

# CHAPTER 5

## Early childhood development

Years before they set foot in school, children in poor families differ dramatically from children in richer families in their cognitive and noncognitive abilities. The differences have powerful and enduring consequences for individuals' health, well-being, education, and longevity, as well as for the societies in which children grow into adulthood.

What is the source of these consequential differences among children? It is well established that children living in poverty experience greater levels of environmental and psychosocial stressors than their higher-income counterparts (Crockett and Haushofer 2014) and that stress and adversity in the first years

**Children in poor families can differ dramatically from children in richer families in their cognitive and noncognitive abilities, resulting in enormous loss of human potential for themselves and society.**

of life can permanently constrict the development of physical and mental capacities throughout adulthood (Shonkoff and others 2012). Furthermore, children from disadvantaged families are less likely to receive consistent support and guidance from responsive caregivers. They are also likely to have had less opportunity to develop the critical skills—including skills in controlling their impulses, understanding

the perspectives of other people, and focusing attention—that are important for engaging effectively with teachers and other children, paying attention in class, completing assignments, and behaving appropriately.

The formative influence of poverty on family life and developmental outcomes has been acknowledged for centuries, but only recently has it come to the forefront in economic thinking—in rich and poor countries alike. Investing in policies that help disadvantaged families provide better support for their young children will have high rates of return (Heckman 2008). The emerging view of the potency of early experience in shaping both life outcomes and national outcomes is supported by new research in neurobiology, biopsychology, and developmental psychology. The mental growth trajectories of children living in advantaged circumstances as compared with those living in poverty begin to diverge very early in life. One goal of this chapter is to explore how experience beginning in infancy acts on biological mechanisms that cause these growth trajectories to diverge. The robust differences among children in their cognitive and social competencies vary across contexts as well. Thus a second goal is to explore how differences in the mental models and parenting beliefs that motivate context-specific caregiving practices also contribute to the substantial gaps observed in children's early language and cognitive development. Integrating research from the biological and sociocultural perspectives, this chapter examines why millions of children fail to reach their developmental potential in the early years and enter school without a strong foundation for learning, resulting in enormous loss of human potential. Finally, the chapter reports evidence that early childhood interventions can mitigate the effects of impoverished environments on children. The chapter demonstrates

that social influences on the mind extend beyond their effects on decision making, which part 1 highlighted, and also include the long-term effects of the early social environment on cognitive and noncognitive skills.

### Richer and poorer children differ greatly in school readiness

Gaps in children's development between rich and poor households are substantial and emerge well before children enter school. In very low-income countries—like Madagascar, where more than three out of four people live below \$1.25 a day—children's performance might be expected to be uniformly low. However, language, cognitive abilities, and noncognitive skills of preschool children exhibit clear variations by wealth (wealth gradients), as seen in figure 5.1.

The wealth gradients were largest for receptive language (listening or reading comprehension), followed by executive function (sustained attention and working memory). Early language ability is predictive of later success in learning to read and to work with numbers in the first years of school, as well as mastery of

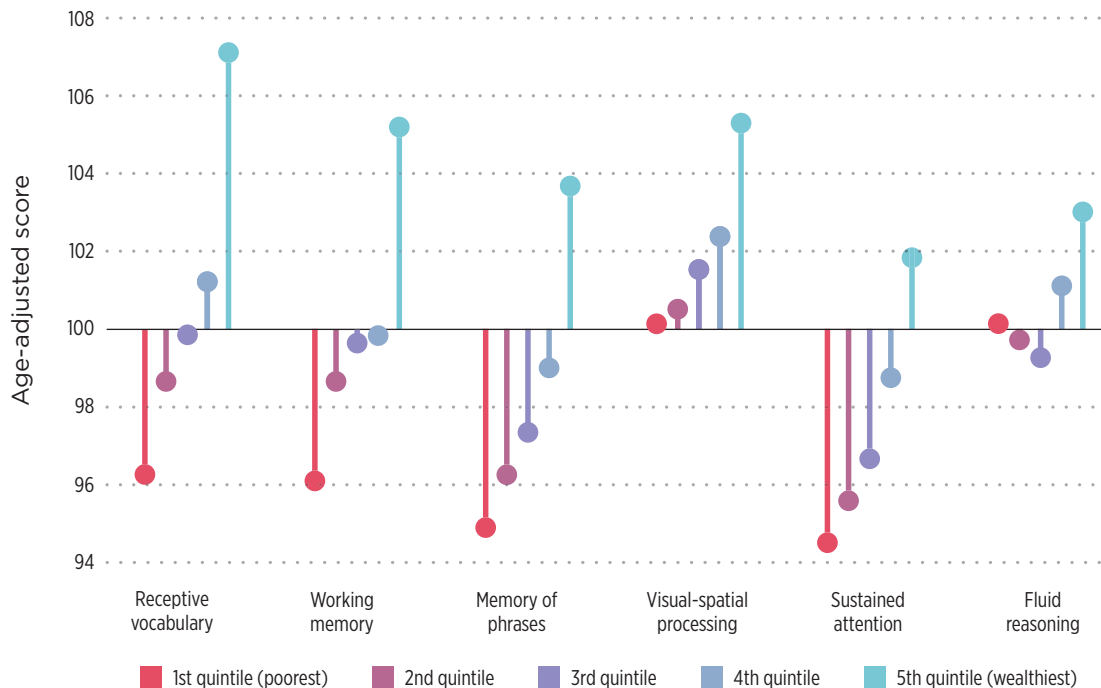
more complex reading and mathematical tasks at older ages. The ability to recognize words was approximately three-quarters of a standard deviation lower for children in the bottom wealth quintile than for children in the top wealth quintile. None of this difference can be explained by variation in maternal education because the estimates are already adjusted to account for differences in educational attainment on the part of mothers.

Recent work in five Latin American countries finds further evidence of substantial wealth gradients in receptive language ability (Schady and others, forthcoming), the skill with the largest wealth gradient in the Madagascar study and in research in developed countries (Hackman and Farah 2009). Figure 5.2 presents the differences in receptive vocabulary between the richest and the poorest wealth quartiles in rural and urban areas in Chile, Colombia, Ecuador, Nicaragua, and Peru.

Do the wealth gaps in children's skills narrow over time? The evidence to date indicates they do not. In both the Madagascar and Latin American samples, by the time children enter school (age six), the differences

**Figure 5.1 Variations by wealth in basic learning skills are evident by age three in Madagascar**

There are socioeconomic gradients across a comprehensive set of child development measures in a population living in extreme poverty in an area of Madagascar. There are strong associations between wealth and child development outcomes among preschool children. Importantly, the largest gaps across socioeconomic groups are in receptive vocabulary, memory, and sustained attention, domains that are highly predictive of later success in school and adult outcomes.

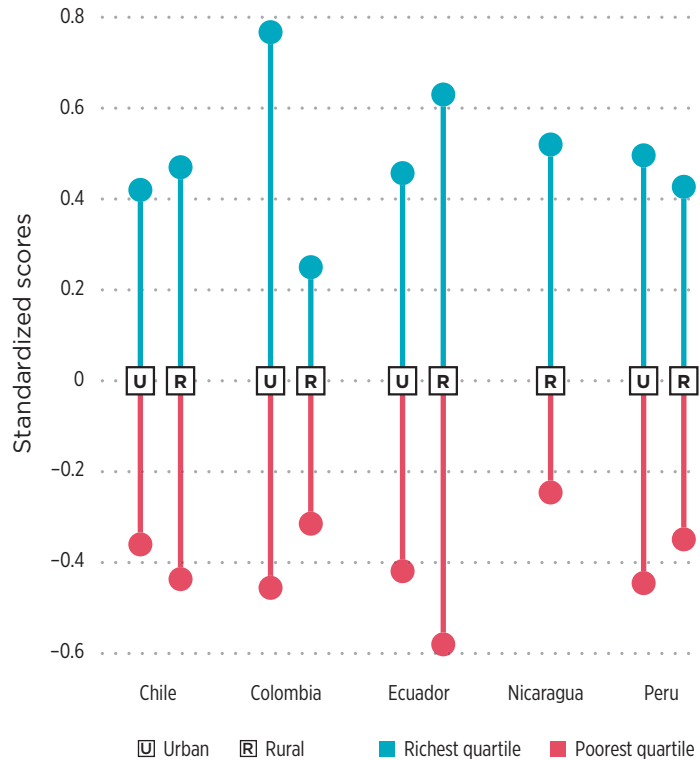


Source: Fernald and others 2011.

Note: Children between the ages of three and six were studied. The bars represent the average age-adjusted scores by wealth quintile (adjusted for maternal education) for each of the outcomes. The scores are normalized to have a mean of 100 and a standard deviation of 15.

**Figure 5.2 Abilities in receptive language for three- to six-year-olds vary widely by wealth in five Latin American countries**

Wealth gradients in receptive language among preschool children across five Latin American countries are substantial in both rural and urban areas. The analysis adds systematic evidence that gaps in child development outcomes appear early in the life cycle.



Source: Based on table 2 in Schady and others, forthcoming.

Note: The bars show the average age-standardized z-scores of receptive language for the richest and poorest quartiles of the distribution of wealth within each country, reported separately by urban (U) and rural (R) areas. An important caveat is that data are generally representative of rural areas for all countries but are not representative for urban areas. No urban data are available for Nicaragua.

in scores between children from the richest and the poorest households widened beyond those seen at three years of age and are virtually flat afterward. Similar gaps and patterns of persistence in academic test scores are observed between children from disadvantaged and advantaged families in the United States (Farkas and Beron 2004; Cunha and others 2006).

### Children need multiple cognitive and noncognitive skills to succeed in school

Where do these critical differences in children's readiness for school come from? Although potential intelligence appears to be partly inherited, adequate support from the environment is crucial for the development of children's full potential. This support includes verbal

interaction and cognitive and socioemotional stimulation early in life, in addition to adequate nutrition and health care. The students more likely to flourish are those who have established a foundation in multiple skills that will affect their ability to perform well across a wide range of domains. Noncognitive skills, and not just IQ, and related faculties such as working memory and cognitive processing, are very important.

Various disciplines characterize these soft skills in different ways. Some psychologists see them as related to personality traits, while neurobiologists focus on the ability to control oneself (*self-regulation*) and related constructs. The cognitive components of self-regulation, referred to as *executive function*, include the ability to direct attention, shift perspective, and adapt flexibly to changes (*cognitive flexibility*); retain information (*working memory*); and inhibit automatic or impulsive responses in order to achieve a goal such as problem solving (*impulse control*) (Hughes 2011). For example, a child who ignores background noise in the classroom to focus on solving the math problems in front of him is relying heavily on these abilities. Self-regulation also includes emotional components such as regulating one's emotions, exhibiting self-control, and delaying gratification to enjoy a future reward. Psychologists agree that skill in self-regulation should be considered a key component of school readiness, just like emerging literacy (Blair and Diamond 2008; Ursache, Blair, and Raver 2012).

The rewards extend beyond the school years. Noncognitive skills are just as powerful as IQ and cognitive skills in predicting a wide range of life outcomes in adulthood that are economically relevant and reinforce each other (Cunha and Heckman 2007, 2009).<sup>1</sup> As Heckman (2008, 309) argues, "Skills beget skills." Early successes in learning make later investments more productive so that learning increases with higher levels of early skills (the *self-productivity* argument). In addition, investments in skills at early stages increase the productivity of investments at later stages (the *dynamic complementarity* argument). Cunha and Heckman (2007, 2009) find strong evidence of self-productivity, especially for cognitive skills, and strong cross-productivity effects of noncognitive skills on subsequent cognitive skills, with important implications for the timing of policy.

For children living in poverty, the development of self-regulation skills can be disrupted by unpredictable environments and sustained levels of stress. In addition, as discussed later in this chapter, disadvantaged children are less likely to receive consistent support and guidance from responsive caregivers and are also likely to have less opportunity to develop skills in impulse control, perspective shifting, and focused attention.

## Poverty in infancy and early childhood can impede early brain development

The new discoveries about the critical importance of cognitive and noncognitive skills for success in school and later life circle back to the central question: if children from rich and poor families differ substantially in core competencies when they enter school, when and how do these differences begin to emerge? Such dramatic early differences are shaped by a multitude of environmental factors that can undermine the child's development, including nutrition, health care, stress, and interactions between the child and caregivers. These factors can lead to a process of *biological embedding*. This occurs when differences in the quality of early environments provided to young children have direct effects on the sculpting and neurochemistry of the central nervous system in ways that impair later cognitive, social, and behavioral development.

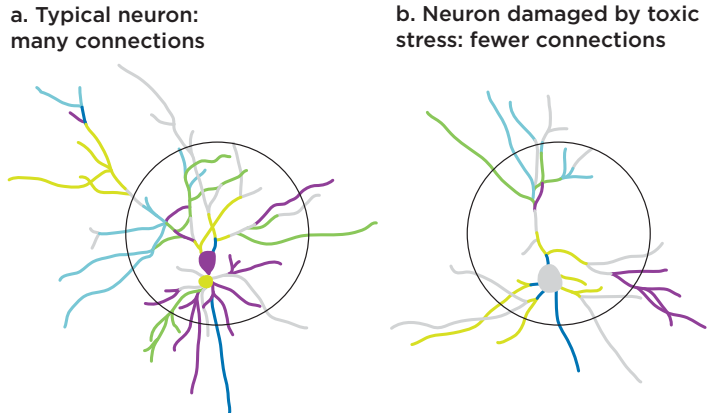
An infant frequently exposed to stressful events experiences persistent activation of a major part of the neuroendocrine system that controls reactions to stress, the hypothalamic-pituitary-adrenal (HPA) axis. While responses to acute stress by the HPA axis can focus the body's energy on the immediate task, and thus be helpful at the moment, prolonged and high exposure to stress can result in chronically heightened cortisol levels and maladaptive stress responses, even in young children. A child who reacts with extreme anxiety to the small daily stresses in school can have difficulty interacting with peers and can perform poorly on school assignments. Such experiences day after day can reduce self-confidence and undermine academic achievement. The disappointments may continue to increase the child's stress level in a feedback loop that will further activate the HPA axis.

But that is just part of the story. Chronically elevated stress in infancy affects the developing brain by damaging neurons in the areas involved in emotions and learning, as shown in figure 5.3, panel b. Elevated stress can also impair the development of the prefrontal cortex, which is the region of the brain crucial for the emergence of the self-regulatory skills essential for success in school and adulthood (Shonkoff and others 2012). Thus experiencing excessive stress and anxiety in infancy impairs the early development of learning abilities and noncognitive skills, with cascading negative consequences for later achievements.

The neurocognitive systems or brain regions most vulnerable to the effects of adversity and differences in socioeconomic status (SES) in young children are those associated with language and executive function (Noble, McCandliss, and Farah 2007). In a recent study in the United States (Fernald, Marchman, and

### Figure 5.3 Unrelenting stress in early childhood can be toxic to the developing brain

Toxic stress is the strong, unrelieved activation of the body's stress management system. This image depicts neurons in the brain areas most important for successful learning and behavior—the hippocampus and prefrontal cortex. The neuron shown in panel b, which has been subjected to toxic stress, clearly displays underdeveloped neural connections.



Source: Shonkoff and others 2012.

Weisleder 2013), disparities in the efficiency of language processing and vocabulary by SES level were evident at 18 months. By their second birthdays, there was a six-month gap between children from higher and lower SES families in processing skills known to be critical to language development.

## Parents are crucial in supporting the development of children's capacities for learning

The discussion so far has focused on the negative side of the biological embedding process. But there is also a positive side: the sensitive periods of early development represent a time of enormous growth if children are given sufficient positive support from the environment. Research in neurobiology now makes it clear that the consequences of early parenting, for better or worse, can also be biologically embedded. Supportive parenting in early childhood is strongly predictive of the development of brain structures, including the area critical to the development of memory, the hippocampus (Luby and others 2012).

### How parents support children's language learning

Particular circumstances help infants learn their first words:

- Infants need to hear lots of words lots of times to learn language, so repetition is valuable.

- Parents can facilitate word learning by following the child's interest and talking about what has engaged the child's attention.
- Children learn words best in meaningful contexts: knowledge is built by connecting words together in webs of meaning, not just by learning words in isolation.
- Positive interactions support learning: asking questions and elaborating on the child's conversation are more effective than giving commands that inhibit curiosity.

However, caregivers vary considerably in their use of these supportive behaviors in interacting with an infant. A landmark study found that families in different SES groups in the United States differed dramatically in the amount of child-directed speech that caregivers provided (Hart and Risley 1995). Children in the

families in the United States revealed striking variability in the amount of adult speech addressed to the child (Weisleder and Fernald 2013). One infant heard 100 words in five minutes, on average, while another heard only five words in five minutes. Infants who experienced more child-directed speech at 18 months became more efficient in language-processing skill and had larger vocabularies by age 24 months. And it was only child-directed speech that mattered—speech that the child simply overheard was unrelated to vocabulary outcomes. These results revealed that even within a low-SES population of Spanish-speaking immigrants, caregiver speech had direct as well as indirect influences on language development. More exposure to child-directed speech provides not only more examples of words to learn but also more opportunities for practice, thus strengthening infants' language-processing skills, with cascading benefits for vocabulary learning.

## Antipoverty programs and social policies can have a powerful indirect effect on child development by reducing key psychological stresses that prevent parents from attending to and engaging positively with their children.

lowest SES group heard about 600 words per hour, while children in the highest SES group heard more than 2,000 words per hour. By age four when they entered preschool, the high-SES children had heard 30 million more words directed to them than the low-SES children. Caregivers' speech varied in quality as well as in quantity. Parents in professional families were more likely to elaborate and use questions to encourage curiosity in the child, while parents in the low-SES families used more commands and prohibitions.

If infants from advantaged and disadvantaged families already differ in language-processing skills and vocabulary at age 18 months—when many have barely begun to speak—do differences in early language experience account for these disparities? Differences in caregivers' speech to children do account for the link between SES and the size of children's vocabulary (Hoff 2003). However, poverty in and of itself is not an inevitable cause of the limited speech directed to children by caregivers. All-day recordings of parent-infant interactions at home in low-income Spanish-speaking

### How parents support children's learning of executive function skills

Given the robust relations between executive function skills at the time of preschool and children's success in later life, what is known about early precursors of these important noncognitive skills? As with language learning, the gradual development of children's ability to resist impulsive responses, modulate their behavior, and plan ahead is strongly influenced by early experience. Children in poverty are likely to have less well developed executive function skills than more advantaged children. In families under stress, in which levels of harsh parenting are generally high, children often have difficulties controlling inhibitions and regulating emotions (Lansford and Deater-Deckard 2012). This relation is consistent with neurobiological findings, discussed above, that early experience with high stress has enduring effects on children's reactivity to stress (Shonkoff and others 2012) and that parents can play a critical role in protecting children against the negative effects of such stress.

One aspect of parenting behavior important in nurturing executive function skills is *scaffolding*—a process by which a caregiver organizes and supports an activity to enable the child to succeed in a task beyond his or her current level of ability. For example, a parent might scaffold a two-year-old's effort to build a tower of blocks by helping the child choose blocks of the right size and position them correctly. Scaffolding is a more complex skill than it might seem, since the adult must simplify the task to just the right level where the child can experience success, guide the child toward a particular goal, and manage the child's frustration if the task is difficult. The skillful caregiver must



respond contingently to the child's ongoing activity, while expanding that activity to direct it in more challenging directions. Through incremental learning with emotional and cognitive support, scaffolding enables children to gradually develop the abilities necessary to solve tasks independently. Scaffolding can be strengthened through appropriate interventions, as the final section of this chapter will discuss.

Since effective scaffolding frequently involves child-directed language, caregivers' skill in using contingent, situation-specific linguistic guidance also plays a role in the development of children's emerging self-regulatory abilities. Mothers who provided more positive verbal stimulation with their toddlers at age two had children who were better able to stay focused on a task and to delay gratification at age six, Olson, Bates, and Bayles (1990) found. Mothers who display a sensitive and scaffolding parenting style also have children who have lower cortisol levels and better executive function skills (Blair and others 2011). Thus the quality of parenting and verbal stimulation in infancy plays a critical role in shaping the child's stress-response system and the development of critical noncognitive skills, as well as the development of language and cognitive skills more broadly.

## Parents' beliefs and caregiving practices differ across groups, with consequences for children's developmental outcomes

### How different parenting styles evolve and adapt differently to different economic contexts

Many studies in the United States have found dramatic differences in caregiving behaviors among families. Parents with greater education and wealth tend to provide more cognitive and positive socioemotional stimulation for their infants than do parents with less education and fewer economic resources. Within SES groups, there is substantial variability as well. But how relevant are these findings to caregivers and children across the much broader range of contexts in developing countries?

There has been little longitudinal research in developing countries that examines parenting behaviors in relation to well-defined child outcomes. On the question of how parenting practices differ across societies, however, ethnographers provide a rich literature of descriptive data. Many anthropological studies of mother-child interaction in agrarian societies report that parents are highly attentive to the safety and nutritional needs of infants, yet do not regularly engage in social interaction or direct speech with children who

have not yet begun to talk (Kağıtçıbaşı 2007). For example, in rural villages in Kenya, Gusii mothers avoided eye contact with infants because of traditional beliefs that direct gaze can be dangerous; thus the mothers only rarely directed affectionate or social behaviors to their babies, Dixon and others (1981) observed. While Gusii mothers were quick to protect, comfort, and feed a crying infant, they tended to respond with touch and rarely with language. The use of contingent conversational communication strategies with young children, including the practices of verbal turn-taking and scaffolding, were not observed. As children grew older, parents spoke to them more often, but frequently used commands to direct the children to do something, rather than using language to elaborate on their children's interests.

How can such variation in parenting behaviors across different cultural groups be explained? The cultural psychologist Cigdem Kağıtçıbaşı (2007) provides functional explanations for cultural differences in parent-child relations by situating parental beliefs, values, and behaviors in their socioeconomic contexts. When a child is expected to make material contributions to the family, as in subsistence economies, then a utilitarian value can be attributed to the child. Thus parents' mental models of child rearing might be goal oriented, although not explicitly or consciously formulated in those terms. The child in a stable agrarian society whose future depends on mastering a traditional craft, such as weaving, could be socialized to develop that competence through nonverbal observation of adult weavers, with no need for extensive cognitive and language stimulation early in life. However, as Kağıtçıbaşı points out, "Teaching and learning limited to non-verbal observational learning and non-inductive obedience-oriented child socialization appear not to be optimal for the promotion of high levels of cognitive and linguistic competence in the child" (2007, 83). In fact, she argues that these traditional socialization goals may be disadvantageous in contexts of social change—for example, when uneducated parents must help their children prepare for formal education. To meet the new challenges of schooling, children need foundational skills in language and executive function to acquire the higher-order cognitive abilities that are critical to creative problem solving and success in school.

### How parenting practices compare across countries

How do parenting practices differ across high-, middle-, and low-income countries? The association between two types of positive parenting practices—cognitive caregiving and socioemotional caregiving—and the country's level of development, as measured

by the Human Development Index (HDI), has been examined in a recent study with comparable data from 28 developing countries (Bornstein and Putnick 2012).<sup>2</sup> As discussed, cognitive caregiving—such as using child-directed language to stimulate the child’s understanding of the world—strongly predicts language and cognitive development. Socioemotional caregiving predicts the development of children’s interpersonal competencies and noncognitive skills.

Mothers’ reports of the prevalence of these caregiving practices differed substantially among countries, as shown in figure 5.4. Mothers engaged more in socioemotional than in cognitive caregiving overall, without much correlation with the level of the country’s development. While there were no consistent differences in mean socioemotional caregiving by HDI level, mothers in each of the high-HDI countries engaged in more cognitive caregiving activities than did mothers in the low-HDI countries. Countries in the medium-HDI groups were split above and below the mean.

Another analysis of this data set focused on negative rather than positive parenting practices (Lansford and Deater-Deckard 2012). This study found a greater prevalence of physical violence by parents toward children in countries with lower education, literacy, and income. Although these associations cannot be assumed to be causal, they corroborate the in-depth ethnographic studies that ground differences in parental behaviors in their socioeconomic context.

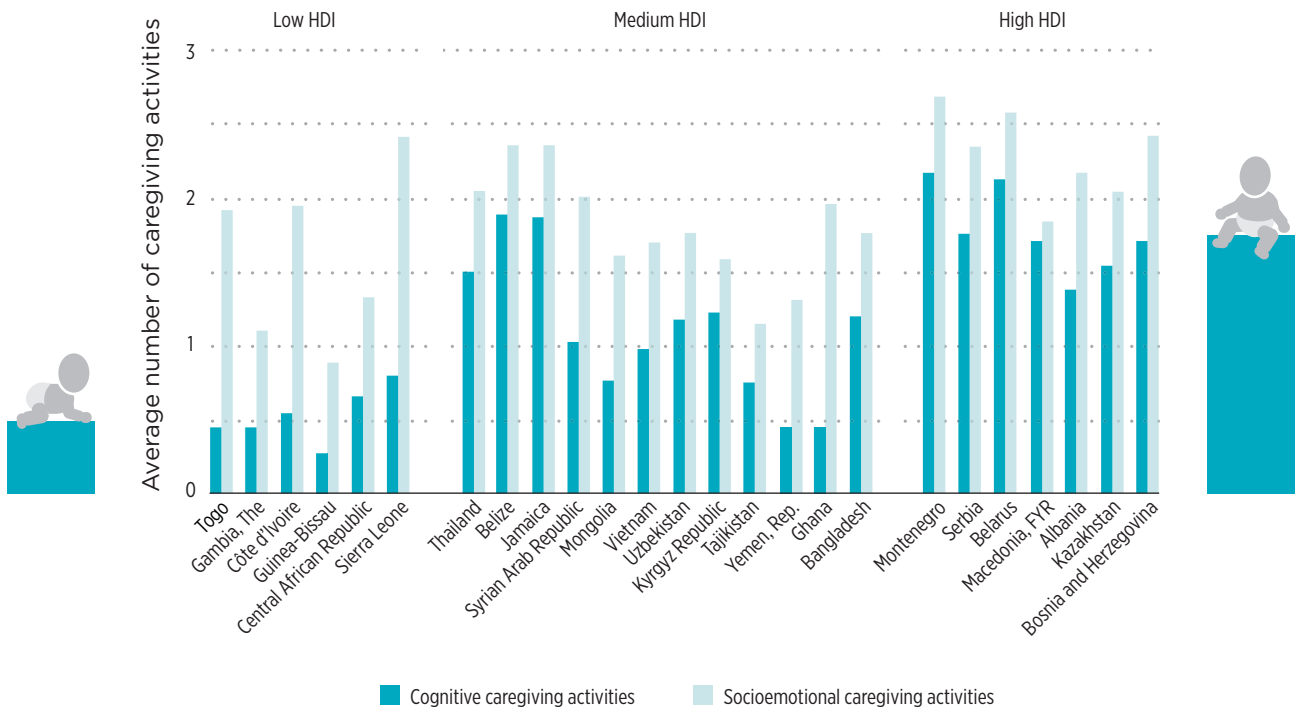
### Designing interventions that focus on and improve parental competence

#### Complementing direct antipoverty programs

Antipoverty programs are often thought to affect child development through a traditional economic mechanism: alleviating income constraints during early childhood enables parents to buy goods and services that support child development. Can the wealth gaps

**Figure 5.4** There is greater variation across countries in cognitive caregiving than in socioemotional caregiving

Cognitive caregiving activities, shown by the dark bars, tend to be much greater in countries with high Human Development Indexes (HDI) than in countries with low HDI, although there are only slight differences in socioemotional activities (light bars) across countries. The height of the bars with babies on them indicates the average number of cognitive caregiving activities reported by parents in low- and high-HDI countries.



Source: Bornstein and Putnick 2012.

Note: The bar graphs show the number of caregiving activities reported by mothers in the past three days, based on comparable data from 25 developing countries ranked by the United Nations Human Development Index (HDI). The three categories of cognitive caregiving activities measured were reading books, telling stories, and naming/counting/drawing with the child.

in child outcomes discussed at the beginning of this chapter be bridged by improving the socioeconomic conditions of poor parents in the first place? How far can structural antipoverty and cash programs go, and through which pathways?

Participation in conditional cash transfers (CCTs) may enhance children's cognitive skills. For instance, in Mexico, children in households exposed longer to a sizable and sustained CCT had improved motor skills and higher cognitive development outcomes than controls (Fernald, Gertler, and Neufeld 2008, 2009). However, in Ecuador, experimental evidence of the impact of a CCT showed only modest effects on child development outcomes among the poorest children (Paxson and Schady 2010). Experimental evidence in Nicaragua on the impact of CCTs also showed modest improvements in language and socioemotional outcomes, which persisted two years after the cash program ended (Macours, Schady, and Vakis 2012). The persistence of these behavioral changes suggests that the programs have operated through mechanisms that go beyond the increase in material resources. The nutrition and parenting components of the CCT programs that directly target children and parenting skills are likely to be important pathways because they directly enhance the children's environment.

Another key pathway mediating the effects of family economic circumstances on the development of children's stress system is the mental health and mental bandwidth of mothers and other caregivers. The stress associated with economic hardship and adversity may increase emotional distress and depression. There is now evidence that having a predictable and stable source of income reduces parents' mental stress and, through that channel, the likelihood of inconsistent and unpredictable parenting behavior (Blair 2010). Some researchers suggest that it can also affect the mental ability and capacity for attention that parents have for engaging with their children (Mullainathan and Shafir 2013). As such, antipoverty programs and social policies that provide income security could have a powerful indirect effect on child development by reducing key psychological stressors that prevent parents from attending to and engaging positively with their children.

A study in urban Mexico demonstrated that maternal depression can interfere with mothers' capacity to provide supportive and responsive care (Fernald, Burke, and Gunnar 2008). The CCT program in Mexico, Oportunidades, has been associated with significant reductions in symptoms of maternal depression, partially explained by mothers' lower stress levels (Ozer and others 2011). In turn, children of mothers who participated in the program had less stress—as evidenced

by lower salivary cortisol, a marker for stress system activity—than children of nonparticipating mothers (Fernald and Gunnar 2009). Significantly, the impact of Oportunidades on children's stress and cortisol is concentrated mainly among children of mothers with depressive symptoms.

Alleviating poverty alone in the short term does not automatically translate into increased positive parenting practices. Direct interventions may be needed, in which parents learn about child development (to promote certain types of positive adult-child interactions), receive support in changing their beliefs and behaviors (to maintain higher levels of positive parenting), and gain the opportunity to practice behaviors that support the development of these competencies (to hone the skills to engage more effectively with children). How can these skills be fostered?

**Alleviating poverty alone does not automatically improve parenting practices. Direct interventions may be needed.**

#### **Changing mindsets, underlying belief systems, and mental models of parents' role**

Numerous barriers prevent parents from engaging more fully with infants and young children. Barriers may be due to their lack of knowledge about child development or lack of awareness that verbal interaction with children is important. Parents might also implicitly believe that intelligence is fixed and immutable, which undermines the motivation to change. Parents might be held back by mental models based on traditional beliefs that some practices can be harmful to the child or by a fear of ridicule for violating a social norm against talking to infants. How can parenting interventions break these mental models and shift awareness about certain types of interactions that are beneficial to their children?

#### ***Making salient the link between parental behavior and the consequences for child outcomes***

Many parenting programs emphasize the importance of communication and play and aim to encourage caregivers to adopt sensitive and responsive care practices (rather than negative harsh parenting). Qualitative work from group parenting programs highlights the importance of shifting core parental beliefs about



parenting, becoming aware that change in the way parents engage with their children is possible, and establishing a link between the parents' own behavior and the child's behavior.

### ***Framing the link between the intervention and future child outcomes***

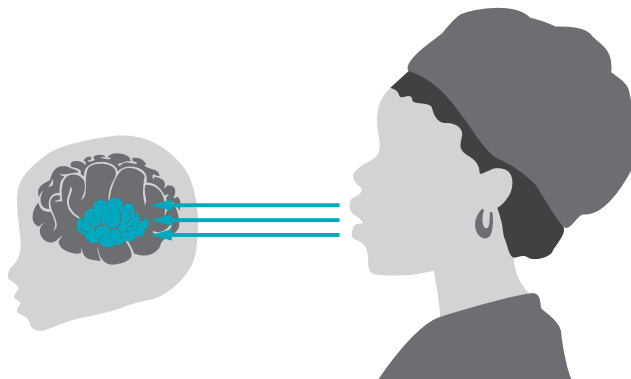
Can mental models and beliefs be altered by framing the desired behavioral change and practices in terms of future benefits for the child? A program in Senegal, *Renforcement des Pratiques Parentales*, aims to help parents understand their crucial role in providing their infants with early verbal engagement. The facilitators, from the nongovernmental organization Tostan, share simple techniques to enrich interactions between parents and their young children, such as speaking to them using a rich and complex vocabulary, asking the children questions and helping them respond, playfully copying their children, telling them stories, and describing objects in detail to them. The first few sessions of the group activities with mothers and other caregivers introduce the important link between verbal engagement, the development of the child's brain, and the future benefits of greater intelligence and other positive outcomes (figure 5.5). The link relies on the mother's aspirations for her child. The hypothesis behind this approach is that the emotional engagement of the mothers might enable them to reexamine their uncritically held assumptions and beliefs.

### ***Mobilizing communities to change social norms***

Support for parents may also promote the development of network support groups (Kağıtçıbaşı 2007).

#### **Figure 5.5 A program in rural Senegal encourages parents to engage verbally with their children**

The drawing is based on a poster used by facilitators in a parent education program in rural Senegal to describe how speech from the mother stimulates the infant's brain. The facilitators meet with parents and village elders twice a month.



Source: WDR 2015 team, based on program material from the nongovernmental organization Tostan.

The *Renforcement des Pratiques Parentales* in Senegal is a promising example of a parenting intervention designed to promote change in social norms. Caregivers may come from disadvantaged backgrounds with little social support; the group intervention provides a setting in which they can discuss and share experiences with local facilitators in community meetings. The resulting women's support network may improve parental effectiveness that can be sustained after the intervention ends. Group parenting programs aim to promote participants' self-confidence as parents and to connect them emotionally through discussions with other parents facing similar problems. Through group dynamics, parents recognize their strengths as individuals, while discussing strategies that help them solve daily problems and reduce stress and avoiding harsh self-judgment.

### ***Changing mindsets (mental models) through "brief" interventions***

One potentially interesting approach focuses on psychological processes that are levers of change, with the expectation that they can set in motion self-reinforcing practices that sustain change in the long term. The core principle of mindset interventions has been documented by the large body of work of psychologists Carol Dweck and David Yeager in the context of schooling in the United States. The objective is to train participants with customized messages encouraging the mindset that certain types of abilities are malleable rather than fixed and hence can be fostered. Such brief interventions—as opposed to intensive or repeated ones—have been effective in motivating students from middle school to college age to change both their beliefs and their study habits, in contexts in which achieving higher grades provides a clear measurable outcome of academic progress (Yeager and others 2013). Extending this approach to changing mindsets to caregiver education, by teaching parents that their children's intelligence is malleable rather than fixed, might have beneficial effects. However, it is not yet clear whether such brief interventions would also be successful in motivating and enabling parents to change multiple behaviors over time as the child grows older or to develop and practice the much wider range of skills essential for improvement in positive parenting.

### **Providing parents with the opportunity to learn and practice new skills and improve their mental health**

Providing information about the benefits of positive parenting strategies and changing mental models and caregiving goals may be necessary but not sufficient

steps to change parents' behavior. Equally critical is providing parents with the opportunity to learn and practice new skills for effective interaction. Parents may need to learn strategies to reduce negative forms of discipline and engage in sensitive and effective forms of caregiving in a sustained and consistent way. Challenges to behavioral change may stem from the difficulty of dealing with temperamental differences among children, negotiating change with other household members, or simply being unprepared to find solutions to continuous developmental challenges that arise at different ages.

### ***Building skills incrementally***

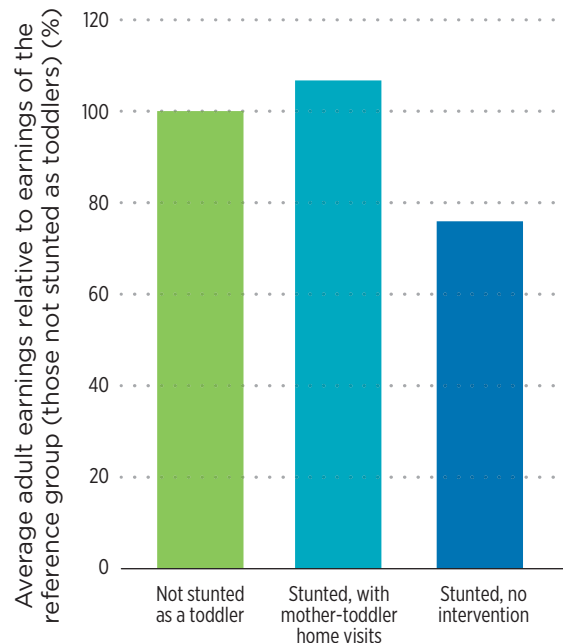
"The acquisition of skills requires a regular environment, an adequate opportunity to practice, and rapid and unequivocal feedback about the correctness of thoughts and actions" (Kahneman 2011, 416). Home visiting programs do this by helping mothers build these skills incrementally, providing a structured curriculum that allows mothers to learn strategies for coping with each new challenge and learn ways to promote the cognitive, language, and socioemotional development of their children. A seminal study in Jamaica provided home stimulation intervention to stunted children aged 9–24 months in low-income communities for two years (Grantham-McGregor and others 1991). The curriculum included detailed structured activities that promoted high-quality interactions between mother and child through role-play and homemade toys used to demonstrate new skills. The frequency and continued contact allowed plenty of opportunities to practice the newly acquired skills over time. The study tracked the children for 20 years. The early stimulation component resulted in important long-term labor market effects for the participants, as shown in figure 5.6. The study shows how an intensive early psychosocial intervention can effectively improve the long-term outcomes of disadvantaged children by closing their education and earning gaps relative to a better-off group and break the intergenerational transmission of poverty (Gertler and others 2014).

### ***Targeting parents' own mental well-being— not just their behavior toward their children***

Given the central role of parents' psychosocial well-being in enabling them to be consistently responsive and positive in their interactions with children, programs that directly support parents' own regulation of affect, stress, and cognition are likely to be useful complements to programs that target only children (Blair and Raver 2012). The Jamaica home visiting program sought not only to improve the interactions between mothers and their children but also to build the

### **Figure 5.6 Early childhood stimulation in Jamaica resulted in long-term improvements in earnings**

A program in Jamaica sought to develop cognitive, language, and socioemotional skills in disadvantaged toddlers. The program of home visits to mothers and their toddlers in Kingston targeted stunted children in poor communities. Over two years, community health aides held one-hour play sessions using a curriculum that promoted high-quality interactions between mother and child. Twenty years later, a follow-up study found that the two-year program of home visits to the toddlers improved long-term outcomes; it closed the earnings gaps between the disadvantaged children and a better-off group. (There is no statistically significant difference between the earnings of the stunted group that received the program and a nonstunted comparison group.) For these disadvantaged children, the program broke the intergenerational transmission of poverty.



Source: Based on Gertler and others 2014.

self-esteem of both the child and the mother incrementally over time. Behavioral economists highlight lack of mental energy and cognitive capacity among low-income parents as a barrier to engagement. There is potential for experimenting with approaches that incorporate insights from behavioral science to improve parental focus, memory, mindful attention, and time management (Mullainathan and Shafir 2013; Kalil 2014).

### **Using complementary classroom-based interventions to support parental competence**

For many children, interventions that focus on the quality of caregiving may not be sufficient if they do not also address children's problems in regulating themselves. Integrating parent training into preschool interventions with multipronged interventions—such as the Incredible Years program offered to Head Start parents in the United States (Webster-Stratton 1998)

and the Chicago Heights Early Childhood Center (Fryer and others 2014)—are promising approaches for improving children’s social skills and their understanding of their emotions. However, these improvements seem to reduce conduct problems in young children and foster executive function skills only for the more disadvantaged and high-risk children. This finding highlights the importance of tailoring the design and intensity of interventions to the needs of the target population (Morris and others 2014).

Teachers in preschool can also play an important role by enhancing early positive investments made by parents and compensating for early deficiencies. Like parents, the ability of teachers to promote a warm and positive emotional climate in the classroom is critical for helping children develop their noncognitive skills, as well as their cognitive abilities. An analysis of teachers and learning outcomes in Ecuador (Araujo and others 2014) documents substantial effects of the quality of preschool teachers (and of teacher practices) on both math and language outcomes, as well as on executive function outcomes. Programs that help teachers define rules and build skills to discipline students and scaffold self-regulation reduce children’s stress and anxiety, thus lessening the need for teachers to impose discipline. Classroom curricula such as the Tools of the Mind (Bodrova and Leong 2007) and Montessori focus directly on enhancing self-regulation, with a strong emphasis on social pretend play, taking turns, and the child’s own planning of activities. There is some evidence that these approaches may be effective in improving children’s executive functions, with sustained effects on reading and vocabulary into the first grade (Blair and Raver 2012). Programs that supplement classroom curricula—such as Promoting Alternative Thinking Strategies (PATHS), used in the Head Start REDI program in the United States—teach teachers to build children’s understanding of emotions, competencies in self-control, and interpersonal problem solving (Bierman and others 2008).

As children grow older and progress through school, the scope for promoting learning, creativity, flexibility, and discipline and for strengthening both cognitive and noncognitive skills will be increased by curricula that promote socioemotional competence alongside cognitive skills.

## Conclusion

Beginning in infancy, experience acts on important biological and cultural mechanisms that cause the trajectories of cognitive and socioemotional skills of children living in poverty to diverge very early in life from those of better-off children. This chapter described the

critical role that parenting plays in shaping the child’s early environment.

Traditional interventions generally alleviate the scarcity of resources in households with young children, as well as the scarcity of information about the child’s development. Going beyond these traditional interventions, many of the most successful programs provide parents with the tools they need for optimal parent-child interactions. The programs train local community members to give parents psychosocial support, with the aim of changing the habitual ways that parents interact with their young children. The programs also aim to change the implicit theories of child development held broadly within the community, providing children and parents with the opportunity to learn and practice new skills for an effective parent-child interaction. Results from a small number of high-quality studies have shown that such carefully designed interventions can pay lifelong returns for individuals born in poverty. More experimentation and testing are needed to tailor interventions to the situations that parents experience, harnessing insights from neurobiology and the behavioral sciences to understand and tackle the psychological and cultural barriers to effective parenting that arise from the contexts in which individuals live.

## Notes

1. Two well-known preschool programs in the United States targeting very disadvantaged children—the Perry Preschool and the Abecedarian Project—demonstrated the sizable effects of enriching early environments (see, for example, Cunha and others 2006). Both programs were evaluated through random assignment and with assessments that followed the children into adulthood. The two programs showed that adults who had participated as young children in these interventions had stronger noncognitive skills than those in the control group, who had not participated in the interventions. While the early IQ gains that emerged for participants in both programs had faded by middle childhood, gains in noncognitive skills persisted and were associated with positive outcomes in adulthood, such as higher earnings, more stable relationships, and less criminal activity. Both programs targeted very disadvantaged children. A similar outcome was obtained in the Montreal program (Algan and others 2013) discussed in chapter 3, which focused on fostering the noncognitive skills and the levels of trust of seven- to nine-year-old boys “at-risk” with behavioral problems.
2. The data on caregiving practices were derived from the Multiple Indicator Cluster Survey, a nationally representative and internationally comparable household survey of developing countries that provides informa-

tion on protective and risk factors for children's health and development (UNICEF 2006). More data and more studies on caregiving practices across wealth levels within countries, in addition to across countries, are needed.

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