in the United States. Several measures of self-discipline outperform IQ as a predictor of the academic performance of adolescents. Grit is correlated with a range of schooling outcomes, such as educational attainment, grades, and retention (Duckworth and others 2007).

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Policy and Programming for Socioemotional Skill Development

The previous chapter showed that both socioemotional and cognitive skills are necessary in Latin America for a job skills development strategy. While there is a large literature on methods for cognitive skill instruction, the literature is much more limited on methods for acquiring socioemotional skills. Further, some concepts from the socioemotional skills literature may be useful to advance and refine the methods for teaching cognition. It may be necessary to expand the job preparation process beyond existing cognitive skills development frameworks into new socioemotional and cognitive learning models, using a broader range of actors.

The guiding framework for this chapter is the concept of readiness. It refers to the notion that skills can be developed only when an individual is neurobiologically, psychosocially, and situationally ready to learn them (Guerra, Modecki, and Cunningham 2014). Just as it is not possible to teach one-year-olds to write (because they cannot manipulate a pencil or computer or understand the concept of writing), it is not possible to teach very young children social problem solving (because they do not yet have the psychosocial wiring needed for empathy).

In addition to readiness, a skills strategy should consider the different actors who can help develop skills at different ages and in various contexts (Cunningham and Villaseñor 2016). Parents and family members are the primary teachers of very young children (age 0–2). Early childhood programs boost the skills-formation process for children 3–5. For school-age children, family and school are the dominant teachers, but peers also start to have an influence. Peer influence grows and parental influence fades in adolescence (13–16), while schools continue to play a strong role in skills development. Once an individual leaves school, skills are learned in the workplace and in new family settings.¹

This chapter examines the concept of readiness for developing socioemotional and cognitive skills that are relevant for the labor market. It identifies methods for teaching these skills and the appropriate teachers at different stages.

It describes some successful programs to illustrate how such socioemotional skills can be developed (appendix F provides an inventory of 27 programs that aim to foster socioemotional skills, from the early years to young adulthood, from Latin America and other regions) and provides some examples of flexible teaching methods. The chapter's primary conclusion is that socioemotional skills can, and have been, successfully taught through public sector interventions across the world. Cognitive skill development can also be enhanced by taking account of readiness and by practicing socioemotional skills in the cognitive skills learning process.

Translating Research Findings into Policy-Relevant Concepts

To begin, we map into a single set of definitions the skills used in the analysis, the skills that employers value, and the skills that are commonly the focus of programming. We use data from employer surveys that identify high-priority socioemotional skills to construct a taxonomy of skills that reflect values and behaviors, are assets in the labor market, and can be taught at key stages of the life cycle. This classification consists of eight categories—social problem solving, resilience, achievement motivation, self-control, teamwork, initiative, confidence, and ethics—summarized by the acronym PRACTICE (table 4.1).

Table 4.1 Definitions of PRACTICE Skills

| <i>Skill</i> | <i>Definition</i> |
|--------------------------|---|
| (Social) problem solving | Set of information-processing skills that determine how individuals solve social problems, such as attention to relevant cues, interpretation of cues and emotional reactions, goal setting and planning, access to behavioral responses from memory, evaluation of responses, decision making, behavioral enactment, and reflection. |
| Resilience | Ability to bounce back from adversity and thrive in the context of risk. Encompasses ability to realistically connect future goals and opportunities to one's own abilities and to adapt as needed to situational constraints. |
| Achievement motivation | Orientation toward success, mastery, and sense of purpose. Associated with high degree of independence and capacity and drive to pursue difficult tasks and work toward desired goals. |
| Control (self-control) | Range of self-regulatory skills that allow individuals to modulate and restrain their impulses, including ability to focus attention, delay gratification, and inhibit impulsive responding. |
| Teamwork | Skills involved in getting along with others, understanding their feelings and points of view, communicating effectively, being helpful and agreeable, and not engaging in aggressive or bullying behaviors. |
| Initiative | Personal agency and internal locus of control; belief that outcomes depend on one's own actions rather than fate, chance, or others. Linked to enterprise, taking charge, follow-through, determination, and leadership. |
| Confidence | Beliefs and feelings about one's abilities, a realistic self-concept, and self-esteem. |
| Ethics | Strength of character, social responsibility, and principled behavior, including being honest and fair, following rules, following through on actions, and behaving responsibly. |

Source: Guerra, Modecki, and Cunningham 2014.

Each of the PRACTICE skills can be mapped to the dimensions of socioemotional skills analyzed in chapter 3. The first column of table 4.2 presents the skills dimensions that were linked to labor market success in chapter 3. The second column presents the corresponding PRACTICE skill defined by employers. The third column presents some specific skills associated with each category, which are the focus of policies. The table also presents the appropriate age for the development of the eight PRACTICE socioemotional skills sets, based on the concept of readiness as it is derived from the psychology literature. For example, (social) problem solving is best developed during middle childhood (age 6–11) and adolescence (age 12–18), with foundational

Table 4.2 Optimal Stages of Development of PRACTICE Skills

| Dimension of socioemotional skills | PRACTICE taxonomy of socioemotional skills | Subskills | Stage of development and key actors | | | |
|------------------------------------|--|---|-------------------------------------|-----------------------------|----------------------------|--|
| | | | Age: 0–5 (parents) | Age: 6–11 (parents, school) | Age: 12–18 (school, peers) | Age: 19–29 (school, family, workplace) |
| Achieving goals | Achievement motivation | Mastery orientation Sense of purpose Motivation to learn | | Optimal | Reinforcement | |
| | Ethics | Honesty Fairness orientation Moral reasoning | Foundational | Optimal | Optimal | |
| | Initiative | Agency Internal locus of control Leadership | Optimal | Optimal | Optimal | Optimal |
| | Problem-solving | Social-information processing skills Decision making Planning skills | Foundational | Optimal | Optimal | Reinforcement |
| Working with others | Teamwork | Empathy/prosocial behavior Low aggression Communication skills Relationship skills | Optimal | Optimal | Reinforcement | |
| Managing emotions | Confidence | Self-efficacy Self-esteem Positive identity | Foundational | Optimal | Optimal | Reinforcement |
| | Control | Delay of gratification Impulse control Attentional focus Self-management | Optimal | Optimal | Optimal | Reinforcement |
| | Resilience | Stress resistance Perseverance Optimism Adaptability | Optimal | Optimal | Reinforcement | |

Source: Guerra, Modecki, and Cunningham 2014.

Note: “Foundational” refers to the basis for the core skill building that takes place in a subsequent period. “Optimal” refers to periods of maximum sensitivity when it is easiest for individuals to acquire specific skills. “Reinforcement” means that intense practice is needed for the skills to be mastered.

skills developed in early childhood (age 0–5) and reinforcement opportunities in early adulthood (age 19–29).²

Three findings emerge from this exercise. First, middle childhood is an optimal period for developing all of the PRACTICE skills: Children have the necessary neurobiological wiring and psychosocial maturity and are in an environment that encourages practice and learning. Second, adolescence is also a period of optimal skills development, allowing for more complex development of skills initiated in middle childhood. The finding suggests that socioemotional development efforts should continue through the high school years and should not be limited to at-risk youth, as is the current common practice. Third, schools are an ideal place to teach these skills, because they are the public institutions that have greatest influence over children and youth during this period. These findings highlight the importance of keeping children in school through adolescence.

Socioemotional Learning through the Life Cycle

The formation of skills is a cumulative process. Because it is affected by the environment and investments, programs for developing socioemotional skills are best implemented at particular times in the life cycle.

Early Years (0–5): Shaping the Foundations in a Safe, Structured Context

Important foundational socioemotional skills are developed in the early years. They include social problem solving when playing with peers; impulse control; and the development of confidence, a set of ethics, and the ability to work with others. The young brain is highly malleable and is being actively wired in this stage, creating a foundation for later skill development (Kautz and others 2014). Much of the positive brain wiring before the age of three occurs through interactions with a trusted, supportive caregiver. Children who have a secure attachment to a supportive caregiver learn to trust others; by the age of two or three, they begin socializing with peers and learning how to navigate social interactions. Because young children's behaviors are controlled by external guidance rather than internal motivation, they need contexts that allow them to observe, model, and be rewarded for developmentally appropriate skills that are a foundation for future skill building (Guerra, Modecki, and Cunningham 2014).

Given the importance for very young children of connection with a caregiver and the need for a scaffolding within which to develop foundational skills, two sets of interventions are particularly effective. Parental support programs teach caregivers how to connect with their young children in a positive manner and to provide a structured context in which the infants or toddlers can begin developing foundations of socioemotional (and cognitive) skills. The support may be center-based or the program may send child development experts to the house to teach parents how to use their own context to stimulate their infants and toddlers. Programs to enhance parental learning and encouragement of early stimulation and nutrition have increased the acquisition of cognitive skills and socioemotional skills in young children (Kagitcibasi, Sunar, and Berkman 1988;

Gertler and others 2014), although effects are more limited for high-risk children (Peacock and others 2013).

Children between the ages of three and five thrive in high-quality, child-centered daycare and preschools that focus on improving personality traits and managing externalizing behaviors while also teaching basic cognitive skills. Such programs have shown positive results in employment, wages, and positive behaviors for more than 30 years after program participation (Schweinhart and others 2005). Much has been written in the psychological and economics literature about the benefits of early investment in high-quality preschool programs, such as the enriched Head Start and the Perry Preschool Program, particularly when followed by later enrichment programs (Cunha and Heckman 2008). Through well-structured and responsive environments that include low student-teacher ratios, child-centered activities, and opportunities for cooperative learning and structured play, these settings can promote a range of skills, including the PRACTICE skills control, teamwork, and initiative. Indeed, many effective preschool programs specifically target these skills (Schweinhart and others 2010).

A number of evidence-based programs currently are available to directly build socioemotional skills in preschool-age children. They often address skills related to social interactions and teamwork, including communication and relationship skills, empathy, prosocial behavior, and prevention of aggression. Some of these programs, such as Second Step, focus on self-control and initiative. Others, such as Tools of the Mind, target only self-control skills (box 4.1).

Middle Childhood (6–11): Experimenting, Practicing, and Entrenching Socioemotional Skills

The peak target age for socioemotional skill development is 6–11, the age group for which the evidence for program effectiveness is greatest (Durlak and others 2011). This is a prime period for impacting all of the PRACTICE skills. Beginning around age six or seven, the brain becomes increasingly coherent. Frequently used brain connections become stronger, leading to the formation of habitual social, emotional, and behavioral responses. Children 6–11 improve their ability to manipulate concrete information (they still cannot think abstractly), and their personality traits start to crystalize (Shiner 2000). They still need supportive and structured contexts, but they also need freedom to experiment and practice newly acquired skills so that they become habitual.

Although parents still play a significant role in supporting socioemotional and cognitive skills development in middle childhood, schools can—and should—play a significant role. They are particularly well-suited for socioemotional skill development for this age group, for several reasons. Primary schooling is nearly universal in Latin America, granting access to the entire middle childhood population; the structured and habitual school day allows for entrenching habits; children typically spend time in a single classroom with a single teacher and the same group of peers for an entire school year; and this single point of entry renders programs easier to implement, less costly, and more likely to have consistent effects.

Box 4.1 Promoting Self-Regulated Learning in Young Children through the Tools of the Mind Program

Tools of the Mind is an early childhood education program that uses teaching and classroom strategies to promote intentional and self-regulated learning in preschool and kindergarten children, with the aim of equipping them to solve problems and create solutions in the modern world. The program is based on the work of Russian psychologist Lev Vygotsky, whose theory (known as cultural-historical theory) maintains that child development is the result of interactions between children and their social environment.

Tools of the Mind aims to scaffold children so that they become “masters of their own behavior” by promoting the development of social and cognitive competencies that allow them to be deliberate, self-regulated learners interested in the process of learning, in doing well, and in other students. It considers cognitive self-regulation (paying attention, remembering, and moving flexibly between learning tasks) to be integral to the quality and quantity of academic learning. Academic content, such as literacy and numeracy, is a means for practice, not the sole goal of learning; educational goals are defined more broadly as child achievement, engagement, and social competence. Program elements to promote self-regulation consist of preschool and kindergarten curricula, a teaching approach, and a professional development program for teachers. Teachers are also trained to use continuous dynamic assessment to scaffold learning and individualize instruction.

The program operates primarily with at-risk children in urban areas in the United States, Canada, and Chile. An impact evaluation (Blair and Raver 2014) finds that children participating in Tools of the Mind are better at focusing attention in the face of distraction and have better working memory (both key components of executive function) than children in control classrooms, with differences especially pronounced in schools in high-poverty areas. These gains carried into first grade, where students from Tools of the Mind classrooms scored higher in reading and vocabulary than control students.

Sources: Diamond and others 2007; Bodrova and Leong 2015.

While socioemotional skills development often occurs outside of the primary school curriculum, several types of interventions have been tested in school settings. They can be classified into four groups: developing teacher’s socioemotional skills, improving the school climate, incorporating the development of socioemotional skills into the teaching of other subjects, and socioemotional curriculum. All of these methodologies can develop the eight PRACTICE skills.

Developing teachers’ socioemotional skills

For teachers to incorporate socioemotional learning into the classroom, they must possess the skills themselves. This type of intervention focuses on developing socioemotional skills in teachers and principals so that they can model them in the classroom.

During middle childhood, children observe and practice adult behaviors. Teachers’ and administrators’ methods for resolving conflict, working in teams,

expressing self-confidence, and practicing other socioemotional skills are therefore important. The intervention teaches teachers to strengthen their socioemotional skills and use (and model) them in classroom and school settings.

There is little empirical evidence on the effectiveness of teaching teachers to model positive socioemotional skills. The government of Peru piloted a one-year course to teach teachers and principals to do so. Box 4.2 presents the model and the initial results.

Box 4.2 Developing Teachers' Socioemotional Skills through Peru's *Escuela Amiga* Program

The Peruvian Ministry of Education's *Escuela Amiga* (Friendly School) program takes a three-pronged approach to build socioemotional skills in children in poor neighborhoods. One prong is a year-long training session for teachers and principals. The two-semester university-level course was designed to develop participants' socioemotional skills so that they could apply them to interactions at school. The course was taught by university staff in the psychology department. A diploma was awarded upon graduation.

Nearly 15,000 classroom teachers and 81 principals participated in the program's first year (2013), meeting for 10 hours every week, for a total of 380 hours of class time over two semesters. Most were mid-career professionals who were working in schools while enrolled in the course.

The course was designed to teach teachers and instructors to recognize and develop their own socioemotional skills—empathy, tolerance, self-regulation, and social decision making, among others—by drawing from their personal experiences and methodologies for using these skills in the classroom. The course was delivered through lectures, paper exercises, role-playing, and group interactions to recognize and manage a range of skills. Participants also formed informal study groups to provide support to one another throughout the week to apply the course lessons to their daily professional challenges. The course incorporated real-time issues in the curricula, drawn from participants' work lives. Once the course was completed, the program's roving support teams visited schools regularly to continue supporting teachers and principals in applying the course tools.

An impact evaluation of the program is underway, but exit surveys suggest that it helped build knowledge of socioemotional skills and how to use them in a school setting: 90 percent of participants felt that they were better able to manage their classrooms, 93 percent believed that they were better equipped to manage conflict at school, and 50 percent felt that their professional relationships had improved. Informal interviews with teachers and principals consistently found that the primary benefit from the course was that better understanding of oneself facilitated better management of the classroom; participants also reported learning how to better manage their own children, marriage, neighbors, and self-esteem. Teachers were initially reluctant to commit so much time to the diploma, but in retrospect they found that it yielded a high return on investment.

Source: Paredes 2014.

Improving the school climate

Children and youth need safe places to practice and reinforce socioemotional skills. Physical safety is crucial, but cultural safety that allows for experimentation and different behaviors is also a basis for effective learning. A positive school climate is one in which school staff reach out to all students (not only those at risk), clear rules are developed and followed by students and staff, reform rather than punishment is used to manage behaviors that are contrary to school norms, rewards are regularly used to recognize positive behaviors, and special services are provided to students with particular challenges. The School-Wide Behavioral Support Model is an example of a process used around the world to create school climates that are conducive to learning (box 4.3).

Incorporating the development of socioemotional skills into the teaching of other subjects

Teachers can incorporate socioemotional learning into standard course material by altering their pedagogical methods. The global shift away from passive learning (in which students quietly listen to information communicated by a teacher) toward active learning (in which students learn through discovery, facilitated by a teacher) is a step in the right direction. Having students work in groups, present their results, and conduct project-based problem solving and exploration—gives an opportunity to use the PRACTICE skills of teamwork, problem solving, confidence, and achievement motivation (box 4.4).

Using a socioemotional curriculum

Some schools have a socioemotional curriculum, materials, teaching methodologies, and dedicated time for developing socioemotional skills. This type of intervention is the closest to treating the teaching of socioemotional skills on a par with the teaching of other subjects, such as history or language. The structure of the course may be similar to that of a traditional subject—a dedicated time each week, with classroom instruction, exercises to practice the skills being learned, grades and feedback, and evaluation. More commonly, a scaled-down version of such a course is delivered. For example, the course may be taught once a week rather than daily, or it may dispense with evaluation and feedback. It may be broad-based or focus on a small set of skills, such as self-regulation or self-esteem. It may be taught by teachers or by school psychologists. Box 4.5 describes the Incredible Years model, which is widely used in elementary schools in the United States.

Linked to a socioemotional curriculum is evaluation of socioemotional skills, regardless of where or how they are taught in the school. For example, the Knowledge Is Power Program (KIPP) includes a “character” report card, in which all teachers who work with a student assess the student’s success in demonstrating a range of socioemotional skills. The teacher feedback is aggregated into a score for each skill and reported in the character report card. During student performance reviews with students and parents, teachers discuss the character report card in the same way they discuss the standard report card, assessing student

Box 4.3 Improving the School Climate through the School-Wide Positive Behavior Support Model

The School-Wide Positive Behavior Support (SWPBS) model is a set of procedures and organizational systems intended to establish a school culture of positive behavior, complemented by additional support for students who need more than a positive school climate. It is not a curriculum but a definition of school norms, practices for reinforcing positive behavior, total school support (not just support by teachers), and data-driven decision making.

The SWPBS model consists of three tiers of intervention. The first tier is largely about improving the school climate. Certain activities are implemented across the entire school to teach all students a set of behaviors. They include the following:

- Behavioral expectations. The school community adopts school rules that are to be expected. Deviation from the rules may result in a more individualized intervention.
- Rewards for appropriate behavior. All school staff—principals, teachers, bus drivers, janitors—recognize the importance of adhering to school rules and offer rewards on occasion. Rewards may be small, such as free entry to a school event or permission to not wear a uniform to school for a day.
- Continuum of consequences for problem behavior. Problem behavior is not tolerated; it is managed in a positive manner. Group-based support to assist with structure and help manage the social and academic aspects of school is provided for people who do not follow school rules. Individualized behavioral assessments are conducted and skills development provided to students with persistent challenges.
- School-wide classroom management practices. The consequences of not adhering to school rules are widely known, and nonadherence is managed in a consistent manner across classrooms. Because classroom management processes are well-defined, students know the consequences of their actions and teachers spend less time managing problem behavior.

Randomized controlled trials show that the SWPBS positively affects student behavior. A three-year randomized trial (using waiting lists to identify control groups) found that the model decreased disciplinary problems and increased third-grade reading performance (Horner and others 2009). A five-year longitudinal study in 37 elementary schools found that problem behavior was lower in SWPBS schools than in controls (Bradshaw, Mitchell, and Leaf 2010). Similar results were found in a 63-school study in Illinois and a study in Hawaii.

progress in mastering the socioemotional skills and identifying which skills are lagging and strategies for addressing shortfalls (Angrist and others 2010).

A number of individual studies as well as recent comprehensive reviews support the effectiveness of school-based socioemotional programs (CASEL 2013). A meta-evaluation of findings from 213 school-based universal social and emotional learning programs involving more than 270,000 participants in different types of programs found that participants demonstrated significant improvements in a range of social and emotional skills and in academic achievement (Durlak and others 2011).

Box 4.4 Incorporating Socioemotional Skills into the Teaching of Other Subjects: Facing History and Ourselves

Facing History and Ourselves is a training program for teachers of middle and high school students (age 12–18) that incorporates socioemotional learning and moral reasoning into history instruction. Teachers are provided with professional development classes, resource books, coaching, and mentoring to help them apply new approaches to the study of the historical events that led to World War II, the Holocaust, the Chinese Cultural Revolution, and apartheid in South Africa, to teach students history and learn to link the lessons of history to their everyday lives while also developing independent and analytical thinking, self-efficacy, and empathy. Teachers are supported to mentor students to listen to one another, consider one another's perspectives, connect personally with the content, take intellectual risks, and learn to form judgments based on a critical analysis of evidence. The program is implemented in more than 110 countries, through 90,000 trained educators, who reach nearly 1.9 million students a year.

An evaluation was undertaken in 2007/08 in 76 randomly assigned schools to assess the impact of the program on teacher satisfaction and student learning of history, higher-order cognitive skills, and tolerance. The study sample included 134 teachers and 1,371 of their 10th grade students; two-thirds of the schools were academically low-performing.

Facing History had a statistically significant impact on student capacity to analyze evidence from multiple sources; prosocial behavior, tolerance, and empathy; and knowledge of history. It increased teacher confidence in creating a student-centered classroom. Facing History classrooms were more inclusive, respectful, and tolerant of differing viewpoints. "It really changed the way I was teaching and framing my lessons. It helped me to put the students in a position in which they are the deciders, trying to figure things out for themselves," reported a teacher in China.

Source: Barr 2010.

Adolescence (12–18): Nuancing and Developing Complex Socioemotional Skills

By the time children reach adolescence, the foundations for socioemotional skills should have been built. The social context is appropriate to develop complex socioemotional skills while still acquiring basic cognitive skills. In this period children experience a rapid growth in cognitive abilities that permit abstract thinking, complex reasoning, and better decision making (Kuhn 2006). These gains are challenged by the slower development of the part of the brain that regulates impulse control, risk taking, and peer pressure. Adolescents have more autonomy in decision making than younger children and increasingly choose their contexts.

Although there has been considerable discussion about the potential inefficiency of investment in skill building during adolescence, the psychology literature suggests that it is a time of increased cognitive capacity, greater independence, and changing roles that support strategic investment. There is growing awareness of the need to develop targeted socioemotional skill-building

Box 4.5 Using a School Curriculum: The Incredible Years Program

The Incredible Years program is a lesson-based program designed for elementary school (and younger) children and their parents that provides information on and practice in social competence, emotional self-regulation, persistence, problem solving, anger management, and prosocial behavior with peers and teachers. The Dina Dinosaur Social Skills and Problem-Solving Curriculum of the Incredible Year program offers 20- to 30-minute lessons twice a week for 15 weeks. The curriculum has seven parts: learning school rules; how to be successful in school; emotional literacy, empathy, and perspective-taking; interpersonal problem solving; anger management; social skills; and communication skills. Lessons include recognizing and understanding feelings, getting along with friends, regulating emotions, solving problems, and behaving at school. The lessons are reinforced by practicing the skills in 20-minute sessions after completion of the structured curriculum and continuing to practice the skills throughout the school day and at home. The program is supplemented by parent training that focuses on positive discipline and engaging in their children's school lives through family homework.

Incredible Years has been implemented in the United States with culturally diverse groups, including Caucasian, Hispanic, Asian-American, African-American, and new immigrant families. The total cost per child ranges from \$1,200 to \$3,000, depending on project components.

A randomized trial of the program was conducted to assess the extent to which the program affected behaviors and social outcomes. Random assignment of matched preschools and elementary schools resulted in a sample of 153 teachers and 1,768 students. The treatment group received the full program; the control group received no additional programming. The study reported outcomes after six months of program implementation. It found that program participants were significantly more likely than controls to display emotional self-regulation and social competence; they also had fewer conduct problems and engaged in less off-task behavior. The effect was particularly strong among students in classrooms with the lowest initial scores on these skills.

Source: Webster-Stratton, Reid, and Stoolmiller 2008.

interventions for all adolescents, not only those considered at-risk (Guerra, Modecki, and Cunningham 2014).

Although adolescents benefit from school-based programs (CASEL 2015), school is a less optimal intervention venue for adolescents than for younger children, for several reasons. Many youth are not in school, and secondary school is structured in a manner that is not conducive to socioemotional skills development (schedules are varied, students change classrooms and teachers regularly). Moreover, adolescents are starting to shift their context away from parents and schools toward peers and the working world.

Three contexts can provide socioemotional skill development for this age group: secondary schools, out-of-school programs, and work-related programs. Interventions for school-based programs for adolescents take the same

form as those for middle childhood, although the skills modeled by teachers and developed via pedagogical methods are more advanced than those taught to younger children. Although most programming and evaluations focus on at-risk adolescents, several program experiences with a broader range of adolescents have shown success (Guerra, Modecki, and Cunningham 2014).

Out-of-school programs

Out-of-school programs can reach adolescents who are still enrolled in school and adolescents who have left school. These programs take two forms. The first is the theme-based club, which is ideally structured as a fun activity (sports, theater, art, music) and includes a staff member who is a child psychologist, who helps the club leader design the activity so that it teaches and reinforces socioemotional skills. Clubs like these have been used across the world. Although there are few evaluations of the impact of these types of programs in developing the PRACTICE skills, some models show promise (Cunningham and others 2008; Guerra, Modecki, and Cunningham 2014; box 4.6).

The second type of program is mentoring programs that provide a strong adult presence to model behaviors and support positive socioemotional development in youth. Mentoring programs can take various forms, such as after-school clubs or programs that pair model adults with children. Both models have been shown to increase the cognitive and socioemotional skills of participants relative to

Box 4.6 Reaching At-Risk Adolescents through Colombia's Fútbol con Corazón Out-of-School Program

Fútbol con Corazón (Soccer with Heart) uses soccer to teach values and cognitive, emotional, and social skills to children and youth living in poor neighborhoods in Colombia. It is based on the Fútbol por la Paz (Football for Peace) methodology, which uses soccer as the hook to attract participants.

Children age 5–17 play in gender-mixed teams supported by mentors who are trained to reinforce the socioemotional objectives of the program. The rules of the game are changed in order to teach a range of socioemotional skills, including social problem-solving, resilience, self-control, teamwork, initiative, confidence, and ethics. Alternative rules include the following:

- Before play, the teams agree on the rules of play.
- There are no referees. Players self-judge and agree on errors, penalties, and other aspects of fair play.
- The first goal must be made by a girl; if it is not, it does not count.
- The winner is not necessarily the team with the most points. The final score is based on a combination of the number of goals and the extent to which each team complied with the teamwork norms set down at the beginning of play.

The program has not been evaluated for impact.

Source: Deporte y Desarrollo 2009.

control groups (Tierney and Baldwin Grossman 2000; Boys & Girls Clubs of America 2004).

Labor market-related programs

As the school-to-work transition process begins, job training and apprenticeship programs should be augmented by interventions that develop socioemotional and advanced cognitive skills. A job training program for low-income youth in the Dominican Republic combines 150 hours of technical training with short internships and 75 hours of socioemotional skills training and practice. Impact evaluation results show that participants performed better than controls on measures of many PRACTICE skills: leadership, conflict management, self-esteem, interpersonal skills (for some groups), organization skills, empathy, and hard work (Ibarrarán and others 2014). The technical training was deemed to have no value added, suggesting that the socioemotional training and internships were responsible for these, as well as some minor labor market, outcomes (Fazio 2011; Martinez 2011; and Vezza and others 2014).

Not all labor markets are able to absorb youth, and not all youth are ready for employment, pointing to the value of activities that approximate the work environment and teach the PRACTICE skills in the process. YouthBuild is an international program that “employs” youth in community improvement projects while explicitly emphasizing improvements in PRACTICE skills such as teamwork, initiative, and confidence. Evaluations from quasi-experimental studies show improved life outcomes (educational progress, having a job) for participating youth; acquisition of specific skills has not been assessed (International Youth Foundation, YouthBuild International, and Catholic Relief Services 2010).

Emerging Adulthood (19–21): Practicing PRACTICE

Development of socioemotional skills can, and should, continue into early adulthood. Although the neurobiological and psychosocial bases are well set by early adulthood, new experiences—higher education, jobs, marriage—provide opportunities for practicing and developing new skills that, according to empirical studies, modify socioemotional skills (Roberts 1997; Roberts, Caspi, and Moffitt 2003). This is particularly important for the PRACTICE skills, because young adults’ primary context is the labor market, which provides them with daily opportunities to refine and consolidate these skills. Research on programming for young adults is sparse.

Cognitive and Socioemotional Learning Processes

Like socioemotional skills, cognition is a function of neurobiological development, situational stimuli, and various actors. The basis for cognition begins soon after birth, with physical changes in the brain and body and interaction with the environment (via smell, vision, and other senses). Building cognitive skills is a continuous, progressive process of acquiring increasingly higher-level skills, a process that becomes more and more complex.

Consider, for example, the development of the ability to compare objects. Very young children compare different shapes or colors. In adolescence comparison might include comparing the digestive and respiratory systems, a complex comparison that involves more elements, such as functionality and shape. Complexity deepens as cognitive development intertwines with socioemotional development. Social interactions, first with parents and later with teachers and peers, foster socioemotional skills that are crucial to develop the capacity to explore and learn from experience, a key prerequisite for acquiring cognitive skills.

Skills development strategies should aim to develop a range of cognitive skills. The analytical work in this book shows that basic skills (including reading proficiency, verbal fluency, numeracy, and memory) are correlated with labor market outcomes. Employers also value advanced cognitive abilities, such as communications, problem-solving, and critical thinking skills (Cunningham and Villaseñor 2016). Skills development strategies must therefore not only teach basic skills but also help people master the following advanced cognitive skills:

- Remembering (the process in which information is recalled from long-term memory)
- Understanding (constructing meaning based on previous knowledge)
- Applying information and previous experiences to solve problems
- Analyzing (the process of deconstructing material into its parts and determining the relationship among them)
- Evaluating (the capacity to form a judgment based on criteria and standards)
- Creating or combining elements to form a new coherent concept

Development of these skills begins in early childhood and continues through adulthood. The most basic form of these skills can be fostered at a very young age. The learning process and the nature of the skills become more complex as children grow and interact with different people and environments, gain new experience, and accumulate knowledge. As with the development of socioemotional skills, the lifelong work of acquiring these skills takes different forms.

The pedagogical literature on teaching basic cognitive skills is so vast that we will not attempt to summarize it here. The methods for teaching advanced cognitive skills is less developed and mirrors methods for socioemotional skill instruction. We can apply the concepts of neurobiological, psychosocial, and situational readiness of the learner to direct the reader toward learning processes that are best suited to age-readiness. And we provide insights into the practice of socioemotional skills to enhance advanced cognitive skills development.

Early Years (0–5): Play

Play is the work of children. Through experimentation and creativity, children begin to build basic and advanced cognitive (and socioemotional) skills. Play is particularly effective for young children, among whom a range of play activities

develops cognition. In the first years of life, parents and caregivers stimulate children mentally through songs, colors, and playful interactions (such as peek-a-boo) to foster cognitive development. Later, they use storytelling, the showing and reading of books, make-believe games, and animation to attract children's interest and maintain their focus. These techniques can be used in both homes and institutional settings, as demonstrated by many well-evaluated programs (box 4.7).

Tools of the Mind (box 4.1) is a curriculum for preschoolers that approaches learning as socially mediated by peers and focus on play. It has shown substantial short-term effects on cognitive control among vulnerable children in the United States (Diamond and others 2007). Chile is experimenting with Tools of the Mind in some preschools in Santiago.

Many countries in Latin America have started designing and implementing similar programs. Examples include Chile Crece Contigo (Chile Grows with You), Uruguay Crece Contigo (Uruguay Grows with You), Cuna Más (Cradle More; Peru), and Quizqueya Empieza Contigo (Quizqueya Begins with You; the Dominican Republic). These programs contribute to children's school readiness by ensuring that cognitive, socioemotional, and motor skills milestones are achieved.

Box 4.7 Fostering Active Learning in Preschool

Educators can foster active learning in preschool in a variety of ways:

- Use objects as toys. Children should be given plenty of opportunities to make, explore, and manipulate materials and interact with the environment. Materials include everyday objects like shells and cardboard boxes; substances with different types of surfaces, like sand, water, and paste; large, heavy materials, such as wooden blocks; and easy-to-handle materials, such as toy figures and Lego® blocks.
- Offer space for play. Children need an organized environment in which to play. Teachers and caregivers should establish a daily routine that includes time for children to play with objects they choose, small-group playtime, large-group activity time for songs or movement, and outdoor time to experience and explore materials from nature.
- Seek to understand intentions. Trying to discern children's intentions reinforces their sense of initiative and control. Having children reflect on their thoughts or feelings and put them into words improves their verbal skills.
- Listen and encourage thinking. Listening to and encouraging each child's way of thinking strengthens their ability to reason. Talking with children about what they are doing and thinking fosters self-esteem.
- Encourage doing for themselves. Encouraging children to solve the problems they face offers them learning opportunities. Educators stand patiently and wait while children sort out issues by themselves, providing feedback and support only when necessary.

Source: Hohmann and Weikart 1995.

Middle Childhood (6–11): Guided Discovery and Experimentation

Active learning is more effective than passive learning. Pedagogical practice in Latin America generally focuses on passive learning based on repetition, low engagement, and copying from blackboards. Not only do students not absorb the information, they also do not practice the cognitive skills acquired earlier.

The role of the teachers in the classroom needs to change. Teachers need to shift from being transmitters of information to being facilitators, to guiding children of all ages in acquiring knowledge (Bonwell and Eison 1991). Instruction should foster active learning; students should be engaged in activities such as reading, discussing, writing, and analyzing, guided by the teacher (box 4.8). Pedagogical methods should put more emphasis on students' exploration and attitudes. Classroom instruction should provide students with learning and study techniques that boost memory; help students transform information into knowledge by experience (learning by doing); capture students' attention; frame information in meaningful ways (so that it can be related to previously acquired knowledge); and use a range of formats (reading, writing, visual, sound) to provide learning opportunities to students with different learning styles. It should engage students in the metacognitive process of evaluating their own work and incentivize them to think about their thinking and the way they learn; provide feedback; continuously assess learning (to foster memory); help them organize and categorize verbal information so that they can recall it more efficiently; and provide extensive practice with procedural knowledge and problem-solving (that is, how to do something), so that students are able to decode text, write, carry out simple math operations efficiently, and teach others cognitive strategies (methods of thinking that improve learning). For all these methods, the teacher is the facilitator, using her own socioemotional

Box 4.8 Active Learning through Colombia's Escuela Nueva Approach

Escuela Nueva (New School) is a pedagogical method based on active learning that started in rural communities in the 1970s in Colombia. Based on active, child-centered learning, it encourages students to work in groups. Rather than focusing exclusively on transmitting information, teachers facilitate and guide students.

Escuela Nueva has increased student retention and achievement, reduced grade repetition, and improved behaviors. As documented by the Colombian government, the approach results in better outcomes than conventional schooling for the most disadvantaged children. The approach has been implemented under different names in nearly 20 countries, including Mexico, India, and Vietnam.

Source: Schiefelbein 1993, Colbert 2009.

and advanced cognitive skills to guide discussion toward the learning objectives through continued questioning.

Several strategies can help the region's teachers transform themselves into learning facilitators. First, teachers, parents, policy makers, and students need to shift their understanding of the role of the teacher and of what constitutes appropriate pedagogical practice. Second, teacher training needs to be redesigned to provide teachers with both the content and modern pedagogical strategies to dramatically change children's experience in the classroom. Teachers need to be trained in the importance of active learning for skills development and experience these concepts through real classroom practice from the moment they begin training. Third, continuous teacher career development and support are needed to incorporate new pedagogical methods as they emerge (Bruns and Luque 2014).

Adolescence (12–18): Development of Advanced Cognitive Skills through Independent Discovery

Advanced cognitive skills that are best taught in secondary school—such as metacognition (thinking about thinking)—may require different teaching strategies than were employed for basic cognitive skills instruction. During adolescence, the brain is neurobiologically and psychosocially ready to self-guide such that teacher facilitation plays a lesser role. The adolescent has the cognitive bases and the socioemotional skills (perseverance, independent work, problem solving) to utilize external resources for learning. The teacher becomes a partner in discovery, nudging the students toward higher levels of cognition and socioemotional mastery.

Emerging Adulthood (19–21): Learning by Doing

Most learning by adults occurs through on-the-job experience and practice-oriented training institutes (OECD 2014). Skills development strategies usually stop at the factory door using the assumption is that skills development happens only in a classroom. Given that people in Latin America spend an average of 10 years in school and 50 years in the labor market and that cognitive (and socioemotional) skills are malleable over a lifetime, modalities for acquiring new skills in the workplace are a new area for research. Technical training models need enhanced pedagogical practices to teach a range of advanced cognitive skills that employers demand (OECD 2014, Fawcett, El Sawi, and Allison 2014). Training should be delivered through structured experience-based (rather than classroom) learning that uses real-world practice to reinforce the cognitive skills learned in school. Although experiential learning is common practice in European technical training systems (Fawcett, El Sawi, and Allison 2014), employers in other countries can find room for improvement. Latin American executives identify work study programs that bring students into the workplace as the primary way that firms can contribute to skills development processes (Ogier 2009).

Notes

1. The workplace may provide explicit socioemotional training, although such training is rare. Most firms believe that such training is the role of the individual or the public sector (Martin and others 2008).
2. “Foundational” indicates that skills developed in this period form the basis for core skill-building later on. “Optimal” refers to periods of maximum sensitivity when it is easiest for individuals to acquire specific skills. “Reinforcement” indicates that a skill acquired during the optimal period needs to be practiced intensively to be mastered.

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Conclusions

This study sets out to depict how different types of skills affect labor market outcomes in Latin America. The results are based on findings from new data on Bolivia, Colombia, El Salvador, and Peru, combined with the scarce literature available from two other Latin American countries (Argentina and Chile). It gives particular emphasis to the study of socioemotional skills and the role that they play in labor market outcomes. Based on the analysis, the study presents a life-cycle framework for when and how to acquire the skills valued by Latin America's labor market. It also points toward pedagogical methods that simultaneously enhance both socioemotional and cognitive skills.

Both Cognitive and Socioemotional Skills Are Associated with Labor Market and Tertiary Education Outcomes

Cognitive skills are positively associated with better jobs. Reading proficiency (in Bolivia and Colombia), math skills (in El Salvador and Peru) and verbal fluency (in Peru) are positively correlated with higher wages, formal employment, or tertiary education. Of the four countries studied, cognitive skills are associated with employment only in El Salvador.

Socioemotional skills are associated with employment patterns and a range of labor market outcomes. Skills associated with achieving goals (conscientiousness, grit) are correlated with employment in Latin America. This finding emerged in all four countries in the sample; it is also evident in high-income countries. Skills associated with all three of the socioemotional skill sets explored in this study (achieving goals, managing emotions, and working with others) are correlated with higher labor earnings and, to a lesser degree, formal employment and wage employment. Only one skill (in the working with others category—extroversion) was uncorrelated with any labor market outcome.

As in higher-income countries, socioemotional skills are correlated with tertiary school attendance in the four countries studied. Skills associated with achieving goals, working with others, and managing emotions predict whether students pursue tertiary education, with perseverance playing a particularly important role.

Instruction in Both Cognitive and Socioemotional Skills Is Both Possible and Necessary to Better Prepare Latin American Workers for the Labor Market

Socioemotional skills must be taught from early childhood through early adulthood and beyond. Important foundational socioemotional skills are developed in the early years. They include social problem solving when playing with peers; impulse control; and the development of confidence, a set of ethics, and the ability to work with others. The young brain is highly malleable and is being actively wired in this stage, creating a foundation for later skill development. But some skills cannot be taught in early childhood, because the brain is not yet constructed to learn certain skills, the child is not psychologically developed to understand certain concepts, and the social environment does not allow the child to practice these skills. Middle childhood is an optimal period for developing the socioemotional skills most valued by the labor market, because children this age (6–11) have the neurobiological wiring and psychosocial maturity needed and are in an environment that permits practice and learning. Adolescence is also a period of optimal skill development, allowing for more complex development of skills initiated in middle-childhood. These skills are practiced, refined, and reinforced during adulthood.

Programs targeted to different age levels, engaging appropriate actors, and utilizing age-appropriate concepts and methodologies are showing that the development of socioemotional skills can occur in structured environments outside the home, including in programs run by the public sector. Public policy has a role in defining, monitoring, regulating, and even providing socioemotional skills development, as it traditionally has in the case of cognitive skills development.

Schools are the ideal place to teach socioemotional skills. They are the public institution that has greatest influence over children and youth in this period. Socioemotional development should continue through the high school years and not be limited to at-risk youth, the current practice. These findings highlight the importance of keeping children in school through adolescence.

Methodologies for teaching socioemotional skills to children and adolescents can be grouped into five modalities:

- *Training teachers in socioemotional skills.* Training teachers can equip them with skills they can model in their classrooms. The teachers themselves learn to develop their own skills and to use these skills in their professional and personal lives.
- *Improving the school climate.* Schools can create a climate that is conducive to positive socioemotional skills by defining and rewarding positive behaviors. The school environment is a space to practice positive behaviors.
- *Weaving instruction into regular classes.* Socioemotional instruction can be woven into pedagogical methods including through interactive instruction, group learning, and problem solving.

- *Using a special curriculum.* Schools can allocate class time to a socioemotional school curriculum.
- *Teaching socioemotional skills after school.* Extracurricular activities can be designed not only to be fun but also to teach and allow students to practice a range of socioemotional skills. This type of intervention also reaches out-of-school youth.

All of these methodologies have been implemented and evaluated across the world (appendix F).

The pedagogical methods and actors used in socioemotional skill development can also address lagging cognitive skills. Cognitive skills need to be understood more broadly as both knowledge and a range of thinking and analytical skills. Research has shown that active learning is more effective than passive learning for all age groups (Hohmann and Weikart 1995, Schiefelbein 1993, Colbert 2009). A shift in pedagogical method is therefore needed, toward teachers as facilitators in a knowledge-discovery process that the learner leads. Methods for developing cognitive skills should be adapted based on the neurobiological, social, and situational contexts of the learner. Young children learn best through play, older children and adolescents through guided discovery and experimentation, and adults by doing. This is not to say that all skills must be taught in an identical manner, but that the teaching of cognitive skills should take the context of the learner into consideration.

Research Is Needed to Guide Policy Design

There is growing consensus that both cognitive and socioemotional skills are critical inputs to labor market success. But the evidence to guide policy design is still limited. Some specific areas for research include the following:

- *Longitudinal studies* in Latin America, such as the recent project of Longitudinal Study of Children's Social and Emotional Skills in Cities, launched by the Organisation for Economic Co-operation and Development (OECD 2015), identify the skills that are most important for labor force outcomes. However, most studies, including this book, use single cross-section data which cannot establish the direction of causality. It is not clear if skills lead to the observed labor force outcomes or if causality may actually go in the other direction. Panel data that measure skills, education, and labor force patterns across time may sort out this possible endogeneity and yield cleaner results.
- *Long-term studies* to determine which interventions generate permanent change. Most evaluations consider short-term program impacts (Kautz and others 2014). The few that do allow measurement of long-term impacts find mixed results; several celebrated programs with short-term impacts have been found to have no effect after a few years. A better understanding of the interventions that permanently affect cognitive and socioemotional skills will allow for more efficient policy design.

- *Evidence on interventions to generate socioemotional skills via family (for early childhood), schools (for adolescents who are not at risk), community (for adolescents and young adults) and, especially, workplaces (for young adults).* Thousands of socioemotional interventions have been implemented, but very few studies empirically establish the impact of these interventions. Although there is some evidence that center-based early child development programs, primary school interventions, and programs for at-risk youth produce results, virtually no evidence supports many other potentially crucial types of programs.
- *Scientific evidence on biological and psychosocial readiness for socioemotional skill development.* This study reports findings from the neurobiological and psychological research that points to the importance of readiness. The tools for imaging the brain and translating the findings to practical learning processes are in their infancy. Much more work needs to be done to understand readiness concepts.

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Abstracts of Background Papers

Developing Social-Emotional Skills for the Labor Market: The PRACTICE Model. 2014. Nancy Guerra, Kathryn Modecki, and Wendy Cunningham. Policy Research Working Paper 7123, World Bank, Washington, DC.

Although there is a general agreement in the literature on the importance of socialemotional skills for labor market success, there is little consensus on the specific skills that should be acquired or how and when to teach them. Psychology, economics, policy research, and program implementation touch on these issues, but this work is not sufficiently integrated to provide policy direction. This paper provides a coherent framework and related policies and programs that bridge the psychology, economics, and education literature related to skills employers value, noncognitive skills that predict positive labor market outcomes, and skills targeted by psychoeducational prevention and intervention programs. The paper classifies social emotional skills employers value into eight subgroups (summarized by the acronym PRACTICE). It then uses the psychology literature—drawing from the concepts of psychosocial and neurobiological readiness and age-appropriate contexts—to map the age at and context in which each skill subset is developed. The paper uses examples of successful interventions to illustrate the pedagogical process. It concludes that the social emotional skills employers value can be effectively taught when aligned with the optimal stage for each skill development, that middle childhood is the optimal stage for development of PRACTICE skills, and that a broad international evidence base on effective program interventions at the right stage can guide policy makers in incorporating social emotional learning into their school curriculum.

Employer Voices, Employer Demands, and Implications for Public Skills Development Policy Connecting the Labor and Education Sectors. 2016. Wendy Cunningham and Paula Villaseñor. *World Bank Research Observer* 31(1): 102–34. (An earlier version of this paper was published in 2014 as World Bank Policy Research Working Paper 6853.)

Educators believe that they are adequately preparing youth for the labor market while at the same time employers lament the students' lack of skills.

A possible source of the mismatch in perceptions is that employers and educators have different understandings of the types of skills valued in the labor market. Drawing on the economics and psychology literature to define four skills sets—socioemotional, higher-order cognitive, basic cognitive, and technical—this paper reviews the literature that quantitatively measures employers' demand for skills, as reported in a preference survey. A sample of 27 studies reveals remarkable consistency across the world in the skills demanded by employers. Although employers value all skill sets, their demand for socioemotional skills and higher-order cognitive skills is greater than their demand for basic cognitive or technical skills. These results are robust across regions, industries, occupations, and education levels. Employers perceive that the greatest gaps are in socioemotional and higher-order cognitive skills. These findings suggest the need to reconceptualize the public sector's role in preparing children for a future labor market. Namely, technical training is not equivalent to job training; instead, a broad range of skills, many of which are best taught long before labor market entry, should be included in school curricula from the earliest ages. The fact that the skills most demanded by employers—higher-order cognitive skills and socioemotional skills—are largely learned or refined in adolescence argues for general education well into secondary school until these skills are formed. The public sector can provide programming and incentives to nonschool actors, namely parents and employers, to encourage them to invest in the skills development process.

Cognitive and Non-Cognitive Skills for the Peruvian Labor Market: Addressing Measurement Error through Latent Skills Estimations. 2016. Wendy Cunningham, Mónica Parra Torrado, and Miguel Sarzosa. Policy Research Working Paper 7550, World Bank, Washington, DC.

Evidence from developed-country data suggests that cognitive and noncognitive skills contribute to improved labor market outcomes. This paper tests this hypothesis in a developing country by using an individual-level data set from Peru that incorporates modules to measure cognitive and noncognitive skills. It estimates a structural latent model with unobserved heterogeneity to capture full ability rather than just measured skill. It also applies standard ordinary least squares techniques for comparison. The analysis confirms that cognitive and noncognitive skills are positively correlated with a range of labor market outcomes in Peru. In particular, cognitive skills correlate positively with wages and the probability of being a wage worker, white-collar, or formal worker, with verbal fluency and math ability playing particularly strong roles. The results are robust to methodology. The patterns are less uniform for noncognitive skills. For instance, perseverance of effort (grit) emerges strongly for most outcomes regardless of methodology, but plasticity—an aggregation of openness to experience and resilience—is correlated only with employment and only when using the structural latent model. The ordinary least squares method also finds that the disaggregated noncognitive skills of kindness, cooperation, and openness to experience are significant, mostly for the wage estimates. The different results derived from the ordinary least squares and the structural model with latent skills suggest

strong measurement bias in most noncognitive skills measurement. These findings, although only correlational because of the use of a single cross-section, suggest that recent efforts by the Peruvian government to incorporate noncognitive skill development into the school curriculum are justified.

Beyond Qualifications: Returns to Cognitive and Socio-Emotional Skills in Colombia. 2015. Pablo A. Acosta, Noël Muller, and Miguel Sarzosa. Policy Research Working Paper 7430, World Bank, Washington, DC.

This paper examines the relationship between individuals' skills and labor market outcomes for the working-age population in urban areas of Colombia. Using a 2012 unique household survey, it finds that cognitive skills (aptitudes to perform mental tasks such as comprehension or reasoning) and socioemotional skills (personality traits and behaviors) are associated with favorable labor market outcomes in the Colombian context, although they have distinct roles. Cognitive skills are strongly correlated with higher earnings, holding a formal job, and working in a high-qualified occupation. By contrast, socioemotional skills appear to have little direct influence on these outcomes but play a strong role in labor market participation. Both types of skills, especially cognitive skills, are strongly associated with tertiary education. The analysis applies standard econometric techniques as a benchmark and structural estimations to correct for the measurement error of skill constructs.

Ethnicity and Labor Market Returns to Cognitive and Socio-Emotional Skills in Urban Bolivia. 2015. Juan D. Barón, Miguel Sarzosa, and José Mola. Background study.

Using a unique survey collected in 2012, this paper estimates the returns to cognitive and socioemotional skills on labor and educational outcomes by ethnicity in urban Bolivia. Results from structural maximum likelihood estimation, which takes into account the latent nature of skills, indicate that (a) irrespective of ethnicity group, cognitive and socioemotional skills matter for labor and educational outcomes in urban Bolivia, with cognitive skills appearing to be more important for labor market outcomes than socioemotional skills; (b) the skills profiles of indigenous and nonindigenous groups seem to differ for both types of skills; and (c) there is substantial heterogeneity in the relationship between labor market outcomes and skills by ethnicity.

Skills and Labor Market Outcomes in El Salvador. 2015. Ana María Oviedo and Noël Muller. Background study.

Do adults with higher levels of cognitive and socioemotional skills achieve better labor market and tertiary education outcomes in El Salvador? Using data from the 2013 El Salvador Household Skill Survey, this background study finds that both types of skills are indeed associated with labor market outcomes in this context, especially socioemotional skills. Socioemotional skills linked to achieving goals (conscientiousness, openness to experience) and managing emotions (resilience, decision-making style) are largely and positively correlated with

indicators of good jobs (higher labor earnings, formal job, and high-skilled occupation). Agreeableness is strongly negatively correlated to labor earnings, a pattern also observed for the labor force of Peru and for women in Germany. By contrast, using more complex math operation at work and in daily life (a proxy for the stock of cognitive skills) is only correlated with being a high-skilled worker and not with labor earnings or job formality. Both cognitive skills (use of numeracy) and socioemotional skills (conscientiousness, grit, agreeableness, and decision-making style) are strongly correlated with employment and being involved in a productive activity (working, looking for a job, or studying). Both types of skills are also strongly correlated with tertiary education attendance, though through a different set of socioemotional skills (openness to experience, agreeableness, and hostile attribution bias). As a caveat, we expect that the large correlations of socioemotional skills measures with labor market and tertiary education outcomes are overestimations due to the absence of well-measured cognitive skill controls (such as a reading test score like in the STEP Household Survey).

Methodologies Used in This Study

The empirical analysis in this study seeks to assess the degree to which certain types of cognitive and socioemotional skills affect labor market outcomes and tertiary education trajectories—that is, to determine how those skills, however acquired, influence outcomes. It uses two approaches.

Estimating correlations between disaggregated measures of skills and outcomes. (Method A)

The first approach follows a standard micro-econometric specification to estimate the relationship between a given labor market or schooling outcome and a set of skills:

$$Y_i = \alpha + \beta_1 A_i + \beta_2 X_i + \varepsilon_i \quad (\text{B.1})$$

where Y_i is a labor market or schooling outcome (for example, wages or tertiary education attendance); A_i represents all ability (skills) that affects the outcome (for example, verbal literacy or conscientiousness); and X_i is a set of other factors that affect Y_i (for example, gender or age).

The true abilities A_i of individuals are unobserved (latent). A common proxy for abilities is years of schooling or school levels. However, educational attainment is a poor measurement of actual ability, because many of the skills and personality traits that shape an individual's success are acquired outside the classroom and at every level of schooling students acquire skills very differently across schools and countries (Hanushek and Woessman 2008).

Nonetheless, the data used in the four case studies provide a set of measured test scores, T_i , that capture various dimensions of cognitive and socioemotional skills. Assuming that T_i measures all skills captured in A_i in equation (B.1), the equation can be rewritten as follows:

$$Y_i = \alpha + \beta_1 T_i + \beta_2 X_i + v_i \quad (\text{B.2})$$

Under the assumption that our sets of T_i perfectly measure vector A_i , we can estimate equation (B.2) using ordinary least squares (for wages) or logit (for discrete labor outcomes) regressions without any ability bias, and β_1 will yield the return to each skill captured by vector T_i . However, a growing body of literature shows that measured skills T_i capture A_i with error, so there may be a dependence between T_i and the error term, v_i (that is, $\text{Cov}(T_i, v_i) \neq 0$). In that case, measurement errors and omitted variables could produce biased estimates of β_1 .

Estimating correlations between unobservable aggregated skills and outcomes (Method B)

The second approach is derived from a structural estimation of latent skills (Heckman, Stixrud, and Urzúa 2006; Sarzosa and Urzúa 2016). It provides consistent estimates even in the presence of measurement error. The outcomes of interest, Y_i , are a function of latent skills and other factors influencing them, as shown in the following reduced-form equation:

$$Y_i = \alpha_{A_i}\theta_A + \alpha_{B_i}\theta_B + \beta_i X_i + e_i \quad (\text{B.3})$$

where the θ 's are the latent skills factors that include measured T_i and dimensions of unobserved heterogeneity, and X_i are observable controls. Available test scores in the data sets, T_i , are only proxies of the true "latent variables" to be used for the estimation. They are treated as realizations of a "score-production function," as presented in equation (B.4), whose inputs are observable and unobservable characteristics:

$$T_i = \alpha_{A_i}\theta_A + \alpha_{B_i}\theta_B + \beta_i X_i + \mu_i \quad (\text{B.4})$$

A system of production functions of test scores (equation B.4) can then be used to nonparametrically identify the distributions of the latent abilities. The main restrictions to this process are the assumptions that (a) latent skills factors θ 's are orthogonal and independent to one another and (b) the system includes at least three test scores per skill (Carneiro, Hansen, and Heckman 2003). Once the distributional parameters are estimated, the association between latent skills and outcomes can be estimated using a maximum-likelihood method.

Given its demanding data requirements, a practical limitation of this approach is that only a limited number of aggregated skills factors can be retrieved from the data sets and studied. Four factors could be constructed using the Peru data: aggregated cognitive skills (math and verbal skills); "stability" personality traits (traits related to consistency in motivation, mood, and social interactions and including resilience, agreeableness, and conscientiousness); "plasticity" personality traits (traits related to striving toward personal growth and including extroversion and openness to experience); and grit. For Bolivia and Colombia, two factors

were constructed: an aggregated factor of cognitive skills (reading and language skills) and an aggregated factor of socioemotional skills (related to achieving goals, working with others, managing emotions and including openness to experience, conscientiousness, extroversion, agreeableness, resilience, grit, decision making, and hostile attribution bias).

Use of Both Approaches and Caveats

The structural estimation (Method B) of latent skills is a state-of-the-art method that more fully captures the association of skills and labor market outcomes, but it does so on a limited number of factors (four for Peru, two each for Bolivia and Colombia) given the data used for this study. Analyses derived from standard econometric computations (Method A) yield less precise but more detailed information on the contribution of specific measures of traits or cognitive abilities (twelve for Peru, eight for Bolivia and Colombia, and seven for El Salvador).

Neither method allows us to claim causation between our measures of skills and improved labor market outcomes. Because of the cross-sectional nature of the data, both the outcomes of interest and the measures of skills (or latent skills factors) are observed simultaneously; employment status or work type could thus also influence skills, particularly socioemotional ones.

Although skills are popularly thought to be set by early adulthood, emerging evidence suggests otherwise. New studies from the United States and Germany suggest that participation in the labor market affects emotional stability and provokes significant change in agreeableness, conscientiousness, and openness to experience (Gottschalk 2005; Boyce and others 2015).

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APPENDIX C

Summary of Associations between Measures of Skills and Labor Market and Tertiary Education Outcomes in Bolivia, Colombia, El Salvador, and Peru

Table C.1 Summary of Associations between Disaggregated Measures of Skills and Labor and Tertiary Education Outcomes in Bolivia, 2012

| <i>Type of skills</i> | <i>Dimension</i> | <i>Skill</i> | <i>Labor earnings</i> | <i>Formal job</i> | <i>High-skilled occupation</i> | <i>Wage worker</i> | <i>Employment</i> | <i>Active in labor market or studying</i> | <i>Tertiary education attendance</i> | |
|---|--|--|-----------------------|-------------------|--------------------------------|--------------------|-------------------|---|--------------------------------------|--|
| Basic cognitive | Basic academic knowledge and reasoning | Reading proficiency (ability to understand, evaluate, use, and engage with written text) | ◆ | | ◆ | | | | ◆ | |
| Socioemotional | Achieving goals | Conscientiousness (tendency to be organized, responsible, and hardworking) | | | | | ◆ | ◆ | | |
| | | Grit (perseverance and passion for long-term goals) | ◆ | | | | | | | |
| | | Openness to experience (appreciation for art, learning, and unusual ideas) | ◆ | | | | | | ◆ | |
| | Working with others | Agreeableness (pro-social behavior, cooperative orientation to others) | | | | | | | | |
| | | Extroversion (sociability and dominance in social situations) | | | | | | | | |
| | Managing emotions | Resilience (management of negative emotions) | | | | | | | | |
| | | Hostile attribution bias (tendency to perceive hostile intents in others) | ◆ | | | | | ◆ | ◆ | |
| Decision making (manner in which individual approaches decision situations) | | | | | | ◆ | | | | |

Table C.2 Summary of Associations between Aggregated Measures of Skills and Labor and Tertiary Education Outcomes in Bolivia, 2012

| <i>Type of skills</i> | <i>Dimension</i> | <i>Skills</i> | <i>Labor earnings</i> | <i>Formal job</i> | <i>High-skilled occupation</i> | <i>Employment</i> | <i>Active in labor market or studying</i> | <i>Tertiary education attendance</i> |
|-----------------------|---|---|-----------------------|-------------------|--------------------------------|-------------------|---|--------------------------------------|
| Basic cognitive | Basic academic knowledge and reasoning | Cognitive skills (reading and language skills) | ◆ | ◆ | ◆ | | | ◆ |
| Socioemotional | Achieving goals, working with others, and managing emotions | Socioemotional skills (achieving goals, working with others, managing emotions) | | ◆ | | | ◆ | ◆ |

Source: Bolivia STEP Household Surveys (2012).

Note: Calculations for labor earnings control for gender, age, mother education, cities of living and their metropolitan areas, industry, and ethnicity. Calculation for other labor market outcomes control for the same variables and a self-reported categorical variable on parents' involvement in ones' education at the age of 12.

Table C.3 Summary of Associations between Disaggregated Measures of Skills and Labor and Tertiary Education Outcomes in Colombia, 2012

| <i>Type of skills</i> | <i>Dimension</i> | <i>Skills</i> | <i>Labor earnings</i> | <i>Formal job</i> | <i>High-skilled occupation</i> | <i>Wage worker</i> | <i>Employment</i> | <i>Active in labor market or studying</i> | <i>Tertiary education attendance</i> | |
|---|--|--|-----------------------|-------------------|--------------------------------|--------------------|-------------------|---|--------------------------------------|---|
| Basic cognitive | Basic academic knowledge and reasoning | Reading proficiency (ability to understand, evaluate, use, and engage with written text) | ◆ | ◆ | ◆ | | | ◆ | ◆ | |
| Socioemotional | Achieving goals | Conscientiousness (tendency to be organized, responsible, and hardworking) | | | | | ◆ | ◆ | | |
| | | Grit (perseverance and passion for long-term goals) | | | | | | | | |
| | | Openness to experience (appreciation for art, learning, and unusual ideas) | ◆ | | | ◆ | | ◆ | ◆ | |
| | Working with others | Agreeableness (pro-social behaviors, cooperative orientation to others) | | | | | | | ◆ | |
| | | Extroversion (sociability and dominance in social situations) | | | | | | | | |
| | Managing emotions | Resilience (management of negative emotions) | | | | | | | | ◆ |
| | | Hostile attribution bias (tendency to perceive hostile intents in others) | | | ◆ | | | | | ◆ |
| Decision making (manner in which individual approaches decision situations) | | | | | | | ◆ | | ◆ | |

Table C.4 Summary of Associations between Aggregated Measures of Skills and Labor and Tertiary Education Outcomes in Colombia, 2012

| <i>Type of skills</i> | <i>Dimension</i> | <i>Skills</i> | <i>Labor earnings</i> | <i>Formal job</i> | <i>High-skilled occupation</i> | <i>Wage worker</i> | <i>Employment</i> | <i>Active in labor market or studying</i> | <i>Tertiary education attendance</i> |
|-----------------------|---|---|-----------------------|-------------------|--------------------------------|--------------------|-------------------|---|--------------------------------------|
| Basic cognitive | Basic academic knowledge and reasoning | Cognitive skills (reading and language skills) | ◆ | ◆ | ◆ | ◆ | | ◆ | ◆ |
| Socioemotional | Achieving goals, working with others, and managing emotions | Socioemotional skills (achieving goals, working with others, managing emotions) | | | | | | ◆ | ◆ |

Source: Colombia STEP Household Survey (2012).

Note: Calculations for labor earnings control for gender, age, mother education, and cities of living and their metropolitan areas. Calculation for other labor market outcomes control for the same variables and a self-reported categorical variable on parents' involvement in ones' education at the age of 12.

Table C.5 Summary of Associations between Disaggregated Measures of Skills and Labor and Tertiary Education Outcomes in El Salvador, 2013

| <i>Type of skills</i> | <i>Dimension</i> | <i>Skills</i> | <i>Labor earnings</i> | <i>Formal job</i> | <i>High-skilled occupation</i> | <i>Wage worker</i> | <i>Employment</i> | <i>Active in labor market or studying</i> | <i>Tertiary education attendance</i> |
|---|--|--|-----------------------|-------------------|--------------------------------|--------------------|-------------------|---|--------------------------------------|
| Basic cognitive | Basic academic knowledge and reasoning | Math ability (use and complexity of basic math operations used at and outside of work) | | | ♦ | ♦ | ♦ | ♦ | ♦ |
| Socioemotional | Achieving goals | Conscientiousness (tendency to be organized, responsible, and hardworking) | ♦ | ♦ | | | ♦ | ♦ | |
| | | Grit (perseverance and passion for long-term goals) | | | | | | ♦ | |
| | | Openness to experience (appreciation for art, learning, and unusual ideas) | | ♦ | ♦ | | | | |
| | Working with others | Agreeableness (pro-social behaviors, cooperative orientation to others) | ♦ | | | | | ♦ | ♦ |
| | | Extroversion (sociability and dominance in social situations) | | | | | | ♦ | |
| | Managing emotions | Resilience (management of negative emotions) | ♦ | ♦ | ♦ | | | | |
| | | Hostile attribution bias (tendency to perceive hostile intents in others) | | | | | | | |
| Decision making (manner in which individual approaches decision situations) | | | | | | | ♦ | ♦ | |

Source: El Salvador Skills Household Survey (2013).

Note: Calculations for labor earnings control for gender, age, mother education, and cities of living and their metropolitan areas. Calculation for other labor market outcomes control for the same variables and a self-reported categorical variable on parents' involvement in ones' education at the age of 12.

Table C.6 Summary of Associations between Disaggregated Measures of Skills and Labor and Tertiary Education Outcomes in Peru, 2010

| <i>Type of skills</i> | <i>Dimension</i> | <i>Skills</i> | <i>Labor earnings</i> | <i>Formal job</i> | <i>White-collar occupation</i> | <i>Wage worker</i> | <i>Employment</i> |
|-----------------------|--|--|-----------------------|-------------------|--------------------------------|--------------------|-------------------|
| Basic cognitive | Basic academic knowledge and reasoning | Memory (short-term memory, representative of working memory) | | | | | |
| | | Math ability (basic math operations) | ♦ | | ♦ | | |
| | | Verbal ability (receptive vocabulary and verbal ability of adult subjects) | ♦ | ♦ | ♦ | ♦ | |
| | | Verbal fluency (speed and ease with which individual accesses words from memory) | | | ♦ | ♦ | ♦ |
| Socioemotional | Achieving goals | Conscientiousness (tendency to be organized, responsible, and hardworking) | | | | | |
| | | Grit (perseverance and passion for long-term goals) | | | ♦ | ♦ | ♦ |
| | | Openness to experience (appreciation for art, learning, and unusual ideas) | | | ♦ | | |
| | Working with others | Agreeableness (pro-social behaviors, cooperative orientation to others) | ♦ | | | | |
| | | Extroversion (sociability and dominance in social situations) | | | | | |
| | Managing emotions | Resilience (management of negative emotions) | ♦ | | | | |

Table C.7 Summary of Associations between Aggregated Measures of Skills and Labor and Tertiary Education Outcomes in Peru, 2010

| <i>Type of skills</i> | <i>Dimension</i> | <i>Skills</i> | <i>Labor earnings</i> | <i>Formal job</i> | <i>White-collar occupation</i> | <i>Wage worker</i> | <i>Employment</i> |
|-----------------------|---|---|-----------------------|-------------------|--------------------------------|--------------------|-------------------|
| Basic cognitive | Basic academic knowledge and reasoning | Cognitive skills (reading and language skills) | ◆ | ◆ | ◆ | ◆ | |
| Socioemotional | Achieving goals | Perseverance personality traits (perseverance of effort and goals, and consistency of interest) | | | ◆ | ◆ | |
| | Achieving goals and working with others | Plasticity personality traits (striving toward personal growth; include extroversion and openness to experience) | | | | | ◆ |
| | Achieving goals, working with others, and managing emotions | Stability personality traits (consistency in motivation, mood, and social interactions; include resilience, agreeableness, and conscientiousness) | ◆ | | | | |

Source: Peru ENHAB (2010).

Note: Estimates control for gender, age, speaking indigenous language as mother tongue, being first-born child, region, industry, parents' education, and distance to school at young age.

APPENDIX D

Regression Results from Country Studies

In all tables, formal workers are workers who receive social security benefits through their job. High-skilled workers are senior officials and managers, professionals, or technicians. Low- and middle-skilled workers are clerks, service workers, machine operators, or laborers. Classification is based on the International Labour Organization's 1988 International Standard Classification of Occupations (ISCO).

Table D.1 Structural Estimates of Conditional Correlations between Labor Market and Tertiary Education Outcomes and Latent Skills in Bolivia, 2012

| <i>Item</i> | <i>Log of hourly labor earnings</i> | <i>Formal worker</i> | <i>High-skilled worker</i> | <i>Employed</i> | <i>Working, looking for a job, or in school</i> | <i>Tertiary education attainment</i> |
|------------------------|-------------------------------------|----------------------|----------------------------|--------------------|---|--------------------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Cognitive skills | 0.1491*** (0.044) | 0.1765** (0.069) | 0.3381*** (0.052) | -0.0509 (0.061) | 0.0638 (0.075) | 0.9251*** (0.084) |
| Socioemotional skills | 0.0679 (0.194) | 0.8237** (0.330) | 0.0675 (0.219) | -0.0809 (0.254) | -0.6540* (0.385) | 0.4994* (0.290) |
| Number of observations | 1,057 | 1,448 | 1,807 | 1,807 | 1,807 | 1,378 |

Source: Bolivia STEP Household Survey (2012).

Note: Calculations for labor earnings are estimations from ordinary least squares regressions that control for gender, age, mother's education, and city of residence and metropolitan area. Calculations for other labor market outcomes are estimations from probit regressions that control for same variables and a self-reported categorical variable that captures parents' involvement in child's education at age 12. Estimations are raw coefficients and were produced using Sarzosa and Urzúa (2016). Standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table D.2 Conditional Correlations between Labor Earnings, Formality, and Occupational Status and Measures of Skills and Schooling in Bolivia, 2012

| Item | Log of hourly labor earnings | | Formal worker | | High-skilled worker | |
|-----------------------------|------------------------------|--------------------|-------------------|--------------------|---------------------|--------------------|
| | Without schooling | With schooling | Without schooling | With schooling | Without schooling | With schooling |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Cognitive skill | | | | | | |
| Reading proficiency | 0.086* (0.05) | 0.016 (0.05) | 0.022 (0.12) | -0.263* (0.15) | 0.375** (0.16) | 0.155 (0.16) |
| Socioemotional skill | | | | | | |
| Extroversion | -0.022 (0.04) | -0.031 (0.04) | 0.049 (0.11) | 0.016 (0.10) | -0.070 (0.11) | -0.087 (0.12) |
| Conscientiousness | -0.053 (0.04) | -0.054 (0.04) | 0.121 (0.13) | 0.137 (0.11) | 0.145 (0.11) | 0.168 (0.11) |
| Openness to experience | 0.110*** (0.03) | 0.095*** (0.03) | 0.178 (0.12) | 0.130 (0.13) | 0.018 (0.09) | -0.062 (0.10) |
| Emotional stability | -0.013 (0.03) | -0.014 (0.03) | 0.070 (0.10) | 0.058 (0.10) | -0.065 (0.09) | -0.062 (0.10) |
| Agreeableness | 0.004 (0.04) | 0.011 (0.04) | -0.033 (0.10) | 0.007 (0.11) | -0.142 (0.12) | -0.139 (0.12) |
| Grit | 0.077** (0.04) | 0.077** (0.04) | 0.007 (0.11) | -0.025 (0.11) | 0.051 (0.11) | 0.029 (0.11) |
| Hostile attribution bias | -0.082* (0.04) | -0.077* (0.04) | -0.161 (0.11) | -0.162 (0.11) | 0.039 (0.10) | 0.073 (0.09) |
| Decision making | -0.026 (0.03) | -0.031 (0.03) | 0.032 (0.10) | 0.011 (0.09) | 0.022 (0.11) | 0.014 (0.11) |
| Education | | | | | | |
| Below primary | | 0.244 (0.19) | | 1.462* (0.78) | | -0.647 (0.56) |
| Secondary | | 0.495*** (0.14) | | 1.999*** (0.63) | | 0.310 (0.42) |
| Upper-secondary | | 0.376** (0.19) | | 2.038*** (0.67) | | 0.547 (0.51) |
| Vocational tertiary | | 0.603*** (0.17) | | 2.814*** (0.65) | | 1.501*** (0.56) |
| General tertiary | | 0.861*** (0.18) | | 3.491*** (0.69) | | 2.502*** (0.50) |
| Number of observations | 1,274 | 1,274 | 1,445 | 1,445 | 1,445 | 1,445 |

Source: Bolivia STEP Household Survey (2012).

Note: Calculations for log of hourly labor earnings are ordinary least squares regressions that control for gender, age, age-squared, mother's education, city and metropolitan area, industry, and ethnicity. Calculations for being a formal or a high-skilled worker control for the same variables and a self-reported categorical variable that captures parents' involvement in child's education at age 12 (three levels); results are odds ratios. Measures of reading proficiency and socioemotional skills are standardized. Regressions coefficients and standards errors of reading proficiency are average of 10 estimations using plausible values. Standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table D.3 Conditional Correlations between Employment, Activity, and Educational Trajectory and Measures of Skills and Schooling in Bolivia, 2012

| Item | Employed | | Working, looking for a job, or in school | Tertiary education attendance |
|-----------------------------|----------------------|-------------------|---|----------------------------------|
| | Without schooling | With schooling | Without schooling | Without schooling |
| | (1) | (2) | (3) | (4) |
| Cognitive skill | | | | |
| Reading proficiency | 0.030 (0.12) | -0.074 (0.11) | -0.039 (0.11) | 0.537*** (0.20) |
| Socioemotional skill | | | | |
| Extroversion | 0.092 (0.08) | 0.053 (0.08) | 0.113 (0.09) | -0.105 (0.15) |
| Conscientiousness | 0.138* (0.07) | 0.132* (0.07) | 0.137* (0.08) | -0.099 (0.14) |
| Openness to experience | -0.098 (0.08) | -0.129 (0.08) | -0.015 (0.09) | 0.463*** (0.16) |
| Emotional stability | -0.040 (0.10) | -0.047 (0.10) | 0.006 (0.11) | 0.222 (0.17) |
| Agreeableness | -0.014 (0.08) | 0.003 (0.08) | -0.045 (0.09) | -0.033 (0.17) |
| Grit | -0.055 (0.09) | -0.066 (0.09) | 0.045 (0.11) | -0.099 (0.17) |
| Hostile attribution bias | 0.147* (0.09) | 0.121 (0.09) | 0.222** (0.11) | 0.147 (0.15) |
| Decision making | -0.087 (0.09) | -0.060 (0.09) | -0.115 (0.10) | -0.124 (0.16) |
| Education | | | | |
| Below primary | | -0.798 (0.53) | | |
| Secondary | | -0.352 (0.38) | | |
| Upper-secondary | | -0.150 (0.45) | | |
| Vocational tertiary | | 0.327 (0.51) | | |
| General tertiary | | 1.183** (0.52) | | |
| Number of observations | 1,976 | 1,976 | 1,976 | 1,063 |

Source: Bolivia STEP Household Survey (2012).

Note: Results are odds ratios of logit regressions that control for gender, age, age-squared, mother's education, city and metropolitan area, industry, ethnicity, and a self-reported categorical variable that captures parents' involvement in child's education at age 12 (three levels). Measures of reading proficiency and socioemotional skills are standardized. Regression coefficients and standard errors of reading proficiency are average of 10 estimations using plausible values. Standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table D.4 Structural Estimates of Conditional Correlations between Labor Market and Tertiary Education Outcomes and Latent Skills in Colombia, 2012

| Items | <i>Log of hourly labor earnings</i> | <i>Formal worker</i> | <i>High-skilled worker</i> | <i>Employed</i> | <i>Working, looking for a job, or in school</i> | <i>Tertiary education attendance</i> |
|------------------------|-------------------------------------|----------------------|----------------------------|------------------|---|--------------------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Cognitive skills | 0.134*** (0.032) | 0.276*** (0.052) | 0.252*** (0.04) | 0.023 (0.042) | 0.112** (0.047) | 0.988*** (0.076) |
| Socioemotional skills | -0.026 (0.028) | -0.004 (0.044) | 0.046 (0.035) | 0.013 (0.04) | 0.143*** (0.045) | 0.170*** (0.049) |
| Number of observations | 1,363 | 1,560 | 2,328 | 2,089 | 2,328 | 1,692 |

Source: Colombia STEP Household Survey (2012).

Note: Calculations for labor earnings are ordinary least squares regressions that control for gender, age, mother's education, and city and metropolitan area. Calculations for other labor market outcomes are probit regressions that control for same variables and a self-reported categorical variable that captures parents' involvement in child's education at age 12 (three levels). Estimations are raw coefficients and were produced using Sarzosa and Urzúa (2016). Standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table D.5 Conditional Correlations between Labor Earnings, Formality, and Occupational Status and Measures of Skills and Schooling in Colombia, 2012

| Item | <i>Log of hourly labor earnings</i> | | <i>Formal worker</i> | | <i>High-skilled worker</i> | |
|-----------------------------|-------------------------------------|-----------------------|--------------------------|-----------------------|----------------------------|-----------------------|
| | <i>Without schooling</i> | <i>With schooling</i> | <i>Without schooling</i> | <i>With schooling</i> | <i>Without schooling</i> | <i>With schooling</i> |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Cognitive skill | | | | | | |
| Reading proficiency | 0.161*** (0.05) | 0.065 (0.06) | 0.063*** (0.02) | 0.014 (0.02) | 0.141*** (0.02) | 0.061*** (0.02) |
| Socioemotional skill | | | | | | |
| Extroversion | -0.009 (0.04) | 0.000 (0.04) | 0.001 (0.02) | 0.005 (0.02) | -0.004 (0.01) | -0.000 (0.01) |
| Conscientiousness | -0.034 (0.04) | -0.034 (0.04) | -0.003 (0.02) | -0.003 (0.02) | 0.001 (0.01) | -0.002 (0.01) |
| Openness to experience | 0.082** (0.03) | 0.078** (0.03) | -0.020 (0.02) | -0.022 (0.02) | 0.020 (0.02) | 0.017 (0.01) |
| Emotional stability | 0.008 (0.04) | -0.015 (0.04) | 0.027 (0.02) | 0.016 (0.02) | 0.006 (0.01) | -0.007 (0.01) |
| Agreeableness | 0.023 (0.03) | 0.015 (0.03) | -0.011 (0.02) | -0.014 (0.02) | -0.007 (0.01) | -0.003 (0.01) |
| Grit | -0.030 (0.04) | -0.043 (0.04) | -0.020 (0.02) | -0.025 (0.02) | 0.013 (0.01) | 0.007 (0.01) |
| Hostile attribution bias | -0.003 (0.03) | 0.023 (0.03) | -0.041** (0.02) | -0.030* (0.02) | -0.019 (0.02) | -0.003 (0.01) |
| Decision making | 0.013 (0.04) | -0.007 (0.04) | 0.012 (0.02) | 0.002 (0.02) | 0.019 (0.01) | -0.002 (0.01) |

table continues next page

Table D.5 Conditional Correlations between Labor Earnings, Formality, and Occupational Status and Measures of Skills and Schooling in Colombia, 2012 (continued)

| Item | Log of hourly labor earnings | | Formal worker | | High-skilled worker | |
|------------------------|------------------------------|--------------------|-------------------|--------------------|---------------------|--------------------|
| | Without schooling | With schooling | Without schooling | With schooling | Without schooling | With schooling |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Education | | | | | | |
| Below primary | | 0.015 (0.11) | | 0.103 (0.08) | | 0.091 (0.07) |
| Upper secondary | | 0.289*** (0.10) | | 0.198*** (0.05) | | 0.163*** (0.04) |
| Vocational tertiary | | 0.371*** (0.11) | | 0.263*** (0.05) | | 0.278*** (0.04) |
| General tertiary | | 0.880*** (0.15) | | 0.348*** (0.06) | | 0.566*** (0.05) |
| Number of observations | 1,372 | 1,372 | 1,576 | 1,576 | 1,801 | 1,801 |
| R-squared | 0.11 | 0.16 | | | | |

Source: Colombia STEP Household Survey (2012).

Note: Calculations for labor earnings are ordinary least squares regressions that control for gender, age, mother's education, and cities of residence and their metropolitan areas. Calculations for other labor market outcomes are logit regressions that control for the same variables and a self-reported categorical variable that captures parents' involvement in child's education at age 12 (three levels). Average marginal effects are reported for logit regressions and reflect the changes in the probability of being observed in a labor or school participation situation with respect to the variables evaluated at the mean. Measures of reading proficiency and socioemotional skills are standardized. Regressions coefficients and standard errors of reading proficiency are the average of 10 estimations using plausible values. Standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table D.6 Conditional Correlations between Employment, Activity, and Educational Trajectory and Measures of Skills and Schooling in Colombia, 2012

| Item | Employed | | Working, looking for a job, or in school | Tertiary education attendance |
|-----------------------------|--------------------|--------------------|--|-------------------------------|
| | Without schooling | With schooling | Without schooling | Without schooling |
| | (1) | (2) | (3) | (4) |
| Cognitive skill | | | | |
| Reading proficiency | 0.003 (0.02) | -0.009 (0.02) | 0.021* (0.01) | 0.199*** (0.02) |
| Socioemotional skill | | | | |
| Extroversion | -0.007 (0.02) | -0.007 (0.02) | 0.009 (0.01) | -0.009 (0.01) |
| Conscientiousness | 0.044*** (0.02) | 0.045*** (0.02) | 0.023** (0.01) | 0.002 (0.01) |
| Openness to experience | 0.011 (0.02) | 0.010 (0.01) | 0.018* (0.01) | 0.045*** (0.01) |
| Emotional stability | 0.018 (0.02) | 0.015 (0.02) | 0.009 (0.01) | 0.048*** (0.01) |

table continues next page

Table D.6 Conditional Correlations between Employment, Activity, and Educational Trajectory and Measures of Skills and Schooling in Colombia, 2012 (continued)

| <i>Item</i> | <i>Employed</i> | | <i>Working, looking for a job, or in school</i> | <i>Tertiary education attendance</i> |
|--------------------------|--------------------------|-----------------------|---|--------------------------------------|
| | <i>Without schooling</i> | <i>With schooling</i> | <i>Without schooling</i> | <i>Without schooling</i> |
| | (1) | (2) | (3) | (4) |
| Agreeableness | -0.016 (0.02) | -0.016 (0.02) | -0.019* (0.01) | 0.001 (0.01) |
| Grit | 0.005 (0.02) | 0.004 (0.02) | 0.003 (0.01) | 0.003 (0.01) |
| Hostile attribution bias | -0.010 (0.01) | -0.008 (0.01) | -0.009 (0.01) | -0.049*** (0.01) |
| Decision making | -0.031* (0.02) | -0.033** (0.02) | -0.003 (0.01) | 0.055*** (0.01) |
| Education | | | | |
| Below primary | | -0.063 (0.06) | | |
| Upper-secondary | | 0.003 (0.04) | | |
| Vocational tertiary | | 0.053 (0.05) | | |
| General tertiary | | 0.066 (0.07) | | |
| Number of observations | 2,117 | 2,117 | 2,356 | 1,717 |

Source: Colombia STEP Household Survey (2012).

Note: Calculations are logit regressions that control for age, mother's education, and city and metropolitan area, and a self-reported categorical variable that captures parents' involvement in child's education at age 12 (three levels). Average marginal effects are reported for logit regressions and reflect the changes in the probability of being observed in a labor or school participation situation with respect to the variables evaluated at the mean. Measures of reading proficiency and socioemotional skills are standardized. Regressions coefficients and standard errors of reading proficiency are the average of the 10 estimations using plausible values. Standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table D.7 Conditional Correlations between Labor Earnings, Formality, and Occupational Status and Measures of Skills and Schooling in El Salvador, 2013

| Item | Log of hourly labor earnings | | Formal worker | | High-skilled worker | |
|-----------------------------|------------------------------|---------------------|-------------------|--------------------|---------------------|--------------------|
| | Without schooling | With schooling | Without schooling | With schooling | Without schooling | With schooling |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Cognitive skill | | | | | | |
| Math ability | 0.118 (0.14) | -0.010 (0.14) | 0.022 (0.02) | -0.008 (0.02) | 0.059*** (0.02) | 0.020 (0.01) |
| Socioemotional skill | | | | | | |
| Extroversion | 0.169 (0.13) | 0.161 (0.13) | -0.000 (0.02) | -0.001 (0.02) | -0.007 (0.01) | -0.004 (0.01) |
| Conscientiousness | 0.279** (0.14) | 0.260* (0.14) | 0.033* (0.02) | 0.026 (0.02) | 0.001 (0.01) | -0.002 (0.01) |
| Openness to experience | -0.064 (0.14) | -0.127 (0.14) | 0.031* (0.02) | 0.012 (0.02) | 0.027* (0.02) | 0.002 (0.01) |
| Emotional stability | 0.265** (0.13) | 0.224* (0.13) | 0.028* (0.02) | 0.017 (0.02) | 0.029** (0.01) | 0.012 (0.01) |
| Agreeableness | -0.419*** (0.14) | -0.368*** (0.13) | -0.001 (0.02) | 0.009 (0.02) | -0.020 (0.01) | -0.005 (0.01) |
| Grit | -0.108 (0.13) | -0.119 (0.13) | -0.025 (0.02) | -0.024 (0.02) | -0.010 (0.01) | -0.015 (0.01) |
| Hostile attribution bias | 0.151 (0.14) | 0.185 (0.14) | -0.010 (0.02) | -0.002 (0.02) | -0.018 (0.01) | -0.002 (0.01) |
| Decision making | 0.240* (0.13) | 0.245* (0.13) | 0.012 (0.02) | 0.013 (0.02) | 0.016 (0.01) | 0.016 (0.01) |
| Education | | | | | | |
| Primary | | 0.369 (0.36) | | 0.313*** (0.06) | | 0.065 (0.09) |
| General secondary | | 1.240*** (0.47) | | 0.343*** (0.07) | | 0.303*** (0.08) |
| Vocational tertiary | | 1.013** (0.43) | | 0.379*** (0.06) | | 0.336*** (0.08) |
| Tertiary | | 2.121*** (0.54) | | 0.663*** (0.07) | | 0.579*** (0.08) |
| Number of observations | 1,105 | 937 | 1,197 | 1,196 | 1,225 | 1,028 |

Source: El Salvador Skills Household Survey (2013).

Note: Calculations for labor earnings are ordinary least squares regressions that control for gender, age, mother's education, and cities of residence and their metropolitan areas. Calculation for other labor market outcomes are logit regressions that control for the same variables and a self-reported categorical variable that captures parents' involvement in child's education at age 12 (three levels). Average marginal effects are reported for logit regressions and reflect the changes in the probability of being observed in a labor or school participation situation with respect to the variables evaluated at the mean. Measures of socioemotional skills are standardized. Standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table D.8 Conditional Correlations between Employment, Activity, and Educational Trajectory with Measures of Skills and Schooling in El Salvador, 2013

| <i>Item</i> | <i>Employed</i> | | <i>Working, looking for a job, or in school</i> | <i>Tertiary education attendance</i> |
|------------------------------------|------------------------------|---------------------------|---|--|
| | <i>Without schooling</i> | <i>With schooling</i> | <i>Without schooling</i> | <i>Without schooling</i> |
| | (1) | (2) | (3) | (4) |
| <i>Cognitive skill</i> | | | | |
| Math ability | 0.044*** (0.01) | 0.039*** (0.01) | 0.087*** (0.01) | 0.057*** (0.01) |
| <i>Socioemotional skill</i> | | | | |
| Extroversion | 0.001 (0.01) | 0.002 (0.01) | 0.002 (0.01) | -0.003 (0.01) |
| Conscientiousness | 0.029** (0.01) | 0.027** (0.01) | 0.027*** (0.01) | 0.012 (0.01) |
| Openness to experience | 0.009 (0.01) | 0.006 (0.01) | 0.008 (0.01) | 0.023* (0.01) |
| Emotional stability | -0.005 (0.01) | -0.007 (0.01) | 0.008 (0.01) | 0.014 (0.01) |
| Agreeableness | -0.010 (0.01) | -0.008 (0.01) | -0.020** (0.01) | -0.022* (0.01) |
| Grit | 0.022* (0.01) | 0.021* (0.01) | 0.029*** (0.01) | 0.009 (0.01) |
| Hostile attribution bias | 0.004 (0.01) | 0.005 (0.01) | 0.004 (0.01) | -0.024** (0.01) |
| Decision making | -0.037*** (0.01) | -0.038*** (0.01) | -0.024*** (0.01) | -0.005 (0.01) |
| <i>Education</i> | | | | |
| Primary | | -0.001 (0.04) | | |
| General secondary | | 0.053 (0.05) | | |
| Vocational tertiary | | 0.009 (0.04) | | |
| Tertiary | | 0.116** (0.05) | | |
| Number of observations | 1,787 | 1,490 | 2,064 | 1,081 |

Source: El Salvador Skills Household Survey (2013).

Note: Calculations are logit regressions that control for age, mother's education, and city and metropolitan area, and a self-reported categorical variable that captures parents' involvement in child's education at age 12 (three levels). Average marginal effects are reported for logit regressions and reflect the changes in the probability of being observed in a labor or school participation situation with respect to the variables evaluated at the mean. Measures of socioemotional skills are standardized. Standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table D.9 Structural Estimates of Conditional Correlations between Labor Market Outcomes and Latent Skills Factors in Peru, 2010

| <i>Items</i> | <i>Log of hourly labor earnings</i> | <i>Formal worker</i> | <i>White-collar worker</i> | <i>Wage worker</i> | <i>Employed</i> |
|------------------------|-------------------------------------|----------------------|----------------------------|----------------------|---------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Cognitive skills | 0.1344*** (0.037) | 0.2223*** (0.065) | 0.3087*** (0.072) | 0.2693*** (0.069) | -0.0019 (0.054) |
| Grit | 0.0532 (0.038) | 0.0667 (0.063) | 0.1535** (0.070) | 0.1510** (0.068) | 0.0600 (0.053) |
| Plasticity | -0.0752 (0.196) | -0.2337 (0.329) | -0.3733 (0.380) | -0.3735 (0.327) | 0.6729** (0.275) |
| Stability | 0.3986* (0.227) | -0.0261 (0.332) | 0.0633 (0.457) | -0.3769 (0.383) | -0.0993 (0.291) |
| Number of observations | 748 | 789 | 789 | 789 | 1,265 |

Source: Peru ENHAB (2010).

Note: Calculations are ordinary least squares regressions (for hourly labor earnings) and probit regressions (for other labor market outcomes) that control for gender, age, speaking indigenous language as mother tongue, being first born, region, industry, parents' education, and distance to school. Estimates are raw coefficients and were produced using Sarzosa and Urzúa (2016). Standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

Table D.10 Conditional Correlations between Labor Outcomes and Measures of Skills in Peru, 2010

| Item | Log of hourly wage | | Formal worker | | White-collar worker | | Wage worker | | Employed | |
|------------------------|----------------------|---------------------|--------------------|-------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| | Without schooling | With schooling | Without schooling | With schooling | Without schooling | With schooling | Without schooling | With schooling | Without schooling | With schooling |
| Math ability | 0.096*** (0.035) | 0.047 (0.035) | -0.008 (0.021) | -0.022 (0.022) | 0.046** (0.018) | 0.016 (0.018) | 0.013 (0.020) | -0.011 (0.020) | 0.012 (0.014) | 0.008 (0.014) |
| Working memory | 0.053* (0.030) | 0.042 (0.030) | 0.025 (0.019) | 0.022 (0.019) | 0.018 (0.015) | 0.012 (0.015) | 0.013 (0.018) | 0.008 (0.018) | 0.007 (0.013) | 0.006 (0.013) |
| Verbal ability | 0.103*** (0.035) | 0.039 (0.036) | 0.050** (0.021) | 0.032 (0.022) | 0.045** (0.019) | 0.008 (0.019) | 0.061*** (0.022) | 0.030 (0.023) | -0.011 (0.015) | -0.017 (0.016) |
| Verbal fluency | 0.049 (0.033) | 0.028 (0.032) | 0.016 (0.018) | 0.010 (0.018) | 0.026* (0.015) | 0.012 (0.015) | 0.025 (0.017) | 0.014 (0.017) | 0.027** (0.013) | 0.025* (0.013) |
| Conscientiousness | -0.043 (0.036) | -0.044 (0.035) | -0.004 (0.021) | -0.004 (0.021) | 0.002 (0.018) | 0.002 (0.018) | -0.005 (0.019) | -0.005 (0.019) | -0.001 (0.015) | -0.001 (0.015) |
| Kindness | -0.093*** (0.035) | -0.086** (0.034) | 0.000 (0.019) | 0.002 (0.019) | -0.007 (0.016) | -0.004 (0.015) | 0.006 (0.019) | 0.009 (0.018) | -0.008 (0.013) | -0.008 (0.013) |
| Cooperation | -0.058* (0.030) | -0.056* (0.030) | 0.018 (0.018) | 0.019 (0.018) | -0.011 (0.016) | -0.009 (0.016) | -0.026 (0.017) | -0.024 (0.016) | 0.002 (0.013) | 0.003 (0.013) |
| Emotional stability | 0.074** (0.032) | 0.067** (0.031) | -0.021 (0.019) | -0.023 (0.019) | 0.001 (0.017) | -0.003 (0.017) | -0.014 (0.018) | -0.017 (0.018) | -0.003 (0.013) | -0.003 (0.013) |
| Extroversion | 0.025 (0.034) | 0.021 (0.033) | -0.007 (0.019) | -0.008 (0.019) | 0.013 (0.016) | 0.011 (0.016) | -0.010 (0.018) | -0.012 (0.018) | 0.010 (0.014) | 0.010 (0.014) |
| Openness to experience | 0.015 (0.032) | 0.009 (0.031) | -0.008 (0.020) | -0.009 (0.020) | -0.032* (0.017) | -0.035** (0.016) | -0.016 (0.019) | -0.019 (0.018) | 0.015 (0.014) | 0.014 (0.014) |
| Perseverance of effort | 0.058 (0.037) | 0.044 (0.037) | 0.035* (0.019) | 0.030 (0.019) | 0.050*** (0.016) | 0.039** (0.016) | 0.054*** (0.017) | 0.045*** (0.017) | 0.033** (0.014) | 0.032** (0.014) |

table continues next page

Table D.10 Conditional Correlations between Labor Outcomes and Measures of Skills in Peru, 2010 (continued)

| Item | Log of hourly wage | | Formal worker | | White-collar worker | | Wage worker | | Employed | |
|-------------------------|--------------------|---------------------|-------------------|---------------------|---------------------|---------------------|-------------------|---------------------|-------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| | Without schooling | With schooling | Without schooling | With schooling | Without schooling | With schooling | Without schooling | With schooling | Without schooling | With schooling |
| Consistency of interest | 0.004 (0.031) | 0.011 (0.030) | -0.025 (0.018) | -0.024 (0.018) | 0.002 (0.016) | 0.005 (0.015) | -0.004 (0.016) | -0.001 (0.016) | 0.005 (0.012) | 0.005 (0.012) |
| Years of schooling | | 0.065*** (0.012) | | 0.018*** (0.007) | | 0.039*** (0.006) | | 0.032*** (0.006) | | 0.006 (0.005) |
| Number of observations | 822 | 822 | 865 | 865 | 865 | 865 | 865 | 865 | 1,390 | 1,390 |
| R-squared | 0.212 | 0.242 | 0.112 | 0.119 | 0.348 | 0.383 | 0.253 | 0.275 | 0.233 | 0.234 |

Source: Peru ENHAB (2010).

Note: Regressions are ordinary least squares regressions that control for gender, age, speaking indigenous language as mother tongue, being first born, region, industry, parents' education, and distance to school. Robust standard errors are in parentheses.

* $p < 0.1$ ** $p < 0.05$ *** $p < 0.01$.

APPENDIX E

**Cross-Country Variations in
Associations between Skills
Dimensions and Labor Market and
Tertiary Education Outcomes**

Table E.1 Cross-Country Variations in Associations between Skills Dimensions and Labor Market and Tertiary Education Outcomes in Bolivia, Colombia, El Salvador, and Peru

| <i>Type of skill</i> | <i>Dimension</i> | <i>Skill</i> | <i>Earnings</i> | <i>Formal job</i> | <i>High-skilled occupation</i> | <i>Wage worker</i> | <i>Employment</i> | <i>Active in labor market or studying^a</i> | <i>Tertiary education attendance^a</i> |
|----------------------|--|--|--------------------------------|-----------------------|--------------------------------------|--------------------|--------------------------------------|---|--|
| Basic cognitive | Basic academic knowledge and reasoning | Memory (short-term memory, representative of working memory) | Bolivia, Colombia, Peru | Colombia, Peru | Bolivia, Colombia, El Salvador, Peru | El Salvador, Peru | El Salvador, Peru | Colombia, El Salvador | Bolivia, Colombia, El Salvador |
| | | Math ability (basic math operations) | Peru | | | | | | |
| | | Verbal ability (receptive vocabulary and verbal ability of adult subjects) | | | | | | | |
| | | Verbal fluency (speed and ease with which individual accesses words from memory) | | | | | | | |
| | | Reading proficiency (ability to understand, evaluate, use, and engage with written text) | | | | | | | |
| Socioemotional | Achieving goals | Conscientiousness (tendency to be organized, responsible, and hardworking) | Bolivia, Colombia, El Salvador | El Salvador | El Salvador, Peru | Colombia, Peru | Bolivia, Colombia, El Salvador, Peru | Colombia, El Salvador | Bolivia, Colombia, El Salvador |
| | | Grit (perseverance and passion for long-term goals) | | | | | | | |
| | | Openness to experience (appreciation for art, learning, and unusual ideas) | | | | | | | |
| | Working with others | Agreeableness (pro-social behaviors, cooperative orientation to others) | El Salvador, Peru | None | None | None | None | Colombia, El Salvador | El Salvador |
| | | Extroversion (sociability and dominance in social situations) | | | | | | | |
| | Managing emotions | Resilience (management of negative emotions) | Bolivia, El Salvador, Peru | Colombia, El Salvador | El Salvador | Bolivia | Bolivia, Colombia, El Salvador | Bolivia, El Salvador | Colombia, El Salvador |
| | | Hostile attribution bias (tendency to perceive hostile intents in others) | | | | | | | |
| | | Decision making (how individuals approach decision situations) | | | | | | | |

Sources: Bolivia and Colombia: STEP Household Surveys (2012); El Salvador: El Salvador Skills Survey 2013; Peru: ENHAB 2010.

Note: Table shows statistically significant associations with outcome (at the 10 percent, 5 percent, or 1 percent levels) for given dimensions of skills. Associations were identified using ordinary least squares or logit regressions controlling for a range of characteristics. See appendixes D for details by country.

a. Outcome not studied for Peru.

APPENDIX F

Inventory of Promising Interventions to Foster Socioemotional Skills

Table F.1 Promising Programs That Foster Socioemotional Skills, by Target Age Group

| <i>Program/country</i> | <i>Target age group</i> |
|--|-------------------------|
| <i>Early years</i> | <i>0–5</i> |
| Carolina Abecedarian Project (United States) | 0–5 |
| Supplementation Study (Jamaica) | 1–2 |
| Early childhood development component of the national conditional cash transfer program Familias en Acción (Families in Action) (Colombia) | 1–2 |
| Perry Preschool (United States) | 3–4 |
| Tools of the Mind (Chile, United States) | 3–4 |
| Head Start (United States) | 3–5 |
| <i>Middle childhood</i> | <i>6–11</i> |
| Incredible Years (United States, Western Europe, elsewhere) | 3–7 |
| Project STAR (Student-Teacher Achievement Ratio) (United States) | 5–6 |
| Seattle Social Development Project (United States) | 6–7 |
| Montreal Longitudinal Experimental Study (Canada) | 7–9 |
| Escuela Nueva (New School) (Colombia, Vietnam, elsewhere) | 6–11 |
| Fútbol con Corazón (Football with Heart) (Colombia) | 5–17 |
| Escuela Amiga (Friendly School) (Peru) | 6–17 |
| <i>Adolescence</i> | <i>12–18</i> |
| Knowledge Is Power Program (KIPP) (United States) | 5–19 |
| Big Brothers Big Sisters (United States) | 10–16 |
| Empresários Pela Inclusão Social (EPIS) (Entrepreneurs for Social Inclusion) (Portugal) | 13–15 |
| Becoming a Man (United States) | 15–16 |
| Chicago One-Goal (United States) | 15–18 |
| Construye T (Build Yourself) (Mexico) | 15–18 |
| National Guard ChalleNGe (United States) | 16–18 |

table continues next page

Table F.1 Promising Programs That Foster Socioemotional Skills, by Target Age Group (continued)

| <i>Program/country</i> | <i>Target age group</i> |
|---|-------------------------|
| <i>Emerging adulthood</i> | <i>19–29</i> |
| Youthbuild (United States, Central America, others) | 16–24 |
| Job Corps (United States) | 16–24 |
| Year-up (United States) | 18–24 |
| Jóvenes en Acción (Youth in Action) (Colombia) | 18–25 |
| Juventud y Empleo (Youth and Employment) (Dominican Republic) | 16–28 |
| Galpão Aplauso (Applause Warehouse) (Brazil) | 15–29 |
| Sustainable Transformation of Youth (Liberia) | 18–35 |

Table F.2 Objectives and Components of Promising Interventions Fostering Socioemotional Skills in the Early Years (Children 0–5)

| Program | Purpose | Age target | Location | | Component | | | | | | Skills targeted | |
|--|-----------------------------|------------|----------|------|----------------------|---------------------|-------------------|------------------|-----------------|-----------------|-----------------|--|
| | | | School | Home | Parental involvement | Guidance, counselor | Parental training | Teacher training | Social services | Health services | | |
| Carolina Abecedarian Project (United States) | Reduce poverty | 0–5 | ◆ | ◆ | ◆ | ◆ | | | | | ◆ | Reduction of aggressive behavior, prevention of antisocial behavior, academic skills |
| Supplementation Study (Jamaica) | Improve health | 1–2 | | ◆ | ◆ | | | ◆ | | | ◆ | Self-esteem, emotional regulation, reduction of antisocial and oppositional behavior |
| Early childhood development component of the national conditional cash transfer program Familias en Acción (Families in Action) (Colombia) | Improve health | 1–2 | | ◆ | ◆ | | | ◆ | | ◆ | ◆ | Self-management, social relationships, regulation of antisocial behavior, cognition, language (expressive and receptive), motor skills |
| Perry Preschool (United States) | Reduce poverty | 3–4 | ◆ | ◆ | ◆ | | | | | | | Reduction of aggressive behavior, academic motivation, IQ |
| Tools of the Mind (Chile, United States) | Improving academic learning | 3–4 | ◆ | | ◆ | | | | ◆ | | | Problem-solving, self-management, learning, time management, teamwork, literacy, math |
| Head Start (United States) | Reduce poverty | 3–5 | ◆ | ◆ | ◆ | | | ◆ | | ◆ | ◆ | Social relationships, self-concept, self-efficacy, self-regulation, emotional regulation, academic skills |

Table F.3 Description of Promising Interventions Fostering Socioemotional Skills in the Early Years (Children 0–5)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Target population</i> | <i>Description</i> | <i>Start year</i> | <i>References</i> |
|--|----------------|-------------------|--|--|-------------------|--|
| Carolina Abecedarian Project (United States) | Reduce poverty | 0–5 | Disadvantaged African-American children | Preschool intervention for 6-week-old babies followed by a school-age treatment. Preschool component was full-day childcare 5 days a week, 50 weeks a year. School curriculum focused on educational games but also included medical and nutritional components. During grades 1–3, teachers and parents interacted biweekly. | 1972 | Barnett and Masse (2007), Temple and Reynolds (2007), Campbell and others (2014) |
| Supplementation Study (Jamaica) | Improve health | 1–2 | Growth-stunted toddlers from poor neighborhoods | Psychosocial stimulation based on weekly one-hour visits from community health workers over a two-year period that taught parenting skills and encouraged mothers and children to interact in ways (such as playing) that develop cognitive and socioemotional skills. Home-made toys were left after each visit. Program also provided nutritional supplements (milk formula) to subset of children. | 1986 | Gertler and others (2014) |
| Early childhood development component of the national conditional cash transfer program Familias en Acción (Families in Action) (Colombia) | Improve health | 1–2 | Children from households participating in the conditional cash transfer program (poorest 20 percent of households) | Psychosocial stimulation based on weekly home visits with play demonstrations by female community leaders. Subset of children receives only micronutrient sprinkles, given daily. Another subset receives both treatments. Intervention lasts 18 months. | 2009 | Attanasio, Cattán, and others (2015) |
| Perry Preschool (United States) | Reduce poverty | 3–4 | Low-income African-American children (initial IQs below 85 at age 3) | Two and a half hours a day of center-based preschool education by certified teachers five days a week for two years. Children are taught social skills in daily sequence in which they plan, execute, and review a task with teachers and fellow students. Children learn to work with others when problems arise. Average child-teacher ratio is 6:1. Teachers also provide weekly 1.5-hour home visits to promote parent-child relationships, involve parents in educational process, and help implement preschool curriculum at home. | 1962 | Heckman and others (2010), Heckman, Pinto, and Savellyev (2013) |

table continues next page

Table F.3 Description of Promising Interventions Fostering Socioemotional Skills in the Early Years (Children 0–5) (continued)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Target population</i> | <i>Description</i> | <i>Start year</i> | <i>References</i> |
|--|-----------------------------|-------------------|---|---|-------------------|---------------------------|
| Tools of the Mind (Chile, United States) | Improving academic learning | 3–4 | Children from low-income families (78 percent of families have annual income of less than \$25,000) | Teaching and classroom strategies to help children regulate their behaviors. Program considers self-regulation (such as paying attention and remembering) integral to quality and quantity of academic learning. In this view, academic content (such as literacy and numeracy) is a means for practice, not the sole goal of learning; educational goals are more broadly defined as child achievement, engagement, and social competence. Program elements consist of preschool and kindergarten curricula encouraging children to role-play and learn in groups, a teaching approach, and a professional development program for teachers. | 1993 | Bodrova and Leong (1996) |
| Head Start (United States) | Reduce poverty | 3–5 | Children from low-income families (below the federal poverty level) and children with disabilities | Preschool education combined with medical, dental, and mental health care; nutrition services; and efforts to help parents foster their children's development. Services have changed substantially since program's introduction. Implementation differs greatly across sites. Program is mostly center based but also exists in home and family childcare settings (or combination of these). | 1965 | Carneiro and Ginja (2014) |

Table F.4 Effects, Costs, and Benefits of Promising Interventions Fostering Socioemotional Skills in the Early Years (Children 0–5)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Effects</i> | <i>Number of participants</i> | <i>Average annual cost per participant</i> | <i>Returns</i> | <i>References</i> |
|--|----------------|-------------------|--|-------------------------------|---|-------------------------------|--|
| Carolina Abecedarian Project (United States) | Reduce poverty | 0–5 | Program yielded lasting improvements in IQ, especially in girls. It increased educational attainment, reduced participation in criminal activity, decreased substance abuse, and improved anxiety, depression, and aggressive behavior in women who participated as girls. Among men in their mid-30s who had participated as boys, it improved employment and health outcomes, significantly improved socioemotional skills, and reduced the prevalence of risk factors for cardiovascular and metabolic disease. | 111 | \$13,900 (2002 dollars) | Benefit-cost ratio of 3.78: 1 | Barnett and Masse (2007), Temple and Reynolds (2007), Campbell and others (2014) |
| Supplementation Study (Jamaica) | Improve health | 1–2 | Psycho-simulation component increased earnings by 25 percent after 20 years (enough for beneficiary to catch up to earnings of a nonstunted comparison group); improved skill development; increased educational attainment; and reduced criminal activity. Nutritional supplementation had no long-term effects. | 129 | — | — | Gertler and others (2014) |
| Early childhood development component of the national conditional cash transfer program Familias en Acción (Families in Action) (Colombia) | Improve health | 1–2 | Psychosocial stimulation had significant impacts on cognition and receptive language. Nutritional supplementation had no effects, and there were no interactions between stimulation and supplementation. | 1,420 | \$500 (2011 dollars), which could be reduced at scale | — | Attanasio, Cattani, and others (2015) |

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Table F.4 Effects, Costs, and Benefits of Promising Interventions Fostering Socioemotional Skills in the Early Years (Children 0–5) (continued)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Effects</i> | <i>Number of participants</i> | <i>Average annual cost per participant</i> | <i>Returns</i> | <i>References</i> |
|--|-----------------------------|-------------------|---|-------------------------------|--|---|--|
| Perry Preschool (United States) | Reduce poverty | 3–4 | Program had large and lasting effects on education, employment, earnings, marriage, health, healthy behaviors, and criminal activity by age 27. Rate of return of 7–10 percent a year for both boys and girls is attributed to the increase in socioemotional skills, as there was no lasting improvement in IQ. | 123 | \$11,300 (2007 dollars) | Benefit-cost ratio of 7.16:1 | Barnett and Masse (2007), Temple and Reynolds (2007), Heckman and others (2010), Heckman, Pinto, and Savelyev (2013) |
| Tools of the Mind (Chile, United States) | Improving academic learning | 3–4 | Program improved classroom quality and children's cognitive control and reduced conduct problems. Results on academic achievements and language were mixed. | — | About \$3,000 per classroom (2008 dollars; estimate) depending on program's size | — | Bodrova and Leong (1996) |
| Head Start (United States) | Reduce poverty | 3–5 | Program reduces incidence of behavioral problems, health problems, and obesity in boys at ages 12 and 13; decreases depression and obesity among adolescents; and reduces engagement in criminal activities and idleness among young adults. It raises IQ and achievement test scores, but improvements fade by age 10. | 1 million (2009) | \$7,800 (2009 dollars) | Internal rate of return of at least 4 percent | Carneiro and Ginja (2014) |

Note: Estimated average costs and benefits may not be comparable across countries because different components may have been included in the computations. See references for details on methodology.
 — = Not available.

Table F.5 Objectives and Components of Promising Interventions Fostering Socioemotional Skills in Middle Childhood (6–11)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Location</i> | | <i>Components</i> | | | | | | <i>Skills targeted</i> | |
|--|---|-------------------|-----------------|---------------|-----------------------------|------------------|----------------------------|--------------------------|-------------------------|-------------------------------|------------------------|---|
| | | | <i>School</i> | <i>Center</i> | <i>Parental involvement</i> | <i>Mentoring</i> | <i>Guidance, counselor</i> | <i>Parental training</i> | <i>Teacher training</i> | <i>Performance activities</i> | | <i>Health services</i> |
| Incredible Years (United States, Western Europe, elsewhere) | Prevent violence and improve student learning | 3–7 | ◆ | | ◆ | | | ◆ | ◆ | | | Social competences, emotional self-regulation, persistence, interpersonal problem solving, anger management, communication, pro-social behavior |
| Project STAR (Student-Teacher Achievement Ratio) (United States) | Enhance quality of education | 5–6 | ◆ | | ◆ | | | | ◆ | | | Student effort, initiative, self-value in classroom, pro-social behaviors, IQ |
| Seattle Social Development Project (United States) | Prevent crime | 6–7 | ◆ | | ◆ | | | ◆ | ◆ | | ◆ | Communication, decision making, negotiation, and conflict resolution |
| Montreal Longitudinal Experimental Study (Canada) | Prevent crime | 7–9 | ◆ | | ◆ | | | ◆ | | | | Social and behavioral skills; positive interactions with teachers, parents, and peers; problem solving; self-regulation |

table continues next page

Table F.5 Objectives and Components of Promising Interventions Fostering Socioemotional Skills in Middle Childhood (6–11) (continued)

| Program | Purpose | Age target | Location | | Components | | | | | Skills targeted | | | |
|---|---|------------|----------|--------|----------------------|-----------|---------------------|-------------------|------------------|-----------------|------------------------|---|---|
| | | | School | Center | Parental involvement | Mentoring | Guidance, counselor | Parental training | Teacher training | | Performance activities | Health services | |
| Escuela Nueva (New School) (Colombia, Vietnam, elsewhere) | Enhance quality of education | 6–11 | ◆ | | | | | | | ◆ | | Teamwork and cooperative learning, decision making, self-management, creativity and innovative thinking, leadership, communication, self-confidence | |
| Fútbol con Corazón (Football with Heart) (Colombia) | Develop social skills and prevent violence | 5–17 | | ◆ | ◆ | ◆ | ◆ | | | | ◆ | ◆ | Leadership, social problem-solving, resilience, self-control, teamwork, initiative, confidence, ethics |
| Escuela Amiga (Friendly School) (Peru) | Prevent violence and improve student learning | 6–17 | ◆ | | ◆ | | | | | ◆ | | | Self-awareness, self-regulation, resilience, social awareness and connectedness, social decision making |

Sources: Kautz and others 2014; OECD 2015, and authors' elaboration.

Table F.6 Description of Promising Interventions Fostering Socioemotional Skills in Middle Childhood (6–11)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Target population</i> | <i>Description</i> | <i>Start year</i> | <i>References</i> |
|--|---|-------------------|---|--|-------------------|--|
| Incredible Years (United States, Western Europe, elsewhere) | Prevent violence and improve student learning | 3–7 | Clinic-referred children diagnosed with oppositional defiant disorder or early-onset conduct problems | School curriculum offering 20- to 30-minute lessons on socioemotional skills twice a week for 15 weeks. Lessons focus on recognizing and understanding feelings, getting along with friends, regulating emotions, solving problems, and behaving well at school. They are reinforced by practicing skills in 20-minute sessions after completing the structured curriculum and continuing to practice the skills throughout the school day and at home. Program is supplemented by parent training that focuses on positive discipline and engaging in children's school lives via family homework. | 1982 | Webster-Stratton, Reid, and Stoolmiller (2008) |
| Project STAR (Student-Teacher Achievement Ratio) (United States) | Enhance quality of education | 5–6 | Children from low-income schools | From kindergarten through third grade, children and teachers were randomly assigned to classrooms of differing class sizes of 13–17 or 20–25 students to study the impact of greater quality kindergarten in smaller classes on short-term grades and longer-term outcomes. | 1985 | Krueger (1999), Chetty and others (2011) |
| Seattle Social Development Project (United States) | Prevent crime | 6–7 | Public elementary schools in high-crime areas | Training of teachers and parents to promote parent-child attachment and teacher-child interactions. Elementary school teachers received five days of training a year that included proactive classroom management, interactive teaching, and cooperative learning. First-grade teachers also received extra training on curriculum teaching children to resolve conflicts with peers. Parents were offered a seven-session course on behavioral management training (offered to parents of first and second graders), a four-session course to support their children's academic achievement (offered to parents of second and third graders), and a five-session course to reduce drug use (offered to parents of fifth and sixth graders). | 1981 | Hawkins and others (2008) |
| Montreal Longitudinal Experimental Study (Canada) | Prevent crime | 7–9 | Most disruptive boys in schools located in areas of low socioeconomic status | Two-year intensive training program for boys, parents, and teachers taught social skills (for example, saying hello, doing things together, saying no politely) and self-control (for example, how to wait when impatient, follow rules, react to teasing) in 19 sessions of small groups of children (one disruptive boy for every three nondisruptive ones). Family visits aim to teach parents to reinforce social skills and self-control (monitoring child, managing punishment and conflicts, and so forth). | 1974 | Algan and others (2014) |

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Table F.6 Description of Promising Interventions Fostering Socioemotional Skills in Middle Childhood (6–11) (*continued*)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Target population</i> | <i>Description</i> | <i>Start year</i> | <i>References</i> |
|---|---|-------------------|--|---|--------------------------------------|--|
| Escuela Nueva (New School) (Colombia, Vietnam, elsewhere) | Enhance quality of education | 6–11 | Rural children (Colombia) | Teaching and learning practices in classroom that promote active learning. Students guide themselves through textbooks and work in groups while interacting with one another. Teachers are trained to promote active learning and use it themselves. Flexible promotion and individualized instruction allow students to advance at their own pace (instruction is multigrade). Students learn democratic behavior by participating in student government. Mastery learning (peer instruction) is practiced as older students tutor younger students. | 1985 in Colombia; 2012 in Vietnam | Psacharopoulos, Rojas, and Velez (1993), Schiefelbein (1993) |
| Fútbol con Corazón (Football with Heart) (Colombia) | Develop social skills and prevent violence | 5–17 | Children from disadvantaged neighborhoods who keep on formal schooling | Out-of-school program uses soccer to attract participants and teach them socioemotional skills. Rules of game are changed in order to teach a range of socioemotional skills, including social problem solving, resilience, self-control, teamwork, initiative, confidence, and ethics. Children play in gender-mixed teams and are supported by mentors, who are trained to reinforce the socioemotional objectives of the program. Intervention also includes a nutrition program, health and life skills workshops, links to vocational training, parental engagement, counseling, and community outreach. | 2007 | Deporte y Desarrollo (2009) |
| Escuela Amiga (Friendly School) (Peru) | Prevent violence and improve student learning | 6–17 | Pupils from poor neighborhoods of Lima | Year-long training session, taught by university psychology staff, for midcareer teachers and school principals; develops their socioemotional skills so that they can apply them in the classroom. Participants can attend 2-hour daily sessions during the week while actively working the schools or meet for 10 hours every Saturday (384 hours of class time in 2 semesters). Course is delivered through lectures, paper exercises, role-playing, and group interactions that focus on recognizing and managing a range of skills. Course incorporates real-time issues into curricula, drawn from participants' work lives. After course ends, program's roving support teams regularly visit schools to continue supporting teachers and principals in applying course tools. | 2013 | Gertler and Kudo (2015) |

Table F.7 Effects, Costs, and Benefits of Promising Interventions Fostering Socioemotional Skills in Middle Childhood (6–11)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Effects</i> | <i>Number of participants</i> | <i>Average annual cost per participant</i> | <i>Returns</i> | <i>References</i> |
|--|---|-------------------|---|-------------------------------|--|---|--|
| Incredible Years (United States, Western Europe, elsewhere) | Prevent violence and improve student learning | 3–7 | After six months, participants were significantly more likely to display emotional self-regulation and social competence; they also had fewer conduct problems and engaged in less off-task behavior (disengagement). Effect was particularly strong among students in classrooms with lowest initial scores on these skills. | — | \$1,200–\$3,000, depending on project components | — | Webster-Stratton, Reid, and Stoolmiller (2008) |
| Project STAR (Student-Teacher Achievement Ratio) (United States) | Enhance quality of education | 5–6 | Children placed in improved kindergarten classrooms had significantly higher earnings in early adulthood and were more likely to attend college, save more for retirement, and live in better neighborhoods. Improvements in test scores faded out but gains in socioemotional measures persisted. | 11,571 | \$9,355 (2009 dollars; cost of 33 percent-reduction of class size for 2 years) | \$1,520 (9.6 percent) at age 27 for class quality, \$368 (2.3 percent) at age 27 for class size | Krueger (1999), Chetty and others (2011) |
| Seattle Social Development Project (United States) | Prevent crime | 6–7 | Participants had significantly better educational and economic attainment, mental health, and sexual health by age 27. Hypothesized effects on substance use and crime were not found at ages 24 or 27. | 808 | \$4,355 | Benefit-cost ratio of 4.25:1 | Hawkins and others (2008) |
| Montreal Longitudinal Experimental Study (Canada) | Prevent crime | 7–9 | Program increased full-time employment or school enrolment at ages 17–26 by 11 percentage points, and secondary school graduation by ages 23–24 by 19 percentage points. It reduced the probability of having a criminal record by ages 23–24 by 11 percentage points. The program also boosted measures of non-cognitive skills and grades during adolescence. | 250 | \$6,500 (2011 dollars) | \$14 per dollar invested | Algan and others (2014) |

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Table F.7 Effects, Costs, and Benefits of Promising Interventions Fostering Socioemotional Skills in Middle Childhood (6–11) (continued)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Effects</i> | <i>Number of participants</i> | <i>Average annual cost per participant</i> | <i>Returns</i> | <i>References</i> |
|---|---|-------------------|---|--|---|----------------|--|
| Escuela Nueva (New School) (Colombia, Vietnam, elsewhere) | Enhance quality of education | 6–11 | Program improved academic achievement and behavior. | 551,749 in Vietnam | — | — | Psacharopoulos, Rojas, and Velez (1993), Schiefelbein (1993), Colbert (2009) |
| Fútbol con Corazón (Football with Heart) (Colombia) | Develop social skills and prevent violence | 5–17 | — | 300 children per soccer field | — | — | Deporte y Desarrollo (2009) |
| Escuela Amiga (Friendly School) (Peru) | Prevent violence and improve student learning | 6–17 | Program helped build teachers' and principals' knowledge of socioemotional skills and how to use them in a school setting. Trained school professionals felt more able to manage the classroom but also better learned about themselves and how to manage their own children, marriages, and neighbors: 90 percent of teachers and school principals felt that they were better able to manage their classrooms, 93 percent believed that they were better equipped to manage conflict in the school setting, and 50 percent felt that their professional relationships had improved. | Nearly 15,000 classroom teachers and 81 principals | Teacher training costs about \$4,000 per teacher (2013 dollars); roaming teams costs about \$20,000 (2013 dollars) per school | — | Gertler and Kudo (2015) |

Note: Estimated average costs and benefits may not be comparable across countries because different components may have been included in the computations. See references for details on methodology.

— = Not available.

Table F.8 Objectives and Components of Promising Interventions Fostering Socioemotional Skills in Adolescence (12–18)

| Program | Purpose | Age target | Location | | Components | | | | | Skills targeted |
|---|--|------------|----------|----------------------|------------|---------------------|------------------|-----------------------|-----------------|--|
| | | | School | Parental involvement | Mentoring | Guidance, counselor | Teacher training | Sports/art activities | Health services | |
| Knowledge Is Power Program (KIPP) (United States) | Increase college graduation rate | 5–19 | ◆ | ◆ | ◆ | ◆ | ◆ | | | Zest, grit, optimism, self-management, gratitude, social intelligence, curiosity |
| Big Brothers Big Sisters (United States) | Reduce poverty | 10–16 | ◆ | ◆ | ◆ | | | | | Self-confidence, motivation, social acceptance and behavior, prevention of antisocial behavior, academic skills |
| Empresários Pela Inclusão Social (EPIS) (Entrepreneurs for Social Inclusion) (Portugal) | Reduce dropout rate | 13–15 | ◆ | ◆ | | ◆ | ◆ | | | Motivation, self-control, problem-solving, social skills |
| Becoming a Man (United States) | Reduce dropout rate and prevent violence | 15–16 | ◆ | | ◆ | ◆ | | ◆ | | Social-cognitive skills: impulse control, emotional self-regulation, conflict resolution, raising aspirations for the future, sense of personal responsibility |
| Chicago One-Goal (United States) | Increase college graduation rate | 15–18 | ◆ | | ◆ | ◆ | ◆ | | | Mindsets, perseverance, self-advocacy, academic skills |
| Construye T (Build Yourself) (Mexico) | Reduce dropout rate and enhance quality of education | 15–18 | ◆ | | | | | ◆ | | Self-awareness, self-regulation, resilience, social awareness and connectedness, social decision making |
| National Guard ChalleNGe (United States) | Reduce dropout rate | 16–18 | ◆ | | | | | | ◆ | Confidence and responsibility, feeling of self-control, sense of leadership and potential, academic skills |

Sources: Kautz and others 2014, OECD 2015, and authors' elaboration.

Table F.9 Description of Promising Interventions Fostering Socioemotional Skills in Adolescence (12–18)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Target population</i> | <i>Description</i> | <i>Start year</i> | <i>References</i> |
|---|--|-------------------|--|--|-------------------|---|
| Knowledge Is Power Program (KIPP) (United States) | Increase college graduation rate | 5–19 | Low-income students who qualify for free or reduced-price lunch (95 percent are black or Latino) | Recruitment of graduates of elite colleges to teach in low-performing school districts. Program uses a “character” report card, in which teachers assess students’ success in demonstrating a range of socioemotional skills. Teacher’s feedback is aggregated into a score for each skill and reported in the card. During student performance reviews with students and parents, character report card is discussed in same way as standard report card. | 1994 | Angrist and others (2010), Tuttle and others (2013) |
| Big Brothers Big Sisters (United States) | Reduce poverty | 10–16 | Children living in unstable family environments, which generally are single-parent households | Volunteer mentors who meet regularly in lengthy one-on-one meetings with mentees for one year, on average. Program allows mentees and mentors to form strong attachments and may help avoid negative peer effects of grouping at-risk youth together. | 1977 | Tierney, Baldwin-Grossman, and Resch (1995) |
| Empresários Pela Inclusão Social (EPIS) (Entrepreneurs for Social Inclusion) (Portugal) | Reduce dropout rate | 13–15 | Pupils with poor academic results and most at risk to drop out | Large private sector program consisting of one-on-one after-school meetings with trained staff member or meetings in small groups. Sessions aim at improving the socioemotional skills (for example, study skills, motivation, self-esteem) of the worst-performing students. | 2007 | Martins (2010) |
| Becoming a Man (United States) | Reduce dropout rate and prevent violence | 15–16 | At-risk boys (poor academic results, dropouts, or engaged in crime) | Mentorship programs focusing on teaching socioemotional skills (through 27 weekly hour-long cognitive behavioral training sessions) and academic skills (through daily hour-long tutoring sessions in math). Intervention is delivered in groups to help control costs. Groups kept small to help develop relationships (maximum of 15 boys, with average youth-to-adult ratio of 8:1. Students skip an academic class in order to participate in program, one of the draws to attend. Program is documented by manuals and can be delivered by college-educated mentors without specialized training in psychology or social work, although there is a preference for such training in selecting program providers. Program seeks mentors with ability to keep youth engaged. After-school sports component reinforces conflict-resolution skills and social and emotional learning objectives of in-school curriculum. | 2009 | Cook and others (2014), Heller and others (2015) |

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Table F.9 Description of Promising Interventions Fostering Socioemotional Skills in Adolescence (12–18) (continued)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Target population</i> | <i>Description</i> | <i>Start year</i> | <i>References</i> |
|--|--|-------------------|---|---|-------------------|--|
| Chicago One-Goal (United States) | Increase college graduation rate | 15–18 | Motivated, disadvantaged high school students (selected through applications and interviews) from Chicago's low-income schools in Chicago, most of which have college enrolment rates of less than 50 percent | High school teachers who help students improve their grades and test scores; apply to colleges (helping them fill out financial aid forms, write essays, and make college choices); and remain in college. Daily classes start in 11th grade and continue for two years. Specific socioemotional skills are taught in contexts in which they can be readily applied. Mentoring relationship continues throughout first year of college. | 2003 | Kautz and Zanoni (2014) |
| Construye T (Build Yourself) (Mexico) | Reduce dropout rate and enhance quality of education | 15–18 | High school staff and students | Training of teachers and school principals and use of toolkits of activities to develop socioemotional skills and improve school climate. | 2013 | SEMS (2014) |
| National Guard ChalleNGe (United States) | Reduce dropout rate | 16–18 | High school dropouts | Seventeen-month intervention occurs in a residential facility removed from the usual environments of participants. Program features a 2-week residential orientation and assessment period; a 20-week residential program, often conducted at a military base; and a 1-year nonresidential mentoring program. | 1993 | Millenky and others (2012), Perez-Arce and others (2012) |

Table F.10 Effects, Costs, and Benefits of Promising Interventions Fostering Socioemotional Skills in Adolescence (12–18)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Effects</i> | <i>Number of participants</i> | <i>Average annual cost per participant</i> | <i>Returns</i> | <i>References</i> |
|---|--|-------------------|---|--|---|---|---|
| Knowledge Is Power Program (KIPP) schools (United States) | Increase college graduation rate | 5–19 | Program improved academic achievement, especially among students with limited English proficiency and special education needs. | 27,000 (2010) | \$4,200–\$17,200 (2014 dollars), depending on the model | — | Angrist and others (2010), Tuttle and others (2013) |
| Big Brothers Big Sisters (United States) | Reduce poverty | 10–16 | Program has positive impacts on academic outcomes for girls but not boys. Studies on long-term effects are needed. | 126,000 | — | — | Tierney, Baldwin-Grossman, and Resch (1995) |
| Empresários Pela Inclusão Social (EPIS) (Entrepreneurs for Social Inclusion) (Portugal) | Reduce dropout rate | 13–15 | Program reduced grade retention by 10 percentage points. | 84 schools and more than 15,000 students (10 percent of the country) | €1,000–€3,250 (2010) | — | Martins (2010) |
| Becoming a Man (United States) | Reduce dropout rate and prevent violence | 15–16 | Program improves math skills and reduces arrests for violent crime by 44 percent in the short term. | 2,740 | \$1,100 | Benefit-cost ratios on the order of 3:1 to 31:1 just from reductions in crime during program year | Cook and others (2014), Heller and others (2015) |
| Chicago One-Goal (United States) | Increase college graduation rate | 15–18 | Program improved academic results in high school; increased high school graduation rates; and raised college enrollment by 10–20 percentage points, with about 15–30 percent of the increase related to improvements in socioemotional skills | 4,000 by 2017 | \$1,351 in 2011 (\$5,092 in 2007) | — | Kautz and Zanoni (2014) |

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Table F.10 Effects, Costs, and Benefits of Promising Interventions Fostering Socioemotional Skills in Adolescence (12–18) (continued)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Effects</i> | <i>Number of participants</i> | <i>Average annual cost per participant</i> | <i>Returns</i> | <i>References</i> |
|--|--|-------------------|---|---|--|---|--|
| Construye T (Build Yourself) (Mexico) | Reduce dropout rate and enhance quality of education | 15–18 | — | 2,500 schools in 32 states (2 million students and 99,000 teachers) | — | — | SEMS (2014) |
| National Guard ChalleNGe (United States) | Reduce dropout rate | 16–18 | Program increased likelihood of earning a General Education Degree (GED) or high school diploma and being employed and reduced likelihood of being arrested or convicted. Three years after intervention, effects for criminal behavior and high school graduation declined and became statistically insignificant, however. Initial reduction in crime likely occurs because participants are housed in a residential program (incapacitation effect). | 113,000 (total, 2015) | \$11,633 (2010 dollars) | \$2.66 per dollar invested (return on investment of 166 percent; internal rate of return 6.4 percent) | Millenky and others (2012), Perez-Arce and others (2012) |

Note: Estimated average costs and benefits may not be comparable across countries because different components may have been included in the computations. See references for details on methodology.

Table F.11 Objectives and Components of Promising Interventions Fostering Socioemotional Skills in Young Adulthood (19–29)

| Program | Purpose | Age target | Location | | | Components | | | | | Skills targeted | |
|--|---|------------|----------|--------|------|------------|---------------------|-----------------------|--------------|---------------|-----------------|--|
| | | | School | Center | Work | Mentoring | Guidance, counselor | Sports/art activities | Cash/voucher | Work training | | Health services |
| Job Corps (United States) | Reduce poverty | 16–24 | ◆ | | | | ◆ | | ◆ | | ◆ | Interpersonal communication, problem solving, social and management skills, technical skills, academic skills |
| Youthbuild (United States, Central America, South Africa, elsewhere) | Prevent violence and improve student learning | 16–24 | ◆ | | ◆ | ◆ | ◆ | | | ◆ | | Teamwork, communication, initiative, confidence, self-esteem |
| Year-up (United States) | Increase employability | 18–24 | ◆ | | ◆ | | ◆ | | | ◆ | | Time management, teamwork, problem solving, conflict resolution |
| Jóvenes en Acción (Youth in Action) (Colombia) | Increase employability | 18–25 | | ◆ | ◆ | | ◆ | | ◆ | ◆ | | Initiative, teamwork, creativity, openness to feedback, communication (verbal and written), problem-solving, decision making, growth mindset, goal setting |
| Juventud y Empleo (Youth and Employment) (Dominican Republic) | Increase employability | 16–28 | ◆ | | ◆ | | ◆ | | ◆ | ◆ | | Self-esteem, problem solving, decision making, conflict resolution, empathy, cooperation, responsibility, emotional control, reduced risk behavior, communication, creative thinking |
| Galpão Aplauso (Applause Warehouse) (Brazil) | Increase employability | 15–29 | | ◆ | ◆ | | | ◆ | | ◆ | | Cooperation, trustworthiness, leadership, literacy, numeracy, technical skills |
| Sustainable Transformation of Youth (Liberia) | Prevent violence and criminality | 18–35 | | ◆ | | | ◆ | | ◆ | | | Self-control, self-esteem, regulation of antisocial behavior, and growth mindset |

Sources: Kautz and others 2014; OECD 2015, and authors' elaboration.

Table F.12 Description of Promising Interventions Fostering Socioemotional Skills in Young Adulthood (19–29)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Target population</i> | <i>Description</i> | <i>Start year</i> | <i>References</i> |
|--|---|-------------------|---|---|-------------------|---|
| Job Corps (United States) | Reduce poverty | 16–24 | Poor high school dropouts and other poor youth residing in disruptive environments who need training or education; participants must be citizens or permanent residents and not on parole | One-year center-based academic, vocational, and social skills training, including counseling. Program provides health services and a stipend during enrollment. Largest residential training program in the United States for at-risk youth. | 1964 | Schochet, Burghardt, and McConnell (2008), Flores and others (2012) |
| Youthbuild (United States, Central America, South Africa, elsewhere) | Prevent violence and improve student learning | 16–24 | Low-income criminal offenders | Training in construction and other skills involved in community improvement projects while indirectly emphasizing improvements in socioemotional skills. | 1978 | IYF, Youthbuild International, and Catholic Relief Services (2010), Cohen and Piquero (2015) |
| Year-up (United States) | Increase employability | 18–24 | Low-income young adults | In-classroom training of technical and professional skills (first six months) and internship at one of program's corporate partners (second six months). Participants earn college credits and a weekly stipend. They are supported by staff advisors, professional mentors, social services staff, and a network of community-based partners. | 2001 | Grobe, Rosenblum, and Weissman (2010), Roder and Elliot (2014) |
| Jóvenes en Acción (Youth in Action) (Colombia) | Increase employability | 18–25 | Unemployed urban youth in bottom fifth of income distribution | Three-month classroom training followed by three months of on-the-job training. Classroom training, provided by private institutions, focuses on providing skills demanded in the local labor market. On-the-job training is provided through unpaid internships with companies that specialize in manufacturing, retail sales and trade, or services (5.2 hours of work a day on average). Participants are also required to develop a life project. Throughout the six months of the program, they receive stipend of \$2.20 a day to cover transportation and food costs. Women with children under seven receive an additional \$0.80 a day to help cover the costs of childcare. | 2002 | Attanasio, Kugler, and Meghir (2011), Attanasio, Guarín and others (2015), Kugler and others (2015) |

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Table F.12 Description of Promising Interventions Fostering Socioemotional Skills in Young Adulthood (19–29) (continued)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Target population</i> | <i>Description</i> | <i>Start year</i> | <i>References</i> |
|---|----------------------------------|-------------------|---|--|-------------------|--|
| Juventud y Empleo (Youth and Employment) (Dominican Republic) | Increase employability | 16–28 | Youth from households earning less than \$120 a month who experience difficulty finding jobs and have not completed secondary education | In-classroom training, internship, and benefits (stipend and insurance). Vocational skills module included 150 hours of training (in sectors such as sales, tourism and hospitality, and carpentry). Life skills component included module of 75 hours that covered self-esteem and self-realization, communication, conflict-resolution, life planning, time management, team work, decision making, hygiene and health, and coaching on risky behaviors. Once in-classroom training phase was completed, all participants were assigned to 240-hour apprenticeships or internships at private companies, for which they received a daily stipend of about \$2 and basic insurance. During this period, participants received oversight and job counseling. | 2001 | Ibarrarán and others (2014), Ibarrarán and others (2015) |
| Galpão Aplauso (Applause Warehouse) (Brazil) | Increase employability | 15–29 | At-risk youth from low-income households (earning less than two minimum wages) living in slums | Combination of vocational, academic, and life skills training, delivered through a pedagogic method that uses arts and dance, and job placement services. Program lasts about six months, five hours a day, five days a week, delivered in three shifts—morning, afternoon, and evening. Includes 300 hours of vocational training (mainly construction related, soldering, or wood shop); 180 hours of training on academic and basic skills, including remedial courses in both math and Portuguese; and 120 hours of training on life skills. | 2005 | Calero and others (2014) |
| Sustainable Transformation of Youth (Liberia) | Prevent violence and criminality | 18–35 | High-risk men (for example, men engaged in petty crime and drug dealing, homeless men, and poorly reintegrated excombatants) from five mixed-income areas of Monrovia | Eight-week course of group cognitive behavior therapy (CBT) focused on developing self-control, such as the tendency to be planful, responsible, and resistant to temptation. Therapy sought to foster nonviolent, noncriminal self-image and set of values. Sessions employed a variety of techniques, from lectures and group discussions to various forms of practice, including role-playing in class, homework that required practicing tasks, exposure to real-world situations, and in-class processing of experiences of executing tasks. As in many CBT programs, tasks began simply and became more difficult over time. In a second treatment arm, half of participants received a \$200 cash transfer. | 2009 | Blattman, Jamison, and Sheridan (2015) |

Table F.13 Effects, Costs, and Benefits of Promising Interventions Fostering Socioemotional Skills in Young Adulthood (19–29)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Effects</i> | <i>Number of participants</i> | <i>Average cost per participant</i> | <i>Returns</i> | <i>References</i> |
|--|---|-------------------|--|---|---|---|--|
| Job Corps (United States) | Reduce poverty | 16–24 | Program increases earnings, but marginal value of longer exposure decreases. | 60,000 a year | \$26,551 (2009 dollars) | \$22.10 in weekly earnings after 48 months in average with heterogeneity across race: \$46.20 for whites, \$22.80 blacks, and \$15.10 for Hispanics | Schochet, Burghardt, and McConnell (2008), Flores and others (2012) |
| Youthbuild (United States, Central America, South Africa, elsewhere) | Prevent violence and improve student learning | 16–24 | Program increased self-esteem and life skills and decreased delinquency. | — | \$13,000–\$24,000 (the lower estimate excludes trainee stipends and cost of building materials) | Benefit-cost ratio: 13:1 to 22:1 based on social costs; 7:1 to 12:1 based on program costs; return on investment: \$7.20–\$21.60 | IYF, Youthbuild International, and Catholic Relief Services (2010), Cohen and Piquero (2015) |
| Year-up (United States) | Increase employability | 18–24 | Program increased employment and earnings. | 10,000 (2014) | \$24,562, of which one quarter is weekly stipend (\$150–\$250) | — | Grobe, Rosenblum and Weissman (2010), Roder and Elliot (2014) |
| Jóvenes en Acción (Youth in Action) (Colombia) | Increase employability | 18–25 | Ten years after intervention, trainees, especially women, were significantly more likely to be employed in formal sector and have higher formal earnings (no data on informal sector). | 80,000 in seven largest cities over 2002–06 | \$750 (plus opportunity cost of \$62 from being out of labor force during program) | Net gains in women's future income of \$666–\$2,993 | Attanasio, Kugler, and Meghir (2011), Attanasio, Guarín, and others (2015), Kugler and others (2015) |

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Table F.13 Effects, Costs, and Benefits of Promising Interventions Fostering Socioemotional Skills in Young Adulthood (19–29) (continued)

| <i>Program</i> | <i>Purpose</i> | <i>Age target</i> | <i>Effects</i> | <i>Number of participants</i> | <i>Average cost per participant</i> | <i>Returns</i> | <i>References</i> |
|---|----------------------------------|-------------------|---|--|---|----------------|--|
| Juventud y Empleo (Youth and Employment) (Dominican Republic) | Increase employability | 16–28 | Short-term employment and wage gains for women were large for men; effects dissipate in longer run. Effects on risky behavior were mixed: Pregnancy declined, but smoking increased. Effect on motivation and expectations was strong. | 27,500 over 2002–08; 38,000 since 2013 | \$400 | — | Ibarrarán and others (2014), Ibarrarán and others (2015) |
| Galpão Aplauso (Applause Warehouse) (Brazil) | Increase employability | 15–29 | Five months after program ended, impacts were very large: 33 percent increase in probability of being employed and 24 percent increase in earnings. No impacts found for shorter periods nor changes on personality traits. | Peak of 10,000 in early years; four to five cohorts of 100 youth a year in 2009–13 | \$385 a month, or \$2,225 for entire curriculum (2012 dollars) | — | Calero and others (2014) |
| Sustainable Transformation of Youth (Liberia) | Prevent violence and criminality | 18–35 | A year after completing program, self-control and noncriminal values improved, leading to large, sustained declines in crime and violence. Impacts were greatest when followed by cash, likely because it reinforced behavioral changes through prolonged practice. Intervention had no effect on employment or earnings. | 999 | \$530 (\$14 for registration, \$189 for therapy, \$216 for grant, and \$111 for administration costs) | — | Blattman, Jamison, and Sheridan (2015) |

Note: Estimated average costs and benefits may not be comparable across countries because different components may have been included in the computations. See references for details on methodology.

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Latin America has shown impressive growth in educational attainment over the past two decades—but that education has failed to yield the expected benefits. A mounting body of research and policy debates suggests that the quantity of education is not an adequate metric of human capital acquisition. Rather, individuals' skills—what people actually know and can do—should stand as policy targets and be fostered across the life cycle. Evidence from around the world suggests that employers require both cognitive and socioemotional skills and that both types of skills are associated with a range of positive employment and educational attainment outcomes.

Minds and Behaviors at Work: Boosting Socioemotional Skills for Latin America's Workforce synthesizes original empirical research on the role of cognitive and socioemotional skills in shaping adults' labor market outcomes in Bolivia, Colombia, El Salvador, and Peru. This work is put in perspective with insights from similar studies in other Latin American countries and high-income countries. The findings show that cognitive skills matter for reaping labor market gains in terms of higher wages and job formality in Latin America but so do socioemotional skills. Moreover, socioemotional skills seem to have a particularly strong effect on labor force participation and tertiary education attendance as a platform to build knowledge. *Minds and Behaviors at Work* also presents a policy framework for developing skills by providing insights from developmental psychology about when people are neurobiologically, socioemotionally, and situationally ready to develop socioemotional skills and provides examples of interventions that combine socioemotional learning and cognitive development.

This book will be of importance to policy makers, researchers, and anyone else interested in human development, from Latin America and beyond. In particular, this book will be most valuable for the curious minds wondering how our mental abilities and behaviors shape our education and employment trajectories, and how to foster these abilities along our lives.



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