

world development report

2015



**MIND, SOCIETY,
AND BEHAVIOR**



WORLD BANK GROUP

world development report

2015



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Foreword

As I write, the world is fighting to control the Ebola outbreak in West Africa, a human tragedy that has cost thousands of lives and brought suffering to families and across entire communities. The outbreak is a tragedy not only for those directly affected by the disease but also for their neighbors and fellow citizens. And the indirect, behavioral effects of the Ebola crisis—slowing business activity, falling wages, and rising food prices—will make life even more difficult for millions of people who already live in extreme poverty in that region of the world.

Some of these behavioral effects are unavoidable. Ebola is a terrible disease, and quarantines and other public health measures are necessary parts of the response. At the same time, it is clear that the behavioral responses we are seeing, not just in West Africa but all over the world, are partly driven by stigma, inaccurate understanding of disease transmission, exaggerated panic, and other biases and cognitive illusions. Sadly, we have seen this happen before, with HIV/AIDS and the SARS and H1N1 influenza outbreaks, and we will likely see it again when we begin to prepare for the next outbreak. Societies are prone to forget what happened, and policy makers tend to focus on the most socially prominent risks, which are not always those that drive disease outbreaks.

In light of these risks, this year's *World Development Report—Mind, Society, and Behavior*—could not be more timely. Its main message is that, when it comes to understanding and changing human behavior, we can do better. Many development economists and practitioners believe that the “irrational” elements of human decision making are inscrutable or that they cancel each other out when large numbers of people interact, as in markets. Yet, we now know this is not the case. Recent research has advanced our understanding of the psychological, social, and cultural influences on decision making and human behavior and has demonstrated that they have a significant impact on development outcomes.

Research also shows that it is possible to harness these influences to achieve development goals. The Report describes an impressive set of results. It shows that insights into how people make decisions can lead to new interventions that help households to save more, firms to increase productivity, communities to reduce the prevalence of diseases, parents to improve cognitive development in children, and consumers to save energy. The promise of this approach to decision making and behavior is enormous, and its scope of application is extremely wide. Let me focus on a few themes.

First, it has implications for service delivery. Research shows that small differences in context, convenience, and salience have large effects on crucial choices, such as whether to send a child to school, prevent illness, or save to start a business. That means development practitioners need to focus not only on *what* interventions are needed but also on *how* they are implemented. That, in turn, requires implementing agencies to spend more time and resources experimenting, learning, and adapting during the intervention cycle.

Second, as the risks and impact of climate change become clearer, we must use every tool at our disposal to confront the challenge. The Report describes how, in addition to taxes and subsidies, behavioral and social insights can help. These include reframing messages to emphasize the visible and palpable benefits of reducing emissions, and the use of social

norms to reduce energy consumption, social networks to motivate national commitments, and analogies to help people grasp climate forecasts.

Third, development professionals and policy makers are, like all human beings, subject to psychological biases. Governments and international institutions, including the World Bank Group, can implement measures to mitigate these biases, such as more rigorously diagnosing the mindsets of the people we are trying to help and introducing processes to reduce the effect of biases on internal deliberations.

The Ebola outbreak makes clear that misunderstanding and miscommunicating risks can have serious repercussions. Quarantining infected individuals can prove sensible, but trying to quarantine nations or entire ethnic groups violates human rights and may actually hinder efforts to control the outbreak of a disease. This year's *World Development Report* provides insight into how to address these and other current challenges and introduces an important new agenda for the development community going forward.

A handwritten signature in black ink, appearing to read 'J. Kim', with a large, stylized loop at the beginning and a horizontal line extending to the right.

Jim Yong Kim
President
The World Bank Group

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Abbreviations

ACC	anthropogenic climate change
APR	annual percentage rate
ART	antiretroviral therapy
BIT	Behavioural Insights Team
CCT	conditional cash transfer
CDD	community-driven development
CDP	Carbon Disclosure Project
CLTS	Community-Led Total Sanitation
EE	entertainment education
FAFSA	Free Application for Federal Student Aid
HDI	Human Development Index
HPA	hypothalamic-pituitary-adrenal
IPCC	Intergovernmental Panel on Climate Change
KAP	knowledge, attitudes, and practices
MFI	microfinance institution
NGO	nongovernmental organization
OECD	Organisation for Economic Co-operation and Development
ORS	oral rehydration salts
ORT	oral rehydration therapy
PATHS	Promoting Alternative Thinking Strategies
R&D	research and development
RCT	randomized controlled trial
ROSCA	rotating savings and credit association
RSV	relative search volume
SES	socioeconomic status
SMarT	Save More Tomorrow
SMS	short messaging service
UNICEF	United Nations Children's Fund
WDI	World Development Indicators (database)
WDR 2015 team	team for the 2015 <i>World Development Report</i>
WHO	World Health Organization

OVERVIEW

Human decision making and
development policy

Overview

Human decision making and development policy

Every person seeks to steer his or her own course, and a great deal of development policy aims to supply the resources and information people in low- and middle-income economies require in their voyage through life. But while such an approach is often appropriate, it can be incomplete. To understand why, consider a comparison with airplane pilots. During the middle decades of the 20th century, a number of flight and engine instruments were developed with the intention of improving how pilots steer their aircraft. But by the 1980s, the multiplying technological improvements and additional information had the

idea that decision making is the product of an interaction between mind and context—were contacted. The airplane cockpit was redesigned with close attention to how information is packaged and presented, so that it fit the human body and its cognitive abilities. These days, airplane cockpits contain fewer instruments than several decades ago because the design of cockpit instrument displays is based on a deeper understanding of human cognitive processes (Wiener and Nagel 1988).

The title of this Report, *Mind, Society, and Behavior*, captures the idea that paying attention to how humans think (the processes of mind) and how history and context shape thinking (the influence of society) can improve the design and implementation of development policies and interventions that target human choice and action (behavior). To put it differently, development policy is due for its own redesign based on careful consideration of human factors.

This Report aims to integrate recent findings on the psychological and social underpinnings of behavior to make them available for more systematic use by both researchers and practitioners in development communities. The Report draws on findings from many disciplines, including neuroscience, cognitive science, psychology, behavioral economics, sociology, political science, and anthropology. In ongoing research, these findings help explain decisions that individuals make in many aspects of development, including savings, investment, energy consumption, health, and child rearing. The findings also enhance the understanding of how collective behaviors—such as widespread trust or widespread corruption—develop and become entrenched in a society. The findings apply not only

This Report aims to inspire and guide the researchers and practitioners who can help advance a new set of development approaches based on a fuller consideration of psychological and social influences.

opposite effect of what the designers had intended: instead of assisting pilots in steering their courses, airplane cockpits had become increasingly complex environments in which the technical improvements stressed and even overwhelmed the pilots. Rates of pilot error rose. Experts in the field of human factors design—a multidisciplinary field based on the core

to individuals in developing countries but also to development professionals, who are themselves prone to error when decision-making contexts are complex.

This approach expands the set of tools and strategies for promoting development and combating poverty. The strength of standard economics is that it places human cognition and motivation in a “black box,” intentionally simplifying the “messy and mysterious internal workings of actors” (Freese 2009, 98) by using models that often assume that people consider all possible costs and benefits from a self-interested perspective and then make a thoughtful and rational decision. This approach can be powerful and useful, but in a number of contexts, it also has a liability: it ignores the psychological and social influences on behavior. Individuals are not calculating automatons. Rather, people are malleable and emotional actors whose decision making is influenced by contextual cues, local social networks and social norms, and shared mental models. All of these play a role in determining what individuals perceive as desirable, possible, or even “thinkable” for their lives. The new tools based on this full consideration of human factors do not displace existing policy approaches based on affecting self-interested personal incentives; rather, they complement and enhance them. Some of the new approaches cost very little to implement because they depend on nuances in design or implementation, such as changing the timing of cash transfers, labeling something differently, simplifying the steps for service take-up, offering reminders, activating a latent social norm, or reducing the salience of a stigmatized identity. Others offer entirely new approaches to understanding and fighting poverty.

These approaches are already widespread among firms in the private sector, which are often preoccupied with understanding customer behavior in its natural contexts. When a company introduces a product, whether a new brand of breakfast cereal, toothpaste, or cell phone, it is entering a competitive market, where small differences in usability and user satisfaction mean the difference between product take-up and rejection. In the intensive and interactive design phase, the company conducts significant qualitative and quantitative research on its customers to understand seemingly peripheral but nonetheless critical drivers of behavior: When and where do customers typically eat breakfast? Are they at home, work, school, on a bus, in a train, or in a car? What is the social meaning of the meal? Does it involve valued rituals? Is it a communal or more private event? Does behavior change need to be coordinated across many people or

can it occur individually? These examples may seem trivial in comparison to the challenges that governments and international organizations face in developing countries. Yet they hold an important lesson: when failure affects the profit-making bottom line, product designers begin to pay close attention to how humans *actually* think and decide. Engineers, private firms, and marketers of all stripes have long paid attention to the inherent limits of human cognitive capacity, the role that social preferences and the context play in our decision making, and the use of mental shortcuts and mental models for filtering and interpreting information. The development community needs to do the same.

The body of evidence on decision making in developing country contexts is still coming into view, and many of the emerging policy implications require further study. Nevertheless, this Report aims to inspire and guide the researchers and practitioners who can help discover the possibilities and limits of a new set of approaches. For example, can simplifying the enrollment process for financial aid increase participation? Can changing the timing of fertilizer purchases to coincide with harvest earnings increase the rate of use? Can providing a role model change a person's opinion of what is possible in life and what is “right” for a society? Can marketing a social norm of safe driving reduce accident rates? Can providing information about the energy consumption of neighbors induce individuals to conserve? As this Report will argue, the answers provided by new insights into human factors in cognition and decision making are a resounding yes (see, respectively, Bettinger and others 2012; Duflo, Kremer, and Robinson 2011; Beaman and others 2009, 2012; Habyarimana and Jack 2011; Allcott 2011; Allcott and Rogers 2014).

From the hundreds of empirical papers on human decision making that form the basis of this Report, three principles stand out as providing the direction for new approaches to understanding behavior and designing and implementing development policy. First, people make most judgments and most choices automatically, not deliberately: we call this “thinking automatically.” Second, how people act and think often depends on what others around them do and think: we call this “thinking socially.” Third, individuals in a given society share a common perspective on making sense of the world around them and understanding themselves: we call this “thinking with mental models.”

To illustrate how all three types of thinking matter for development, consider the problems of low personal savings and high household debt, which are common across the developing world (and in many

high-income countries, as well). Much of economic policy operates on the assumption that increasing savings rates requires an increase in the rate of return for savers. But other factors beyond the standard variables of prices, incomes, and regulations also affect saving behavior, including automatic thinking that reacts to the framing and perception of choices, the widespread tendency to adhere to social norms, and the mental models of one's place in life. Field experiments in Kenya, South Africa, and Ethiopia demonstrate the relevance of these three principles of human decision making to a key development problem.

In Kenya, many households report a lack of cash as an impediment to investing in preventive health products, such as insecticide-treated mosquito nets. However, by providing people with a lockable metal box, a padlock, and a passbook that a household simply labels with the name of a preventive health product, researchers increased savings, and investment in these products rose by 66–75 percent (Dupas and Robinson 2013). The idea behind the program is that although money is fungible—and cash on hand can be spent at any time—people tend to allocate funds through a process of “mental accounting” in which they define categories of spending and structure their spending behaviors accordingly. What was important about the metal box, the lock, and the labeled passbook was that it allowed people to put the money in a mental account for preventive health products. The intervention worked because mental accounting is one way in which people are often “thinking automatically” and is an example of a more general framing or labeling effect in which assigning something to a category influences how it is perceived.

Conventional financial literacy programs in low-income countries have had limited effects (Xu and Zia 2012). In contrast, a recent effort in South Africa to teach financial literacy through an engaging television soap opera improved the financial choices that individuals made. Financial messages were embedded in a soap opera about a financially reckless character. Households that watched the soap opera for two months were less likely to gamble and less likely to purchase goods through an expensive installment plan (Berg and Zia 2013). The households felt emotionally engaged with the show's characters, which made them more receptive to the financial messages than would be the case in standard financial literacy programs. The success of the intervention depended on “thinking socially”—our tendency to identify with and learn from others.

In Ethiopia, disadvantaged individuals commonly report feelings of low psychological agency, often

making comments like “we have neither a dream nor an imagination” or “we live only for today” (Bernard, Dercon, and Taffesse 2011, 1). In 2010, randomly selected households were invited to watch an hour of inspirational videos comprising four documentaries of individuals from the region telling their personal stories about how they had improved their socioeconomic position by setting goals and working hard. Six months later, the households that had watched the inspirational videos had higher total savings and had invested more in their children's education, on average. Surveys revealed that the videos had increased people's aspirations and hopes, especially for their children's educational future (Bernard and others 2014). The study illustrates the ability of an intervention to change a mental model—one's belief in what is possible in the future (Bernard and Taffesse 2014).

The view that labeling, role models, and aspirations can affect savings is not inconsistent with the view that people respond in predictable ways to changes in interest rates or prices and other incentives. The new approaches do not replace standard economics. But the new approaches enhance our understanding of the development process and the way development policies and interventions can be designed and implemented.

The *mind, society, and behavior* framework points to new tools for achieving development objectives, as well as new means of increasing the effectiveness of existing interventions. It provides more entry points for policy and new tools that practitioners can draw on in their efforts to reduce poverty and increase shared prosperity. This Report discusses how taking the human factors more completely into account in decision making sheds light on a number of areas: the persistence of poverty, early childhood development, household finance, productivity, health, and climate change. The framework and many examples in the Report show how impediments to people's ability to process information and the ways societies shape mindsets can be sources of development disadvantage but also can be changed.

The three ways of thinking emphasized here apply equally to all human beings. They are not limited to those at higher or lower income levels, or to those at higher or lower educational levels, or to those in high-income or low-income countries. Numerous examples from high-income countries throughout this Report demonstrate the universality of psychological and social influences on decision making. The Report documents the cognitive limitations of people in all walks of life, including World Bank staff (see spotlight 3 and chapter 10). Development professionals themselves

think automatically, think socially, and think with mental models and, as a result, may misidentify the causes of behavior and overlook potential solutions to development problems. Development organizations could be more effective if practitioners became aware of their own biases and if organizations implemented procedures that mitigate their effects.

For development practitioners, identifying psychological and social influences on behavior and constructing policies that work with them—rather than against them—require a more empirical and experimental approach to policy design. Because human decision making is so complicated, predicting how beneficiaries will respond to particular interventions is a challenge. The processes of devising and implementing development policy would benefit from richer diagnoses of behavioral drivers (see spotlight 4) and early experimentation in program design that anticipates failures and creates feedback loops that allow practitioners to incrementally and continuously improve the design of interventions.

Three principles of human decision making

The organizing framework of part 1 of the Report rests on three principles of human decision making: thinking automatically, thinking socially, and thinking with mental models. Although these principles are based on recent groundbreaking research from across the social sciences, it is worth emphasizing that the new research, in some ways, brings the discipline of economics full circle to where it began, with Adam Smith in the late 18th century, and to perspectives that were prominent in the early and middle parts of the 20th century (box O.1).

First principle: Thinking automatically

In the simplifying assumptions employed in a number of economic models, economic actors consider the full universe of information and environmental cues and look far into the future to make thoughtful decisions in the present that will advance their fixed, long-term goals. Of course, actual human decision making is almost never like this (see, for example, Gilovich, Griffin, and Kahneman 2002; Goldstein 2009). People typically have more information than they can process. There are an unmanageably large number of ways to organize the information that bears on almost any decision.

Thus psychologists have long distinguished two kinds of processes that people use when thinking: those that are fast, automatic, effortless, and associative; and those that are slow, deliberative, effortful, serial, and reflective. Psychologists describe the two

modes, metaphorically, as two distinct systems in the mind: System 1, the *automatic system*, and System 2, the *deliberative system* (Kahneman 2003). Chapter 1 will discuss this division in more detail, but table O.1

Box O.1 The evolution of thinking in economics about human decision making

Since the foundational work of Adam Smith ([1759, 1776] 1976), economists have explored psychological and social influences on human decision making. John Maynard Keynes recognized “money illusion”—the tendency to think of money in nominal rather than in real terms—and used it in his proposed solution to unemployment. He also recognized that many of our long-term investments reflect “animal spirits”—intuitions and emotions—not cool-headed calculation. Gunnar Myrdal was a student of cultural stagnation. Herbert Simon and F. A. Hayek based much of their work on the recognition that human beings can process only so much information at once and are not capable of carefully weighing the costs and benefits of every possible outcome of their decisions. Albert Hirschman argued that it is useful to remember that people have complex motives; they value cooperation and loyalty.

However, in much of the 20th century, through the work of Paul Samuelson and many others, there was “a steady tendency toward the rejection of hedonistic, introspective, psychological elements” (Samuelson 1938, 344). Milton Friedman, in his famous essay, “On the Methodology of Positive Economics” (1953), and others in the 1950s argued persuasively, based on the evidence available at the time, that economists could safely ignore psychological factors in making predictions about market outcomes. The individual economic actor could be understood as if he behaved like a dispassionate, rational, and purely self-interested agent since individuals who did not behave that way would be driven out of the market by those who did. The assumptions of perfect calculation and fixed and wholly self-regarding preferences embedded in standard economic models became taken-for-granted beliefs in many circles.

The past 30 years of research in decision making across many behavioral and social sciences have led economists to a stage where they measure and formalize the psychological and social aspects of decision making that many of the foundational contributors to economics believed were important. Empirical work demonstrates that people do not make decisions by taking into account all costs and benefits. People want to conform to social expectations. People do not have unchanging or arbitrarily changing tastes. Preferences depend on the context in which they are elicited and on the social institutions that have formed the interpretive frameworks through which individuals see the world (Basu 2010; Fehr and Hoff 2011).

Economics has thus come full circle. After a respite of about 40 years, an economics based on a more realistic understanding of human beings is being reinvented. But this time, it builds on a large body of empirical evidence—microlevel evidence from across the behavioral and social sciences. The mind, unlike a computer, is psychological, not logical; malleable, not fixed. It is surely rational to treat identical problems identically, but often people do not; their choices change when the default option or the order of choices changes. People draw on mental models that depend on the situation and the culture to interpret experiences and make decisions. This Report shows that a more interdisciplinary perspective on human behavior can improve the predictive power of economics and provide new tools for development policy.

Table O.1 People have two systems of thinking

Individuals have two systems of thinking—the automatic system and the deliberative system. The automatic system influences nearly all our judgments and decisions.

Automatic system	Deliberative system
Considers what automatically comes to mind (<i>narrow frame</i>)	Considers a broad set of relevant factors (<i>wide frame</i>)
Effortless	Effortful
Associative	Based on reasoning
Intuitive	Reflective

Sources: Kahneman 2003; Evans 2008.

provides an overview. Most people think of themselves as primarily deliberative thinkers—but of course they tend to think about their own thinking processes automatically and under the influence of received mental models about who they are and how the mind works. In reality, the automatic system influences most of our judgments and decisions, often in powerful and even decisive ways. Most people, most of the time, are not aware of many of the influences on their decisions. People who engage in automatic thinking can make what they themselves believe to be large and systematic mistakes; that is, people can look back on the choices they made while engaging in automatic thinking and wish that they had decided otherwise.

Automatic thinking causes us to simplify problems and see them through *narrow frames*. We fill in missing information based on our assumptions about the world and evaluate situations based on associations that automatically come to mind and belief systems that we take for granted. In so doing, we may form a mistaken picture of a situation, just as looking through a small window overlooking an urban park could mislead someone into thinking he or she was in a more bucolic place (figure O.1).

The fact that individuals rely on automatic thinking has significant implications for understanding development challenges and for designing the best policies to overcome them. If policy makers revise their assumptions about the degree to which people deliberate when making decisions, they may be able to design policies that make it simpler and easier for individuals to choose behaviors consistent with their desired outcomes and best interests.

For example, policy makers can help by paying close attention to such factors as the framing of choices and the default options—an idea referred to as *choice architecture* (Thaler and Sunstein 2008). The way that the cost of borrowing is framed can affect how much

high-interest debt people will choose to incur. For some of the poorest individuals in many countries, the repeated use of small, short-term, unsecured loans is a fact of life; these loans carry interest rates that would be over 400 percent if multiplied over a year. Yet the high cost of these loans is often not obvious to borrowers. In the United States, creditors called payday lenders offer a short-term loan until the next payday arrives. The cost of the loan is typically portrayed as a fixed fee per loan—say, \$15 for every \$100 borrowed for two weeks—rather than as an effective annual interest rate, or what the cost would be if the loan were repeated over time.

A field trial in the United States demonstrated the power of framing by testing an intervention that presented the cost of borrowing more transparently (Bertrand and Morse 2011). One group received the standard envelope from the payday lender, which includes the cash and the paperwork for the loan. The envelope stated the amount due and the due date, as shown in figure O.2, panel a. Another group received a cash envelope that also showed how the dollar fees accumulate when a loan is outstanding for three months, compared to the equivalent fees for borrowing the same amount with a credit card (figure O.2, panel b). Those who received the envelope on which the costs of the loan were reframed in accumulated dollar amounts were 11 percent less likely to borrow from the payday lenders in the four months following the intervention. The study captures a key implication of chapter 1, which is that adjusting what information is provided, and the format in which it is provided, can help people make better decisions.

Second principle: Thinking socially

Individuals are social animals who are influenced by social preferences, social networks, social identities, and social norms: most people care about what those around them are doing and how they fit into their groups, and they imitate the behavior of others almost automatically, as shown in figure O.3. Many people have social preferences for fairness and reciprocity and possess a cooperative spirit. These traits can play into both good and bad collective outcomes; societies that are high in trust, as well as those that are high in corruption, require extensive amounts of cooperation (see spotlight 1). Chapter 2 focuses on “thinking socially.”

Human sociality (the tendency of people to be concerned with and associate with each other) adds a layer of complexity and realism to the analysis of human decision making and behavior. Because many economic policies assume individuals are self-regarding, autonomous decision makers, these policies often focus on external material incentives, like prices.

However, human sociality implies that behavior is also influenced by social expectations, social recognition, patterns of cooperation, care of in-group members, and social norms. Indeed, the design of institutions, and the ways in which they organize groups and use material incentives, can suppress or evoke motivation for cooperative tasks, such as community development and school monitoring.

People often behave as *conditional cooperators*—that is, individuals who prefer to cooperate as long as others

are cooperating. Figure O.4 shows the results of a “public goods game” that was played in eight countries. It demonstrates that although the proportion of conditional cooperators versus free riders varies across countries, conditional cooperators are the dominant type in every one. In other words, in no society where this behavior has been studied does the canonical theory of economic behavior hold (Henrich and others 2001).

Social preferences and social influences can lead societies into self-reinforcing collective patterns of

Figure O.1 Automatic thinking gives us a partial view of the world

To make most decisions and judgments, we think automatically. We use narrow framing and draw on default assumptions and associations, which can give us a misleading picture of a situation. Even seemingly irrelevant details about how a situation is presented can affect how we perceive it, since we tend to jump to conclusions based on limited information.

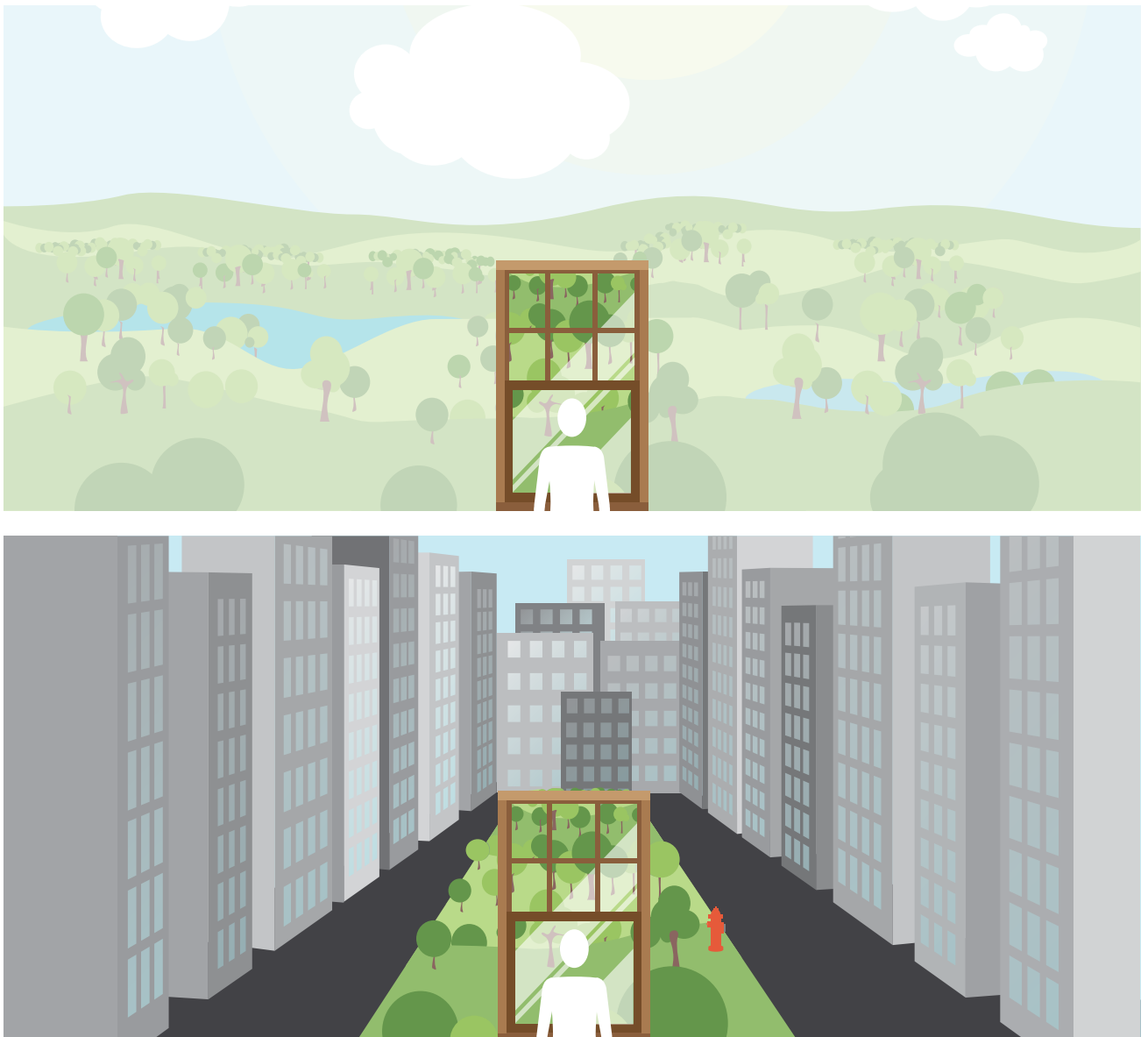
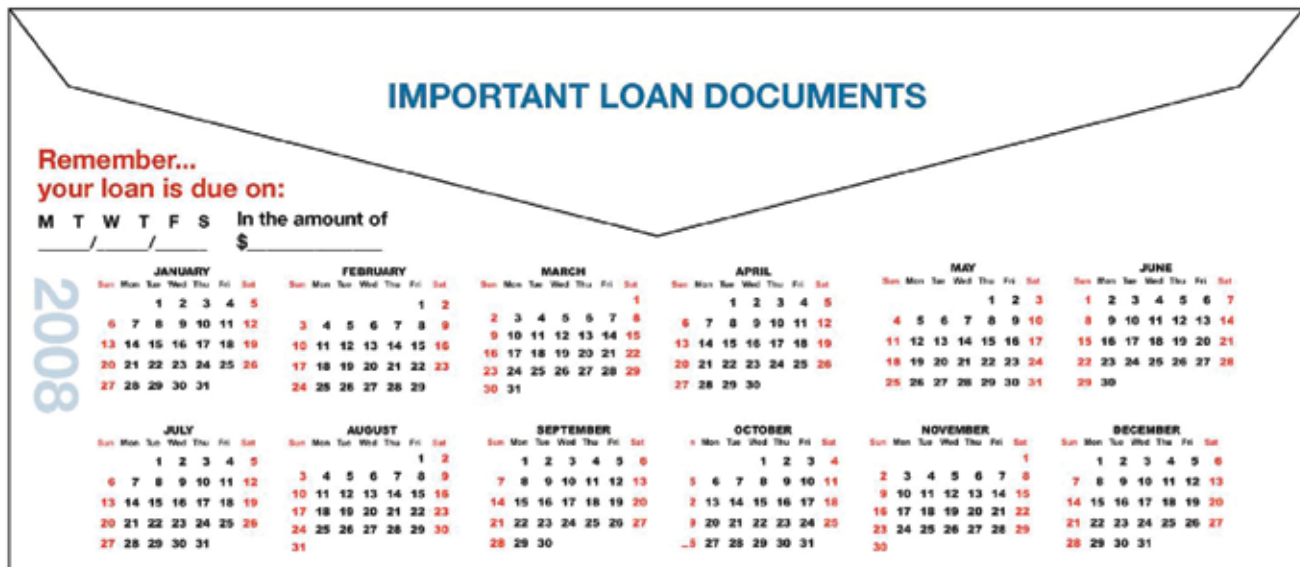


Figure O.2 Reframing decisions can improve welfare: The case of payday borrowing

a. The standard envelope

A payday borrower receives his cash in an envelope. The standard envelope shows only a calendar and the due date of the loan.



b. The envelope comparing the costs of the payday loan and credit card borrowing

In a field experiment, randomly chosen borrowers received envelopes that showed how the dollar fees accumulate when a payday loan is outstanding for three months, compared to the fees to borrow the same amount with a credit card.

How much it will cost in fees or interest if you borrow \$300			
PAYDAY LENDER (assuming two-week fee is \$15 per \$100 loan) If you repay in:		CREDIT CARD (assuming a 20% APR) If you repay in:	
2 weeks	\$45	2 weeks	\$2.50
1 month	\$90	1 month	\$5
2 months	\$180	2 months	\$10
3 months	\$270	3 months	\$15

Borrowers who received the envelope with the costs of the loans expressed in dollar amounts were 11 percent less likely to borrow in the next four months compared to the group that received the standard envelope. Payday borrowing decreased when consumers could think more broadly about the true costs of the loan.

Source: Bertrand and Morse 2011.

Note: APR = annual percentage rate.

behavior. In many cases, these patterns are highly desirable, representing patterns of trust and shared values. But when group behaviors influence individual preferences and individual preferences combine into group behaviors, societies can also end up coordinating activity around a common focal point that is ill-advised or even destructive for the community. Racial or ethnic segregation and corruption are just two examples (spotlight 1). When self-reinforcing “coordinated points” emerge in a society,

they can be very resistant to change. Social meanings and norms, and the social networks that we are a part of, pull us toward certain frames and patterns of collective behavior.

Conversely, taking the human factor of sociality into account can help in devising innovative policy interventions and making existing interventions more effective. In India, microfinance clients who were randomly assigned to meet weekly, rather than monthly, had more informal social contact with one another

Figure O.3 What others think, expect, and do influences our preferences and decisions

Humans are inherently social. In making decisions, we are often affected by what others are thinking and doing and what they expect from us. Others can pull us toward certain frames and patterns of collective behavior.



two years after the loan cycle ended, were more willing to pool risks, and were three times less likely to default on their second loan (Feigenberg, Field, and Pande 2013). In Uganda and Malawi, agricultural extension activities were much more successful when peer farmers were used in training activities (Vasilaky and Leonard 2013; BenYishay and Mobarak 2014). Individuals generally want to repay their loans and to adopt better technology, but they may have trouble motivating themselves to do it. By drawing on social motivations, policy can help them reach their goals and protect their interests.

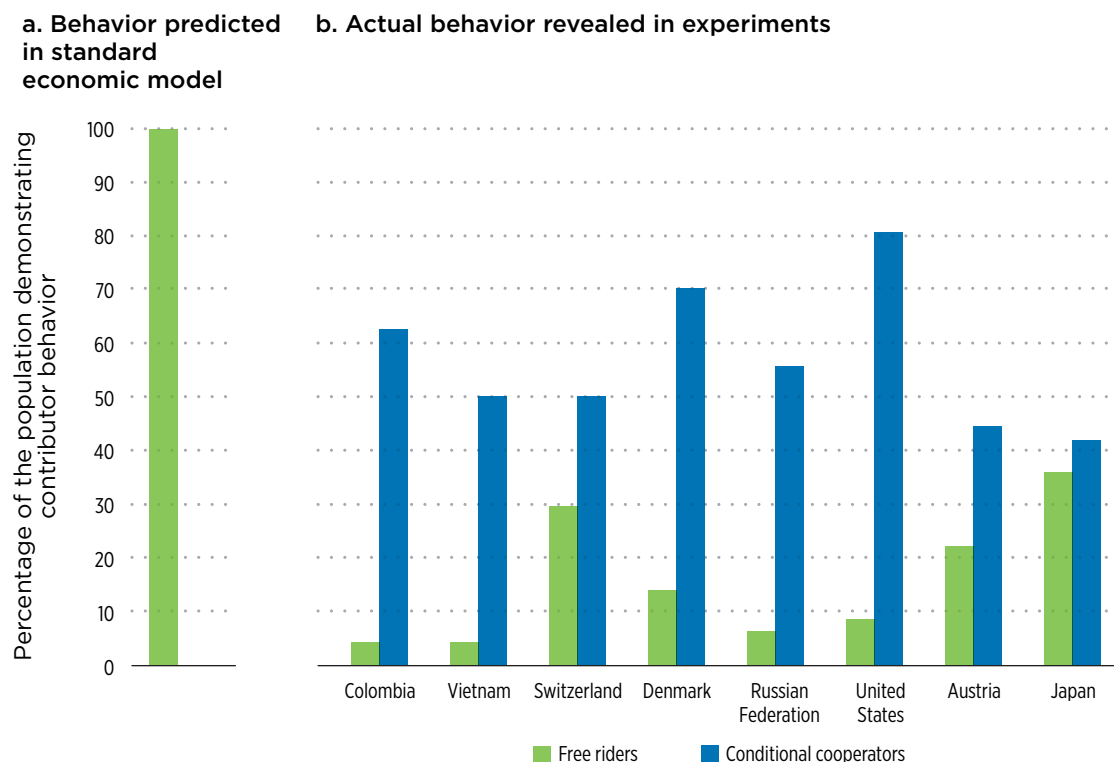
The case of a public emergency in Bogotá, Colombia, illustrates how policy approaches can both undermine and nurture cooperative behaviors (spotlight 5). In 1997, part of a tunnel providing water to the city collapsed, triggering a water shortage emergency. The city government's first action was to declare a public emergency and initiate a communication program warning inhabitants of the coming crisis. While this

step was intended to promote water conservation, it instead increased both water consumption and hoarding. Recognizing the problem, the city government changed its communication strategy, sent around volunteers to educate people about the most effective conservation measures, and began publicizing daily water consumption figures and naming individuals who were cooperating with the effort, as well as those who were not. The mayor appeared in a television ad taking a shower with his wife, explaining how the tap could be turned off while soaping and suggesting taking showers in pairs. These strategies strengthened cooperation, and reductions in water use persisted long after the tunnel was repaired.

The principle of thinking socially has several implications for policy. Chapter 2 examines the scope for economic and social incentives in a world where human sociality is a major factor influencing behavior, shows how institutions and interventions can be designed to support cooperative behavior, and demonstrates how

Figure O.4 In experimental situations, most people behave as conditional cooperators rather than free riders

The standard economic model (panel a) assumes that people free ride. Actual experimental data (panel b) show that across eight societies, the majority of individuals behave as conditional cooperators rather than free riders when playing a public goods game. The model of free riding was not supported in any society studied.



Source: Martinsson, Pham-Khanh, and Villegas-Palacio 2013.

Note: Other players did not fit into either of the two categories, which is why the bars do not sum to 100 percent.

social networks and social norms shape behavior and can serve as the basis of new kinds of interventions.

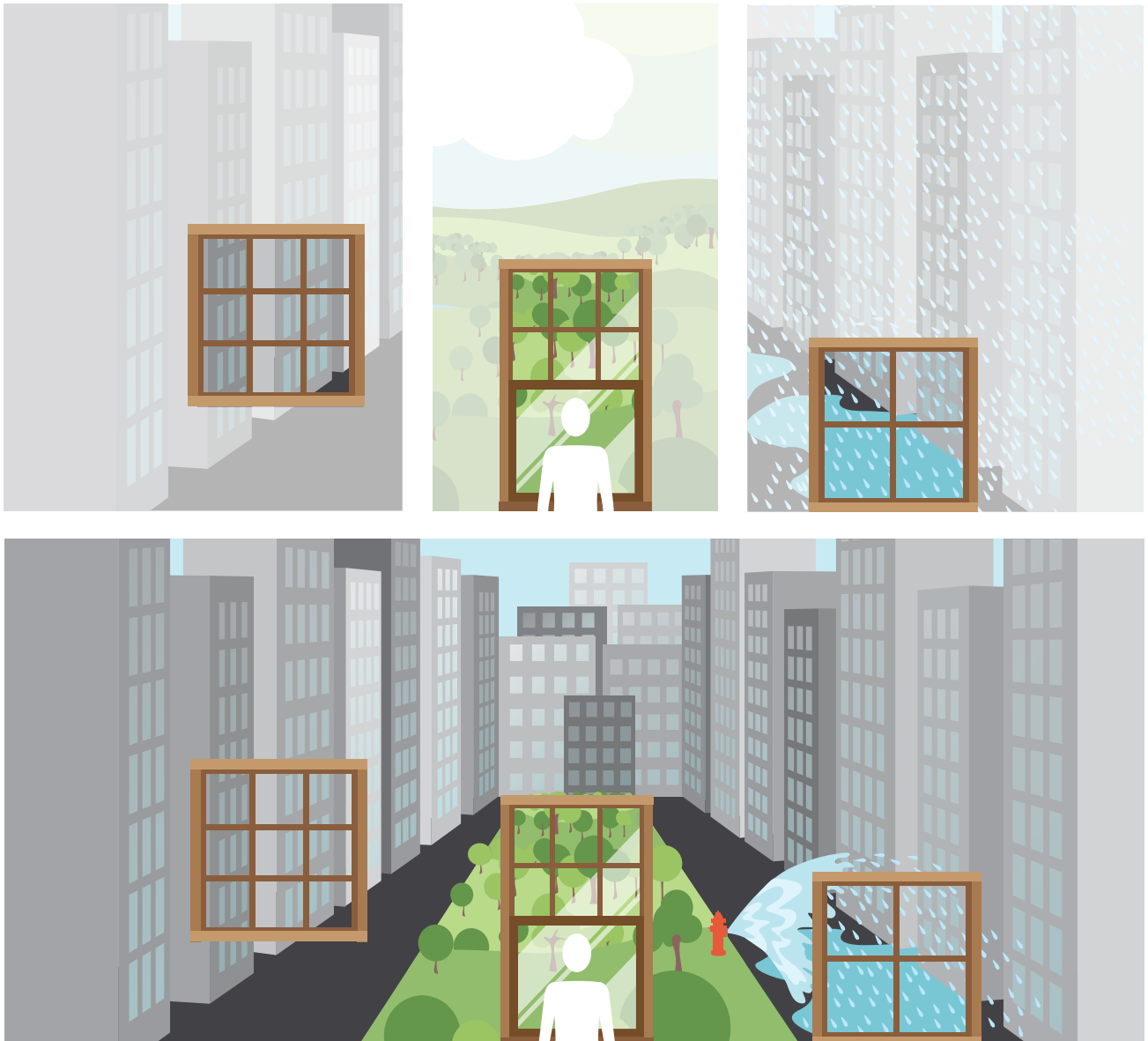
Third principle: Thinking with mental models

When people think, they generally do not draw on concepts that they have invented themselves. Instead, they use concepts, categories, identities, prototypes, stereotypes, causal narratives, and worldviews drawn from their communities. These are all examples of

mental models. *Mental models* affect what individuals perceive and how they interpret what they perceive, as shown in figure O.5. There are mental models for how much to talk to children, what risks to insure, what to save for, what the climate is like, and what causes disease. Many mental models are useful; others are not and contribute to the intergenerational transmission of poverty. Mental models come from the cognitive side of social interactions, which people often refer to

Figure O.5 Thinking draws on mental models

Individuals do not respond to objective experience but to mental representations of experience. In constructing their mental representations, people use interpretive frames provided by mental models. People have access to multiple and often conflicting mental models. Using a different mental model can change what an individual perceives and how he or she interprets it.



as *culture*. Culture influences individual decision making because it serves as a set of interrelated schemes of meaning that people use when they act and make choices. These schemes of meaning function like tools for enabling and guiding action (DiMaggio 1997).

Mental models and social beliefs and practices often become deeply rooted in individuals. We tend to internalize aspects of society, taking them for granted as inevitable “social facts.” People’s mental models shape their understanding of what is right, what is natural, and what is possible in life. Social relations and structures, in turn, are the basis of socially constructed “common sense,” which represents the evidence, ideologies, and aspirations that individuals take for granted and use to make decisions—and which in some cases increase social differences. A body of writing by anthropologists and other social scientists points out that what people take to be hard evidence and common sense (their basic mental models of their world and how it works) is often shaped by economic relationships, religious affiliations, and social group identities (Bourdieu 1977; Kleinman 2006). Much of that work argues that achieving social change in a situation where mental models have been internalized may require influencing not only the cognitive decision making of particular individuals but also social practices and institutions.

A canonical example of a mental model is a *stereotype*, which is a mental model of a social group. Stereotypes affect the opportunities available to people and shape processes of social inclusion and exclusion. As a result of stereotypes, people from disadvantaged groups tend to underestimate their abilities (Guyon and Huillery 2014) and may even perform worse in social situations when they are reminded of their group membership. In these and other ways, the stereotypes can be self-fulfilling and can reinforce economic differences among groups (for example, see Ridgeway 2011 on gender stereotypes).

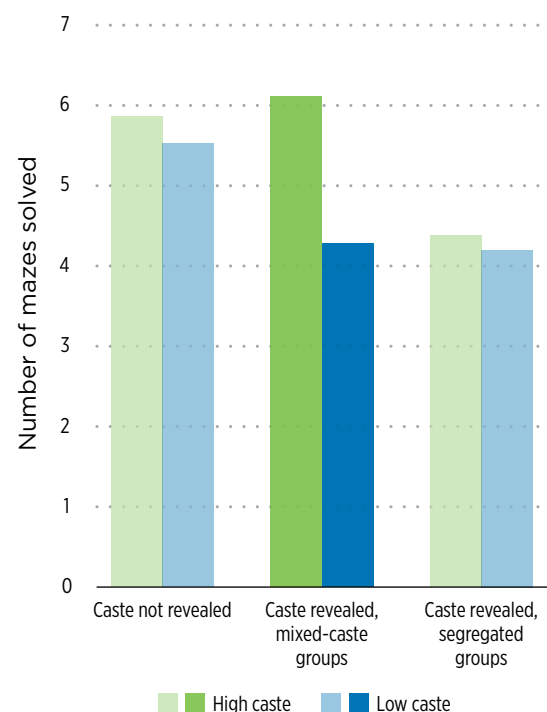
In India, low-caste boys were essentially just as good at solving puzzles as high-caste boys when caste identity was not revealed, as shown in figure O.6. However, in mixed-caste groups, revealing the boys’ castes before puzzle-solving sessions created a significant “caste gap” in achievement in which low-caste boys underperformed the high-caste boys by 23 percent, controlling for other individual variables (Hoff and Pandey 2006, 2014). Making caste salient to the test takers invoked identities, which in turn affected performance. The performance of the stigmatized low-caste boys declined relative to the performance of the high-caste boys. When caste was revealed to the high-caste boys when they were not mixed with low-caste boys, the high-caste boys underperformed, perhaps because

the revelation evoked a sense of entitlement and “Why try?” The simple presence of a stereotype can contribute to measured ability differences, which in turn can reinforce the stereotype and serve as a basis for distinction and exclusion, in a vicious cycle.

Finding ways to break this cycle could increase the well-being of marginalized individuals enormously. Evidence from a number of contexts suggests that invoking positive identities can counteract stereotypes and raise aspirations. Having individuals contemplate their own strengths has led to higher academic achievement among at-risk minorities in the United States, to greater interest in antipoverty programs among poor people, and to an increase in the probability of finding a job among the unemployed in the United Kingdom (Cohen and others 2009; Hall, Zhao, and Shafir 2014; Bennis 2013).

Figure O.6 Cuing a stigmatized or entitled identity can affect students’ performance

High-caste and low-caste boys from villages in India were randomly assigned to groups that varied the salience of caste identity. When their caste was not revealed, high-caste and low-caste boys were statistically indistinguishable in solving mazes. Revealing caste in mixed classrooms decreased the performance of low-caste boys. But publicly revealing caste in caste-segregated classrooms—a marker of high-caste entitlement—depressed the performance of both high-caste and low-caste boys, and again their performance was statistically indistinguishable.



Source: Hoff and Pandey 2014.

These considerations expand the toolkits of policy makers in other ways, as well. An increasingly important set of development interventions involves the media. Exposure to fiction, such as a serial drama, can change mental models (see spotlight 2 on entertainment education). For example, when people living in societies with high fertility were exposed to engaging soap operas about families with few children, fertility rates declined (Jensen and Oster 2009; La Ferrara, Chong, and Duryea 2012).

Shared mental models are persistent and can exert a major influence on individual choices and aggregate social outcomes. Because mental models are somewhat malleable, interventions can target them to promote development objectives. Individuals have many different and competing mental models that they can bring to bear on any situation; which one they use depends on which one the context activates. Policies that expose individuals to new ways of thinking and alternative understandings of the world can expand the available set of mental models and thus play an important role in development.

Psychological and social perspectives on policy

In many cases, a fuller understanding of human decision making can help societies achieve broadly shared goals like higher savings or better health and in this

way improve individual well-being. Table O.2 presents examples of interventions based on a more realistic understanding of human behavior that takes human factors into account. Drawing on insights from modern behavioral and social sciences can generate new kinds of interventions that can be highly cost effective.

An expanded understanding of human behavior can improve development policy. Whereas part 1 of this Report is organized by principles of human behavior, part 2 is organized by development problems and illustrates how these principles can be applied in a number of policy domains.

Poverty

Poverty is not only a deficit in material resources but also a context in which decisions are made. It can impose a cognitive burden on individuals that makes it especially difficult for them to think deliberatively (Mullainathan and Shafir 2013). Individuals who must exert a great deal of mental energy every day just to ensure access to necessities such as food and clean water are left with less energy for careful deliberation than those who, simply by virtue of living in an area with good infrastructure and good institutions, can instead focus on investing in a business or going to school committee meetings. Poor people may thus be forced to rely even more heavily on automatic decision making than those who are not poor (chapter 4).

Table O.2 Examples of highly cost-effective behavioral interventions

Intervention	Description	Outcome
Reminders	Weekly text messages to remind patients to take their HIV drugs in Kenya.	Adherence to a medical regimen Weekly reminders improved the rate of drug adherence to 53% from a baseline of 40%.
Nonmonetary gifts	Small nonfinancial incentives and prizes—like lentils and metal dinner plates—were combined with a reliable immunization provider within the community in India.	Immunization rate Among children aged 1–3, rates of full immunization were 39% with the lentils incentives compared to 18% in the group with only the reliable immunization provision. In areas with no intervention, the rate of full immunization was 6%.
Public notices	Small stickers were placed in randomly selected buses encouraging passengers to “heckle and chide” reckless drivers in Kenya.	Traffic accidents Annual insurance claims rates for accidents declined from 10% to 5%.
Making products convenient	Chlorine dispensers were provided free of charge at local water sources, and promoters of chlorination to treat water were hired to visit houses in Kenya.	Take-up of chlorination The take-up rate was 60% in households with dispensers, compared to 7% for the comparison group.
Inspirational messages	Poor households were shown videos about how people like them had escaped from poverty or improved their socioeconomic status in Ethiopia.	Aspirations and investment Aspirations for children increased. Total savings and investments in schooling were higher after six months.
Timing of cash transfers	Part of a conditional cash transfer was automatically saved and given as a lump sum at the time when decisions about school enrollment were made in Colombia.	Enrollment in higher education Enrollment increased in the next school year, without a decline in current attendance.

Sources: Pop-Eleches and others 2011; Banerjee and others 2010; Habyarimana and Jack 2011; Kremer and others 2009; Bernard and others 2014; Barrera-Orsorio and others 2011.

Sugar cane farmers in India, for example, typically receive their income once a year, at the time of harvest. The large income difference between just before the harvest and just after affects financial decision making. Right before the harvest, these farmers are much more likely to have taken on loans and to have pawned some of their belongings. This financial distress takes a toll on the cognitive resources that the farmers have available before harvest time (Mani and others 2013). Farmers perform worse on the same series of cognitive tests before receiving their harvest income than after receiving their earnings—a difference in scores that is equivalent to roughly 10 IQ points. In this sense, poverty imposes a *cognitive tax*.

Drawing on insights from modern behavioral and social sciences can generate new kinds of interventions that can be highly cost effective.

Development policy aimed at reducing or removing the cognitive tax on poverty might seek to shift the timing of critical decisions away from periods when cognitive capacity and energy (*bandwidth*) are predictably low (such as moving school enrollment decisions closer to periods when income is higher) or targeting assistance to decisions that may require a lot of bandwidth (such as choosing a health insurance plan or applying to a higher education program).

Psychological and anthropological research also suggests that poverty generates a mental model through which the poor see themselves and their opportunities. In particular, it can dull the capacity to imagine a better life (Appadurai 2004). Evidence also shows that interventions and policy designs that alter this mental model so that people can recognize their own potential more easily—or that at least spare poor people from reminders of their deprivation—can increase important development outcomes such as school achievement, labor market participation, and the take-up of antipoverty programs.

Child development

High stress and insufficient socioemotional and cognitive stimulation in the earliest years, which tend to be associated with growing up poor, can impair the development of both the automatic decision-making system (for instance, the ability to cope with stress)

and the deliberative system (for example, the ability to pay attention). Chapter 5 discusses these issues.

In all countries studied to date, whether low, middle, or high income, there is a divergence as early as age three in the cognitive and noncognitive skills of children in households at the bottom of the national wealth distribution and those in households at the top. The disparity stems in part from problems that policy can address.

The problem of insufficient stimulation to children is of particular concern for low-income countries. A study of caregiving practices by mothers in 28 developing countries found that socioemotional caregiving did not vary widely by level of development. In contrast, the amount of cognitive stimulation that mothers provide is systematically lower in countries with lower measures of economic, health, and education variables, according to the United Nations Human Development Index (figure O.7). In this study, the level of cognitive stimulation was measured by the number of times that a caregiver read books, told stories, and engaged in naming, counting, or drawing with the child. When cognitive stimulation among infants is low, they have fewer and less sophisticated linguistic interactions, which can result in less facility with language and impede future scholastic achievement.

Very early childhood stimulation has a large impact on adult success in the labor market, a 20-year study in Jamaica found (Gertler and others 2014). Community health workers made weekly home visits to teach mothers how to play and interact with their children in ways that promote cognitive and emotional development. Children who were randomly selected to participate in the program earned 25 percent more as adults than those in the control group who did not participate in the program—enough to close the earnings gap with a population that was not disadvantaged.

Household finance

Making a good financial decision is difficult. It requires individuals to understand the future cost of money, focus on gains and losses evenhandedly, resist the temptation to consume too much, and avoid procrastinating. Recent behavioral and social insights demonstrate the difficulties involved, while also opening avenues for policy makers to help individuals make decisions that serve their interests and achieve their goals (chapter 6).

High consumer debt often results from a form of thinking automatically, in which individuals attach much more weight to current consumption through borrowing than to the loss of consumption that will occur when they have to pay back a loan in the future. Certain types of financial regulation can help

consumers frame their decisions about borrowing in a broader context that encompasses more than the prospect of immediate consumption. This kind of regulation helps individuals make financial decisions that they would likely prefer if they had thought deliberately about them rather than automatically.

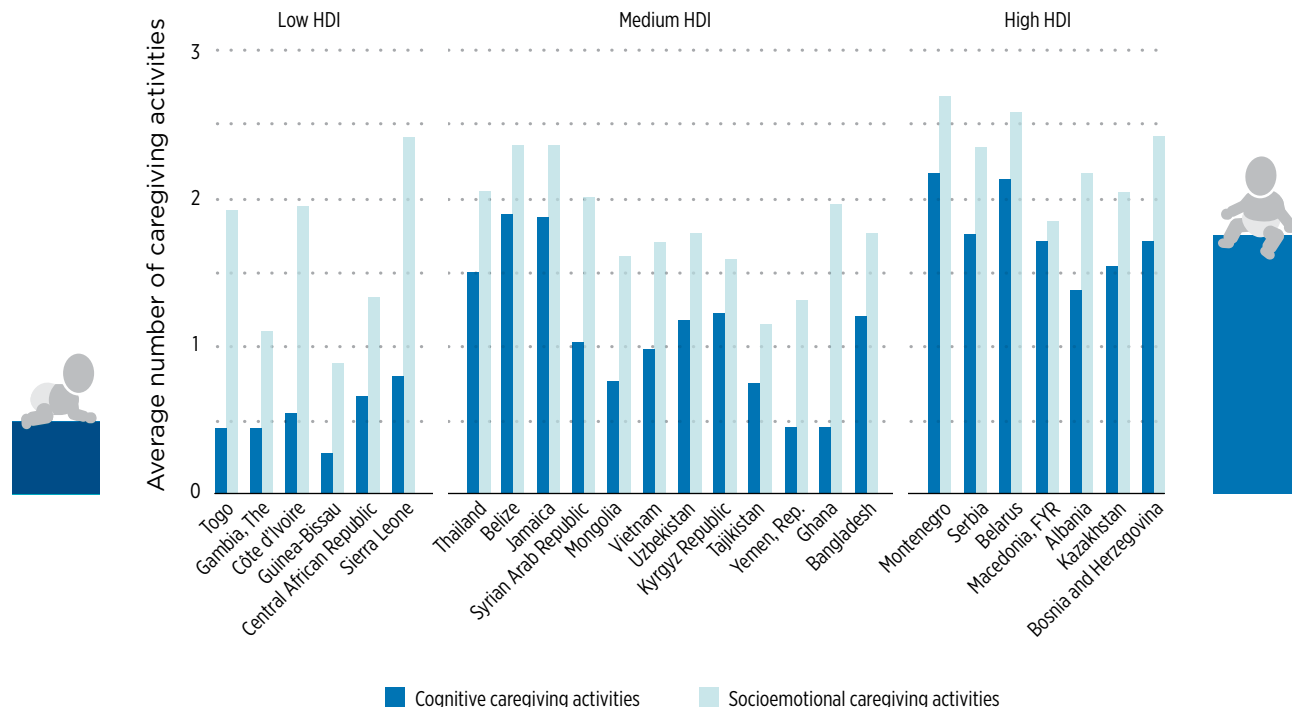
An experiment with a low-income population in Mexico shows how bandwidth constraints may limit how people process financial information (Giné, Martinez Cuellar, and Mazer 2014). Low-income individuals from Mexico City were invited to choose the best one-year, 10,000 peso loan product (that is, roughly \$800) from a randomized list of loan products resembling ones locally available. Individuals could earn rewards if they identified the lowest-cost product. As shown in figure O.8, panel a, only 39 percent of people could identify the lowest-cost product when presented with brochures designed by banks for their customers. But a much larger fraction (68 percent) of individuals

could identify the lowest-cost credit product using a user-friendly summary sheet designed by the Consumer Financial Credit Bureau of Mexico (figure O.8, panel b).

Another set of interventions has focused on savings. Some programs have helped individuals attain their savings goals through the use of reminders that make the goals more salient. A series of studies in Bolivia, Peru, and the Philippines show that simple, timely text messages reminding people to save improve savings rates in line with their goals (Karlan, Morten, and Zinman 2012). Other programs have helped individuals increase their savings by offering *commitment devices* in which consumers voluntarily give up access to their savings until they meet a specified target level of savings. When savings accounts were offered in the Philippines without the option of withdrawal for six months, nearly 30 percent of those offered the accounts accepted them (Ashraf, Karlan, and Yin 2006).

Figure O.7 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.

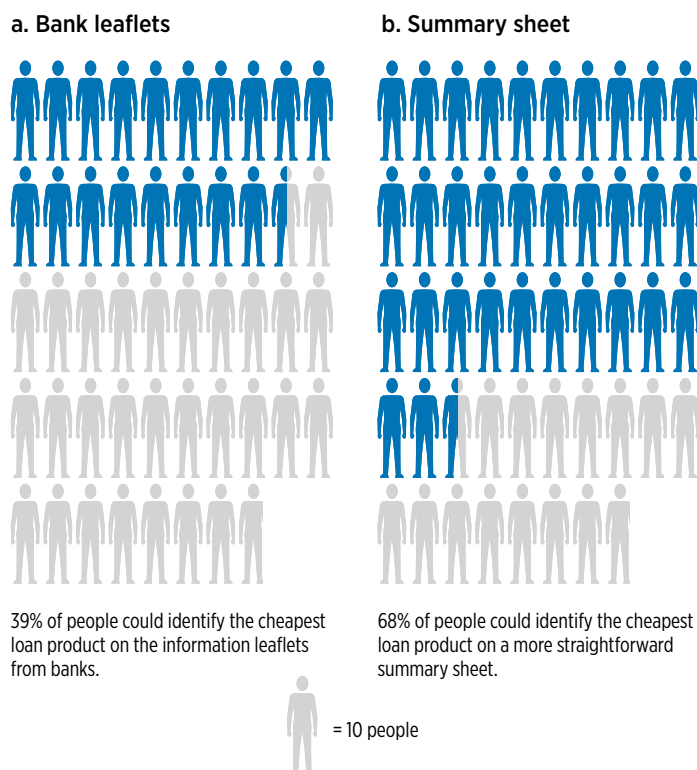


Source: Bornstein and Putnick 2012.

Note: The bar graphs show the number of caregiving activities reported by mothers in the past three days, based on comparable data from 28 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, or drawing with the child.

Figure O.8 Clarifying a form can help borrowers find a better loan product

Low-income subjects from Mexico City were invited to classrooms to choose the cheapest one-year, \$800 (10,000 peso) loan product from a set of five products representative of actual credit products offered by banks in Mexico City. They could earn rewards by getting the right answer. When using the banks' descriptions of their products, only 39 percent of the people could identify the cheapest credit product. When using the more straightforward summary sheet, 68 percent could identify the cheapest credit.



Source: Giné, Martínez Cuellar, and Mazer 2014.

After one year, individuals who had been offered and had used the accounts increased savings by 82 percent more than a control group that was not offered such accounts. These and other studies show that psychological and social factors impede financial decision making and that interventions that target these factors can help individuals achieve financial goals.

Productivity

Automatic thinking, social thinking, and thinking with mental models also play a large role in worker motivation and the investment decisions of farmers and entrepreneurs (chapter 7). Even when monetary incentives are strong, individuals may not exert the amount of effort that they intend, unless or until a deadline or payday looms. For example, workers may frame the decision to work at each moment narrowly

and thus miss achieving their own goals (the so-called *intention-action divide*).

The gap between intentions and actions inspired an intervention that offered data entry workers in India the opportunity to select a contract in which each worker could choose a target for the number of accurately typed fields he or she entered. If a data entry worker achieved her target, she would be paid at the normal piece rate. If she missed her own target, however, she would be paid at a lower rate. If people can simply do what they intend to do, there is no benefit to choosing this kind of contract because workers do not increase their pay if they meet the target, but lower their pay if they do not. But if workers recognize that there is a gap between intentions and actions, the commitment contract can serve a useful purpose. Because effort has a cost in the present and a reward in the future, individuals may spend less time on effort than their deliberative minds would prefer. The commitment contract gives the individual an incentive to work harder than she might in the current moment when the work needs to be done. In the case of the data entry workers in India, about one-third chose the commitment contract—indicating that some of the workers themselves had a demand for commitment devices. The self-chosen commitment contracts did increase effort. Workers who opted for them increased their productivity by an amount equivalent to what would have been expected from an 18 percent increase in piece-rate wages (Kaur, Kremer, and Mullainathan 2014).

The way that an identical level of pay is described can also affect productivity. Take performance pay for teachers, in which teachers are paid a bonus at the end of the year that depends on the academic performance or improvement of their students. This kind of intervention failed to improve test scores in low-income neighborhoods in the U.S. city of Chicago (Fryer and others 2012). Another variant of the program, however, altered the timing of the bonuses and cast them as losses rather than as gains. At the beginning of the school year, teachers were given the amount that administrators expected the average bonus to be. If their students' performance turned out to be above average at the end of the year, they would receive an additional payment. If student performance was below average, however, they would have to return the difference between what they received at the beginning and the final bonus they would have received had their students performed above average. This loss-framed bonus improved test scores substantially. As these examples suggest, well-designed interventions that take into account people's tendencies to think automatically, socially, and with mental models can improve productivity.

Health

The decisions people make about their health and their bodies emerge out of a tangle of information, the availability and prices of health goods and services, social norms and pressures, mental models of the causes of disease, and willingness to try certain interventions. By recognizing this broad array of human factors, development policy involving health can in some cases dramatically improve its results (chapter 8).

Consider the problem of open defecation. About 1 billion people defecate in the open, and defecation has been linked to infections in children that lead to stunted growth and in some cases death. A standard approach is to provide information, along with goods at a subsidized cost—in this case, to construct toilets. But even with these changes in place, new sanitation norms are also needed to end this unhealthy practice. Government officials in Zimbabwe developed “community health clubs” to create community structures that served as a source of group endorsement for new sanitation norms (Waterkeyn and Cairncross 2005).

A related approach to creating new norms with some promising anecdotal evidence is Community-Led Total Sanitation (CLTS). One core element of this approach is that CLTS leaders work with community members to make maps of dwellings and the locations where individuals defecate in the open. The facilitator uses a repertoire of exercises to help people recognize the implications of what they have seen for the spread of infections and to develop new norms accordingly. A recent and systematic study of CLTS in villages in India and Indonesia provides evidence of the initiative's value as well as its limitations. The CLTS programs were found to decrease open defecation by 7 and 11 percent from very high levels in Indonesia and India, respectively, compared to control villages. But where CLTS was combined with subsidies for toilet construction, its impact on toilet availability within households was much higher. These findings suggest that CLTS can complement, but perhaps not substitute for, programs that provide resources for building toilets (Patil and others 2014; Cameron, Shah, and Olivia 2013).

Mental models of the body also affect health choices and behaviors. Beliefs about the causes of sterility, autism, and other conditions influence parents' decisions to vaccinate their children, as well as to adopt appropriate therapies. In India, 35–50 percent of poor women report that the appropriate treatment for a child with diarrhea is to reduce fluid intake, which makes sense if the prevailing mental model attributes the cause of diarrhea to too much fluid (so the child is “leaking”) (Datta and Mullainathan 2014). However, there is a low-cost and extraordinarily successful therapy for diarrhea: oral

rehydration therapy (ORT). While ORT saves lives by preventing dehydration, it does not stop the symptoms of diarrhea, making the benefits less easy to perceive. The Bangladesh Rural Advancement Committee tackled the barriers to take-up of ORT by designing a home-based approach, in which community health workers were employed to teach mothers how to make ORT solutions at home in face-to-face social interactions that explained the value of the therapy. This and similar campaigns boosted the adoption of ORT in Bangladesh and across South Asia.

Initiatives to increase the use of health products and services often rely on subsidies, another area where psychological and social insights matter. Individuals may be willing to adopt and use health products if they are free but almost completely unwilling to use them when prices are just above zero (Kremer and Glennerster 2011). The reason is that prices for health products have many meanings in addition to the quantity of payment required in an exchange. A product that is free triggers an emotional response, and it may convey a social norm that everyone should be and will be using it. Setting prices at zero, however, can promote waste if people take the product but do not use it. Research on this topic in developing countries is recent, but the emerging message is that if products are valuable enough to subsidize, there may be significant payoffs to setting prices at zero and not just close to zero.

The choices of health care providers also arise from a complicated tangle of factors, including the scientific information at their disposal, how much and how they are paid, and professional and social norms. Simply reminding providers of the social expectations surrounding their performance can improve it. For example, clinicians in urban Tanzania significantly increased their effort when a visiting peer simply asked them to improve their care (Brock, Lange, and Leonard, forthcoming), even though the visit conveyed no new information, did not change incentives, and imposed no material consequences. While developing and enhancing professional and social norms in health care is not simple and the same solution will not work everywhere, there are many examples in which leadership has transformed social expectations and improved performance.

Climate change

Responding to climate change is one of the defining challenges of our time. Poor countries and communities are generally more vulnerable to the effects of climate change and will also bear significant costs during transitions to low-carbon economies. Addressing climate change requires individuals and societies not only to overcome complex economic, political, technological,

and social challenges but also to get around a number of cognitive illusions and biases (chapter 9). Individuals ground their views of climate on their experience of recent weather. Ideological and social allegiances can result in *confirmation bias*, which is the tendency of individuals to interpret and filter information in a manner that supports their preconceptions or hypotheses. Individuals tend to ignore or underappreciate information presented in probabilities, including forecasts for seasonal rainfall and other climate-related variables. Human beings are far more concerned with the present than with the future, and many of the worst impacts of climate change could take place many years from now. People tend to avoid action in the face of the unknown. *Self-serving bias*—the tendency of individuals to prefer principles, particularly principles regarding fairness, that serve their interests—makes it hard to reach international agreements on how to share the burdens of mitigating and adapting to climate change.

Psychological and social perspectives also expand the menu of options for addressing climate change. One option is to use policy to foster new habits of energy use. In a study of the effect of an eight-month period of compulsory electricity rationing in Brazil, evidence shows that the policy led to a persistent reduction in electricity use, with consumption 14 percent lower even 10 years after rationing ended. Household data on the ownership of appliances and on consumption habits indicate that a change in habits was the main reason for the decrease in consumption (Costa 2012).

An energy conservation program in the United States illustrates how social comparisons can also influence energy consumption. The company running the program, Opower, mailed “home energy reports” to hundreds of thousands of households; these reports compared a household’s electricity use to the amount used by others in the neighborhood in the same time period. This simple information led to a 2 percent reduction in energy consumption, which was equivalent to reductions resulting from short-term increases in energy prices of 11–20 percent and a long-term increase of 5 percent (Allcott 2011; Allcott and Rogers 2014).

The work of development professionals

Recognizing the human factor in decision making and behavior has two interrelated repercussions for the practice of development. First, experts, policy makers, and development professionals, like everyone else, are themselves subject to the biases and mistakes that can arise from thinking automatically, thinking socially, and using mental models. They need to be more aware of these biases, and organizations should implement

procedures to mitigate them. Second, seemingly small details of design can sometimes have big effects on individuals’ choices and actions. Moreover, similar challenges can have different underlying causes; solutions to a challenge in one context may not work in another. As a result, development practice requires an iterative process of discovery and learning. Multiple psychological and social factors can affect whether a policy succeeds; while some of these may be known before implementation, some will not be. This means that an iterative process of learning is needed, which in turn implies spreading resources (time, money, and expertise) over several cycles of design, implementation, and evaluation.

Development professionals

While the goal of development is to end poverty, development professionals are not always good at predicting how poverty shapes mindsets. The WDR 2015 team administered a randomized survey to examine judgment and decision making among World Bank staff. Although 42 percent of Bank staff predicted that most poor people in Nairobi, Kenya, would agree with the statement that “vaccines are risky because they can cause sterilization,” only 11 percent of the poor people sampled (defined in this case as the bottom third of the wealth distribution in that city) actually agreed with the statement. Similarly, staff predicted that many more poor residents of Jakarta, Indonesia, and Lima, Peru, would express feelings of helplessness and lack of control over their future than actually did, according to the WDR 2015 team survey. This finding suggests that development professionals may assume that poor individuals may be less autonomous, less responsible, less hopeful, and less knowledgeable than they in fact are. Beliefs like these about the context of poverty shape policy choices. It is important to check mental models of poverty against reality (chapter 10).

The WDR 2015 team survey also studied the ways in which ideological and political outlooks affect how World Bank staff members interpret data. Survey respondents were presented with identical data in two different contexts and then were asked to identify the conclusion that the data best supported. One context was politically and ideologically neutral: the question asked which of two skin creams was more effective. The second context was more politically and ideologically charged: the question asked whether minimum wage laws reduce poverty. The survey found that World Bank staff members were more likely to get the right answer in the skin cream context than in the minimum wage context, even though the data were the same in both. One might be tempted to add that this occurred

even though many World Bank staff members are highly trained experts on poverty, but in reality this occurred because World Bank staff members are highly trained on that topic. Faced with a demanding calculation, they interpreted new data in a manner consistent with their prior views, about which they felt confident. This survey followed the line of inquiry developed by Kahan and others (2013).

One way to overcome the natural limitations on judgment among development professionals may be to borrow and adapt certain methods from industry. *Dogfooding* is a practice in the technology industry in which company employees themselves use a product to experience it and discover its flaws. They work out its kinks before releasing it to the marketplace. Policy designers could try to go through the process of signing up for their own programs, or trying to access existing services, as a way of diagnosing problems firsthand. Similarly, the practice of *red teaming*, used in both the military and the private sector, could help uncover weaknesses in arguments before big decisions are made and programs are designed. In red teaming, an outside group has the role of challenging the plans, procedures, capabilities, and assumptions of an operational design, with the goal of taking the perspective of potential partners or adversaries. Red teaming is based on the insight, from social psychology, that group settings motivate individuals to argue vigorously. Group deliberation among people who disagree but who share a common interest in finding the truth can divide cognitive labor efficiently, increase the odds that the best design will come to light, and mitigate the effects of “groupthink.”

Adaptive design, adaptive interventions

Because a number of competing factors may sway decision making in a particular context and because development professionals themselves may be prone to certain biases when assessing a situation, diagnosis and experimentation should be part of a continuous process of learning (chapter 11). Institutional mechanisms of development research and policy should ensure space for sound diagnosis and for effective feedback loops for adapting programs that align with the evidence gathered during implementation. This step might require changing institutional mental models and increasing an organization’s tolerance for failure. In many cases, the initial diagnosis may be incorrect or may be only partially successful. Only through implementation will this become clear. However, instead of penalizing failure or burying findings of failure, organizations need to recognize that the real failures are policy interventions in which learning from experience does not happen.

To see the usefulness of this approach, consider the problem of diarrheal disease and some experiments implemented in Kenya to learn about cost-effective methods to tackle it (Ahuja, Kremer, and Zwane 2010). Bacteria-laden water is a major contributor to the burden of disease among children and can lead to lifelong physical and cognitive impairment. Lack of access to clean water was diagnosed as a problem. Thus an early intervention aimed at improving the infrastructure at households’ water sources, which are naturally occurring springs. The springs were susceptible to contamination, such as fecal matter from the surrounding

Development professionals are themselves subject to the biases and mistakes that can arise from thinking automatically, thinking socially, and using mental models. They need to be more aware of these biases, and organizations should implement procedures to mitigate them.

environment. To reduce contamination, the springs were covered with concrete so that water flowed from an above-ground pipe rather than seeping from the ground. While this measure considerably improved water quality at the source, it had only moderate effects on the quality of the water consumed at home because the water was easily recontaminated while it was being carried or stored.

Thus the problem was redefined this way: households did not adequately treat their water at home. Another iteration of experiments demonstrated that providing free home delivery of chlorine or discount coupons that could be redeemed in local shops elicited high take-up of the water treatment product at first but failed to generate sustained results. People needed to chlorinate their water when they returned home from the spring, and they needed to continue to go to the store to purchase the chlorine when their initial supplies ran out.

These results suggested yet another diagnosis of the problem: households cannot sustain the use of water treatment over time. This led to the design of free chlorine dispensers next to the water source,

which made water treatment salient (the dispenser served as a reminder right when people were thinking about water) and convenient (there was no need to make a trip to the store, and the necessary agitation and wait time for the chlorine to work automatically occurred during the walk home). It also made water treatment a public act, which could be observed by whoever was at the spring at the time of water collection, allowing for social reinforcement of using water treatment. These dispensers proved to be the most cost-effective method for increasing water treatment and averting diarrheal incidents (Abdul Latif Jameel Poverty Action Lab 2012).

Multiple behavioral and social factors can affect whether a policy succeeds. Thus development practice requires an iterative process of discovery and learning, which implies spreading time, money, and expertise over several cycles of design, implementation, and evaluation.

Results like these, as well as the process of continuous investigation used to establish them, are encouraging. So is the realization that a more complete consideration of the psychological and social factors involved in decision making may offer “low-hanging fruit”—that is, policies with relatively large gains at relatively low cost. But given that small changes in design and implementation can have large consequences for the success of an intervention, ongoing experimentation will be crucial. Analysis of existing or newly collected data and field observations will generate hypotheses that can inform the design of possible interventions. *Multi-armed interventions*—interventions that vary a number of parameters, such as the frequency of reminders or the method of rewarding effort—can shed light on which ones are more effective in meeting the social objective. The learning that takes place during implementation should then feed back into redefining, rediagnosing, and redesigning programs in a cycle of continued improvement (figure O.9).

Before policy makers launch initiatives to help individuals with decision making, they should confront a normative question: Why should governments be

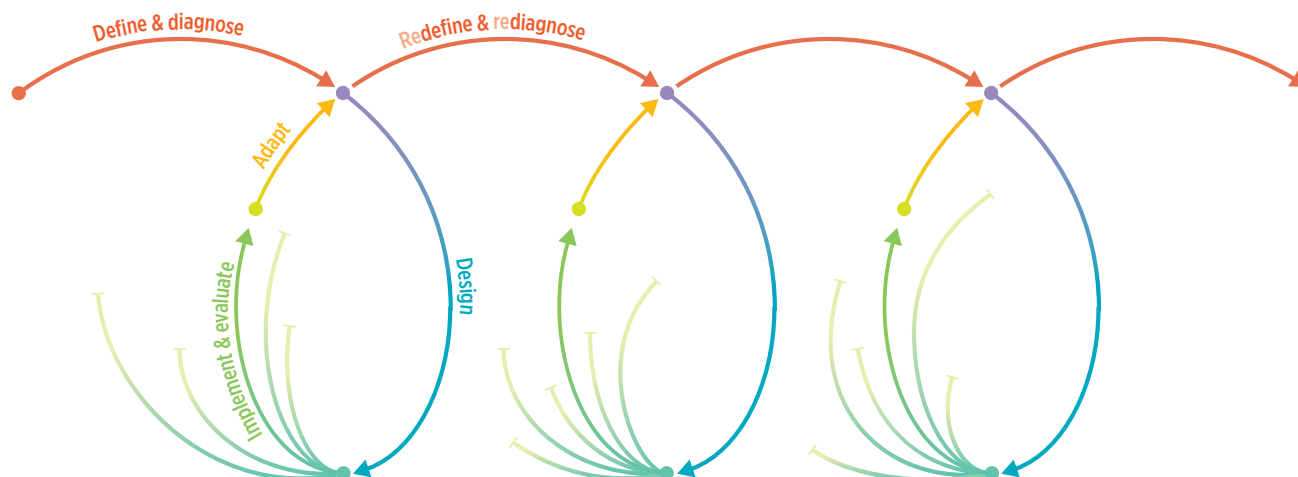
in the business of shaping individual choices? There are three basic reasons, as discussed in spotlight 6. First, shaping choices can help people obtain their own goals. Reminders to save or take medicine help people who are otherwise caught up in life achieve objectives that they themselves have set. Commitment contracts, which markets underprovide, can reinforce decisions to adopt healthful behaviors. Matching the timing of social transfers to the timing of charges for school enrollment, or making it easier to buy fertilizer at harvest time when cash is at hand, can help overcome the divide between intentions and actions for people who may be forgetful or possess insufficient willpower (that is to say, all of us). Many development policies that operate at the boundary of economics and psychology can be understood in those terms.

Second, individuals' preferences and immediate aims do not always advance their own interests. Individuals might choose differently, in ways more consistent with their highest aspirations, if they had more time and scope for reflection. Third, socially reinforced practices and mental models can block choices that enhance agency and promote well-being and thus prevent individuals from even conceiving of certain courses of action—as when discrimination can sometimes lead people, understandably, to adopt low aspirations. Governments should act when inadequate engagement, situational framing, and social practices undermine agency and create or perpetuate poverty. Although development actors have legitimate differences on some of these issues and place different weights on individual freedoms and collective goals, widely shared and ratified human rights constitute a guiding principle for addressing these trade-offs.

Not every psychological or social insight calls for more government intervention; some call for less. Because policy makers are themselves subject to cognitive biases, they should search for and rely on sound evidence that their interventions have their intended effects, and allow the public to review and scrutinize their policies and interventions, especially those that aim to shape individual choice. Still, it is not the case that when governments refrain from action, individuals freely and consistently make choices in their own best interest, uninfluenced by anyone else. Any number of interested parties exploit people's tendency to think automatically, succumb to social pressure, and rely on mental models (Akerlof and Shiller, forthcoming), including moneylenders, advertisers, and elites of all types. In that context, governmental inaction does not necessarily leave space for individual freedom; rather, government inaction may amount to an indifference to the loss of freedom (Sunstein 2014).

Figure O.9 Understanding behavior and identifying effective interventions are complex and iterative processes

In an approach that incorporates the psychological and social aspects of decision making, the intervention cycle looks different. The resources devoted to definition and diagnosis, as well as to design, are greater. The implementation period tests several interventions, each based on different assumptions about choice and behavior. One of the interventions is adapted and fed into a new round of definition, diagnosis, design, implementation, and testing. The process of refinement continues after the intervention is scaled up.



Source: WDR 2015 team.

This Report seeks to accelerate the process of applying the new insights into decision making to development policy. The possibilities and limits of this approach—based on viewing people more fully and recognizing that a combination of psychological and social forces affects their perception, cognition, decisions, and behaviors—are not yet completely known. The research presented in the Report comes from an active, exciting, and unsettled field. This Report is only the beginning of an approach that could eventually alter the field of development economics and enhance the effectiveness of development policies and interventions.

References

- Abdul Latif Jameel Poverty Action Lab. 2012. "Cleaner Water at the Source." *J-PAL Policy Briefcase* (September). <http://www.povertyactionlab.org/publication/cleaner-water-source>.
- Ahuja, Amrita, Michael Kremer, and Alix Peterson Zwane. 2010. "Providing Safe Water: Evidence from Randomized Evaluations." *Annual Review of Resource Economics* 2 (1): 237–56.
- Akerlof, George A., and Robert Shiller. Forthcoming. "Phishing for Phools." Unpublished manuscript.
- Allcott, Hunt. 2011. "Social Norms and Energy Conservation." *Journal of Public Economics* 95 (9): 1082–95. doi: 10.1016/j.jpubeco.2011.03.003.
- Allcott, Hunt, and Todd Rogers. 2014. "The Short-Run and Long-Run Effects of Behavioral Interventions: Experimental Evidence from Energy Conservation." *American Economic Review* 104 (10): 3003–37. doi: 10.1257/aer.104.10.3003.
- Appadurai, Arjun. 2004. "The Capacity to Aspire: Culture and the Terms of Recognition." In *Culture and Public Action*, edited by Vijayendra Rao and Michael Walton, 59–84. Palo Alto, CA: Stanford University Press.
- Ashraf, Nava, Dean Karlan, and Wesley Yin. 2006. "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines." *Quarterly Journal of Economics* 121 (2): 635–72.
- Banerjee, Abhijit Vinayak, Esther Duflo, Rachel Glennerster, and Dhruva Kothari. 2010. "Improving Immunisation Coverage in Rural India: Clustered Randomised Controlled Evaluation of Immunisation Campaigns with and without Incentives." *BMJ* 340. doi: <http://dx.doi.org/10.1136/bmj.c2220>.
- Barrera-Osorio, Felipe, Marianne Bertrand, Leigh L. Linden, and Francisco Perez-Calle. 2011. "Improving the Design of Conditional Transfer Programs: Evidence from a Randomized Education Experiment in Colombia." *American Economic Journal: Applied Economics* 3 (2): 167–95.
- Basu, Kaushik. 2010. *Beyond the Invisible Hand: Groundwork for a New Economics*. Princeton, NJ: Princeton University Press.
- Beaman, Lori, Raghavendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?" *Quarterly Journal of Economics* 124 (4): 1497–1540.

- Beaman, Lori, Esther Duflo, Rohini Pande, and Petia Topalova. 2012. "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India." *Science* 335 (6068): 582–86.
- Bennhold, Katrin. 2013. "Britain's Ministry of Nudges." *New York Times*, Dec. 7. <http://www.nytimes.com/2013/12/08/business/international/britainsministry-of-nudges.html?pagewanted=all&r>.
- BenYishay, Ariel, and A. Mushfiq Mobarak. 2014. "Social Learning and Communication." Working Paper 20139, National Bureau of Economic Research, Cambridge, MA.
- Berg, Gunhild, and Bilal Zia. 2013. "Harnessing Emotional Connections to Improve Financial Decisions: Evaluating the Impact of Financial Education in Mainstream Media." Policy Research Working Paper 6407, World Bank, Washington, DC.
- Bernard, Tanguy, Stefan Dercon, Kate Orkin, and Alemayehu Seyoum Taffesse. 2014. "The Future in Mind: Aspirations and Forward-Looking Behaviour in Rural Ethiopia." Working Paper, Centre for the Study of African Economies, University of Oxford.
- Bernard, Tanguy, Stefan Dercon, and Alemayehu Seyoum Taffesse. 2011. "Beyond Fatalism: An Empirical Exploration of Self-Efficacy and Aspirations Failure in Ethiopia." Discussion Paper 01101, International Food Policy Research Institute, Washington, DC. <http://www.ifpri.org/sites/default/files/publications/ifpridp01101.pdf>.
- Bernard, Tanguy, and Alemayehu Seyoum Taffesse. 2014. "Aspirations: An Approach to Measurement with Validation Using Ethiopian Data." *Journal of African Economies* 23 (2): 189–224. doi: 10.1093/jae/ejto30.
- Bertrand, Marianne, and Adair Morse. 2011. "Information Disclosure, Cognitive Biases, and Payday Borrowing." *Journal of Finance* 66 (6): 1865–93.
- Bettinger, Eric P., Bridget Terry Long, Philip Oreopoulos, and Lisa Sanbonmatsu. 2012. "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment." *Quarterly Journal of Economics* 127 (3): 1205–42.
- Bornstein, Marc H., and Diane L. Putnick. 2012. "Cognitive and Socioemotional Caregiving in Developing Countries." *Child Development* 83 (1): 46–61.
- Bourdieu, Pierre. 1977. *Outline of a Theory of Practice*. Cambridge, U.K.: Cambridge University Press.
- Brock, J. Michelle, Andreas Lange, and Kenneth L. Leonard. Forthcoming. "Generosity and Prosocial Behavior in Health Care Provision: Evidence from the Laboratory and Field." *Journal of Human Resources*.
- Cameron, Lisa, Manisha Shah, and Susan Olivia. 2013. "Impact Evaluation of a Large-Scale Rural Sanitation Project in Indonesia." Policy Research Working Paper 6360, World Bank, Washington, DC.
- Cohen, Geoffrey L., Julio Garcia, Valerie Purdie-Vaughns, Nancy Apfel, and Patricia Brzustoski. 2009. "Recursive Processes in Self-Affirmation: Intervening to Close the Minority Achievement Gap." *Science* 324 (5925): 400–03.
- Costa, Francisco. 2012. "Can Rationing Affect Long-Run Behavior? Evidence from Brazil." Unpublished manuscript. http://idei.fr/doc/conf/bee2012/Costa_Rationing_120831.pdf.
- Datta, Saugato, and Sendhil Mullainathan. 2014. "Behavioral Design: A New Approach to Development Policy." *Review of Income and Wealth* 60 (1): 7–35.
- DiMaggio, Paul. 1997. "Culture and Cognition." *Annual Review of Sociology* 23 (1): 263–87. doi: 10.1146/annurev.soc.23.1.263.
- Duflo, Esther, Michael Kremer, and Jonathan Robinson. 2011. "Nudging Farmers to Use Fertilizer: Theory and Experimental Evidence from Kenya." *American Economic Review* 101 (6): 2350–90.
- Dupas, Pascaline, and Jonathan Robinson. 2013. "Why Don't the Poor Save More? Evidence from Health Savings Experiments." *American Economic Review* 103 (4): 1138–71.
- Evans, Jonathan St. B. T. 2008. "Dual-Processing Accounts of Reasoning, Judgment, and Social Cognition." *Annual Review of Psychology* 59 (January): 255–78.
- Fehr, Ernst, and Karla Hoff. 2011. "Introduction: Tastes, Castes and Culture: The Influence of Society on Preferences." *Economic Journal* 121 (556): F396–412.
- Feigenberg, Benjamin, Erica Field, and Rohini Pande. 2013. "The Economic Returns to Social Interaction: Experimental Evidence from Microfinance." *Review of Economic Studies* 80 (4): 1459–83.
- Freese, Jeremy. 2009. "Preferences." In *The Oxford Handbook of Analytical Sociology*, edited by Peter Hedström and Peter Bearman, 94–114. Oxford, U.K.: Oxford University Press.
- Friedman, Milton. 1953. *Essays in Positive Economics*, Vol. 231. Chicago: University of Chicago Press.
- Fryer, Roland G., Jr., Steven D. Levitt, John List, and Sally Sadoff. 2012. "Enhancing the Efficacy of Teacher Incentives through Loss Aversion: A Field Experiment." Working Paper 18237, National Bureau of Economic Research, Cambridge, MA.
- Gertler, Paul, James Heckman, Rodrigo Pinto, Arianna Zanolini, Christel Vermeersch, Susan Walker, Susan M. Chang, and Sally Grantham-McGregor. 2014. "Labor Market Returns to an Early Childhood Stimulation Intervention in Jamaica." *Science* 344 (6187): 998–1001.
- Gilovich, Thomas, Dale Griffin, and Daniel Kahneman. 2002. *Heuristics and Biases: The Psychology of Intuitive Judgment*. Cambridge, U.K.: Cambridge University Press.
- Giné, Xavier, Cristina Martinez Cuellar, and Rafael Keenan Mazer. 2014. "Financial (Dis-)Information: Evidence from an Audit Study in Mexico." Policy Research Working Paper 6902, World Bank, Washington, DC.
- Goldstein, Daniel G. 2009. "Heuristics." In *The Oxford Handbook of Analytical Sociology*, edited by Peter Hedström and Peter Bearman, 140–67. Oxford, U.K.: Oxford University Press.
- Guyon, Nina, and Elise Huillery. 2014. "The Aspiration-Poverty Trap: Why Do Students from Low Social Back-

- ground Limit Their Ambition? Evidence from France." Working Paper, Department of Economics, Sciences Po, Paris.
- Habyarimana, James, and William Jack. 2011. "Heckle and Chide: Results of a Randomized Road Safety Intervention in Kenya." *Journal of Public Economics* 95 (11): 1438–46.
- Hall, Crystal C., Jiaying Zhao, and Eldar Shafir. 2014. "Self-Affirmation among the Poor: Cognitive and Behavioral Implications." *Psychological Science* 25 (2): 619–25.
- Henrich, Joseph, Robert Boyd, Samuel Bowles, Colin Camerer, Ernst Fehr, Herbert Gintis, and Richard McElreath. 2001. "In Search of *homo economicus*: Behavioral Experiments in 15 Small-Scale Societies." *American Economic Review* 91 (2): 73–78.
- Hoff, Karla, and Priyanka Pandey. 2006. "Discrimination, Social Identity, and Durable Inequalities." *American Economic Review* 96 (2): 206–11.
- . 2014. "Making Up People: The Effect of Identity on Performance in a Modernizing Society." *Journal of Development Economics* 106: 118–31.
- Jensen, Robert, and Emily Oster. 2009. "The Power of TV: Cable Television and Women's Status in India." *Quarterly Journal of Economics* 124 (3): 1057–94.
- Kahan, Dan M., Ellen Peters, Erica Cantrell Dawson, and Paul Slovic. 2013. "Motivated Numeracy and Enlightened Self-Government." Working Paper, Cultural Cognition Project, Yale Law School, New Haven, CT.
- Kahneman, Daniel. 2003. "Maps of Bounded Rationality: Psychology for Behavioral Economics." *American Economic Review* 93 (5): 1449–75.
- Karan, Dean, Melanie Morten, and Jonathan Zinman. 2012. "A Personal Touch: Text Messaging for Loan Repayment." Working Paper 17952, National Bureau of Economic Research, Cambridge, MA.
- Kaur, Supreet, Michael Kremer, and Sendhil Mullainathan. 2014. "Self-Control at Work." Working Paper, Harvard University, Cambridge, MA.
- Kleinman, Arthur. 2006. *What Really Matters: Living a Moral Life amidst Uncertainty and Danger*. Oxford, U.K.: Oxford University Press.
- Kremer, Michael, and Rachel Glennerster. 2011. "Improving Health in Developing Countries: Evidence from Randomized Evaluations." In *Handbook of Health Economics*, Vol. 2., edited by Thomas G. McGuire, Mark V. Pauly, and Pedro P. Barros, 201–315. Amsterdam: Elsevier.
- Kremer, Michael, Edward Miguel, Sendhil Mullainathan, Clair Null, and Alix Peterson Zwane. 2009. "Making Water Safe: Price, Persuasion, Peers, Promoters, or Product Design." Unpublished manuscript.
- La Ferrara, Eliana, Alberto Chong, and Suzanne Duryea. 2012. "Soap Operas and Fertility: Evidence from Brazil." *American Economic Journal: Applied Economics* 4 (4): 1–31.
- Mani, Anandi, Sendhil Mullainathan, Eldar Shafir, and Jiaying Zhao. 2013. "Poverty Impedes Cognitive Function." *Science* 341 (6149): 976–80.
- Martinsson, P., N. Pham-Khanh, and C. Villegas-Palacio. 2013. "Conditional Cooperation and Disclosure in Developing Countries." *Journal of Economic Psychology* 34: 148–55.
- Mullainathan, Sendhil, and Eldar Shafir. 2013. *Scarcity: Why Having Too Little Means So Much*. New York: Times Books.
- Patil, S. R., B. F. Arnold, A. L. Salvatore, B. Briceno, S. Ganguly, J. Colford Jr., and P. J. Gertler. 2014. "The Effect of India's Total Sanitation Campaign on Defecation Behaviors and Child Health in Rural Madhya Pradesh: A Cluster Randomized Controlled Trial." *PLoS Med* 11 (8): e1001709. doi: 10.1371/journal.pmed.1001709.
- Pop-Eleches, Cristian, Harsha Thirumurthy, James Habyarimana, Joshua Graff Zivin, Markus Goldstein, Damien de Walque, Leslie Mackeen, Jessica Haberer, John Sidle, and Duncan Ngare. 2011. "Mobile Phone Technologies Improve Adherence to Antiretroviral Treatment in Resource-Limited Settings: A Randomized Controlled Trial of Text Message Reminders." *AIDS* 25 (6): 825–34.
- Ridgeway, Cecilia L. 2011. *Framed by Gender: How Gender Inequality Persists in the Modern World*. Oxford, U.K.: Oxford University Press.
- Samuelson, Paul A. 1938. "The Empirical Implications of Utility Analysis." *Econometrica* 6 (4): 344–56.
- Smith, Adam. (1759) 1976. *The Theory of Moral Sentiments*. London: Millar. Glasgow Bicentenary Edition, edited by D. D. Raphael and A. L. Macfie. Oxford, U.K.: Oxford University Press.
- . (1776) 1976. *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: Millar. Glasgow Bicentenary Edition, edited by D. D. Raphael and A. L. Macfie. Oxford, U.K.: Oxford University Press.
- Sunstein, Cass. 2014. *Why Nudge? The Politics of Libertarian Paternalism*. New Haven, CT: Yale University Press.
- Thaler, Richard H., and Cass R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven, CT: Yale University Press.
- Vasilaky, Kathryn, and Kenneth L. Leonard. 2013. "As Good as the Networks They Keep? Improving Farmers' Social Networks via Randomized Information Exchange in Rural Uganda." Working Paper, University of Maryland, College Park.
- Waterkeyn, Juliet, and Sandy Cairncross. 2005. "Creating Demand for Sanitation and Hygiene through Community Health Clubs: A Cost-Effective Intervention in Two Districts in Zimbabwe." *Social Science and Medicine* 61 (9): 1958–70.
- Wiener, E. L., and D. C. Nagel. 1988. *Human Factors in Aviation*. London: Academic Press.
- Xu, Lisa, and Bilal Zia. 2012. "Financial Literacy in the Developing World." Policy Research Working Paper 6107, World Bank, Washington, DC.

PART 1

An expanded understanding
of human behavior for
economic development:
A conceptual framework

Introduction

This first part of this Report presents a framework for understanding and using recent findings on human decision making. The three chapters in part 1 develop the three elements of the framework:

1. *Thinking automatically.* Much of our thinking is automatic, not deliberative. It is based on what effortlessly comes to mind. In contrast to standard assumptions that we perform complex calculations and consider all possible routes of action, humans reach for simple solutions and use mental shortcuts much of the time. Thus minor situational changes can have a large impact on behavior and, ultimately, on the achievement of development goals. Simplifying the choice environment can help people make choices and enact behaviors that benefit them.
2. *Thinking socially.* Humans are not autonomous thinkers or decision makers but deeply social animals. We have innate preferences for altruism, cooperation, and reciprocity, and we are strongly affected by the social norms and networks in our communities. We often want to meet others' expectations of us, and we act on the basis of shared identities. Recognizing the importance of social preferences and norms in decision making can help policy makers improve program efficacy and develop new tools for achieving development objectives.
3. *Thinking with mental models.* Individuals do not respond to objective experience but to mental

representations of experience constructed from culturally available mental models. People have access to multiple and often conflicting mental models, and which one they invoke to make a choice depends on the context. Human decision making, therefore, is powerfully shaped by both contextual cues and the past experiences of individuals and societies. Showing people new ways of thinking can expand the set of mental models they draw on and their capacity to aspire and can thus increase social welfare.

These three elements of the framework are of first-order importance for development policy, poverty alleviation, and the policy design process itself. These elements have two important implications:

- “Economic man” is a fiction, not a reality. Policies that assume that rational decision making will always prevail can go astray in many contexts and may miss opportunities for low-cost, high-efficacy interventions. Updating the standard assumptions about human decision making is essential to pushing forward the frontier of development policy making.
- The interplay of institutions and individuals is more complex than is often recognized; yet the potential for temporary interventions and changes in institutions to alter long-standing patterns is greater than has been recognized.

CHAPTER 1

Thinking automatically

Two systems of thinking

To make a judgment or decision, individuals simplify the problem. They construct a representation in their heads and then reach a judgment or decision based on that simplification. There is a broad consensus in psychology that to do this, people use two systems of thinking. Sometimes, they think in a way that is deliberative, reflective, and effortful—as when solving a difficult math problem or in trying to overcome an impulse in acts of self-control. This type of thinking is hard. It is cognitively taxing and can be exhausting. Our capacity to engage in it is limited. It is difficult to spend even a few minutes focusing attention in a concentrated manner. This Report refers to this way of thinking as thinking deliberately (the *deliberative system*).

We normally think of ourselves in terms of the deliberative system—the conscious reasoning self—yet automatic operations generate complex patterns of ideas that influence nearly all our judgments and decisions.

Most of the time, we use another mode of thinking, with relatively little interference from the deliberative system. When we detect anger in the image of a face or make sense of speech in a fraction of a second, our minds are operating in automatic mode. This mode

of thinking is effortless, fast, and largely outside voluntary control. The mental reserves for this kind of cognitive activity are vast. This Report refers to this mode as thinking automatically (the *automatic system*). The two systems are also called System 1 (automatic system) and System 2 (deliberative system) (Stanovich and West 2000; Kahneman 2003) (see table 1.1).

The psychologists Daniel Kahneman and Amos Tversky established that people tend to rely on the automatic system to make decisions. People evaluate alternatives quickly, based on what automatically comes to mind.¹ People rarely, if ever, consider all alternatives. Although often perfectly capable of more careful analysis, people are hard wired to use just a small part of the relevant information to reach conclusions. By observing mental processes under controlled experimental conditions, Kahneman and Tversky developed a new understanding of human action that helped lay the foundation for the field of *behavioral economics*—a subfield of economics that draws on the psychological, social, and cultural foundations of human decision making.

Their work dispelled a central cognitive illusion. We normally think of ourselves in terms of the deliberative system—the conscious reasoning self—yet, in fact, the automatic operations of thinking generate complex patterns of ideas that influence nearly all our judgments and decisions. In a recent book, Kahneman (2011) compares the deliberative system to a supporting character in a play who believes herself to be the hero.

The automatic and deliberative systems interact. The automatic system effortlessly generates impressions and feelings that are the main sources of the explicit beliefs and reflective choices of the deliberative system. In routine situations, we use the automatic system without much oversight from the deliberative

system, unless the deliberative system is provoked to check it.

To see how lightly the deliberative system regulates the automatic system, consider this problem: a bat and ball cost \$1.10. The bat costs \$1.00 more than the ball. How much does the ball cost? Most people answer “10 cents,” since \$1.10 can be easily broken into a sum \$1 and 10 cents. The automatic system provides a plausible response, based on what comes quickly to mind, before the deliberative system has time to intervene and regulate our judgment. The correct answer is 5 cents (since $\$0.05 + \$1.05 = \$1.10$).²

When individuals are under cognitive strain, it is even more difficult to activate the deliberative system. Poverty, time pressure, and financial stress all can cause cognitive strain (see chapter 4). Sugar cane farmers in India offer an example of how financial distress can deplete mental resources. The farmers typically receive their income once a year, at the time of harvest. Just before the harvest, 99 percent of the farmers have incurred loans. Just after the harvest, they have received most of the earnings for the season and only 13 percent of farmers are indebted. Their financial distress before the harvest takes a measurable toll on their cognitive resources. Before receiving their harvest income, farmers perform worse on a series of cognitive tests than when they take the same tests after receiving their earnings, a gap that cannot be explained by differences before and after harvest in nutrition, physical exhaustion, biological stress, or learning. The difference in scores is roughly equivalent to three-quarters of the cognitive deficit associated with losing an entire night's sleep (Mani and others 2013).

The idea that people have two systems of thinking is not new and has been anticipated in the work of many psychologists and philosophers over the centuries (Frankish and Evans 2009). However, research over the past four decades has vastly expanded our understanding of the implications for development and, more broadly, for economic policy. One central implication is the power of *framing*. The term *frame* applies to descriptions of decision problems at two levels (Kahneman and Tversky 2000, xiv):

- *Description and presentation.* The formulation to which decision makers are exposed is called a frame. A frame in this sense is the way choices are described and presented.
- *“Mental editing” and interpretation.* A frame is also the interpretation that decision makers construct for themselves, based on the way they mentally edit and interpret the information they receive. When situations are complex or ambiguous or entail miss-

ing information, default assumptions and other “mental models” that individuals bring to a problem influence what they pay attention to and how they interpret what they perceive. Framing in this sense is a part of decision making.

The first meaning of framing concerns what is done to the decision maker: for example, putting in bold letters that a payday loan costs \$15 for two weeks and leaving to the small print the fact that the annual interest rate is 400 percent. The second meaning of framing concerns what the decision maker does.

Figure 1.1 depicts an individual looking through a window frame. The frame provides only a very narrow view of an urban scene that leads the viewer to imagine it as a park. The figure captures a central feature of automatic thinking: what our attention is drawn to and what we focus on are not always the things most needed for good decision making.

Development practitioners are increasingly using the idea of dual-system thinking to address problems of poverty and development, as this *World Development Report* will discuss. Since people may be powerfully influenced by the way that options are described, simple changes in descriptions of options can sometimes change behavior. Policies that make it easier to reach the right decisions can sometimes boost welfare substantially and at low cost. This is especially important for individuals living in poverty, as chapter 4 will show. If policy can change which frame people use for a decision, it can in some cases change the decisions they make.

A second broad policy implication of our reliance on automatic thinking is the limited power of merely providing information. *Confirmation bias* is the tendency to automatically interpret information in ways that support prior beliefs (Dawson, Gilovich, and Regan 2002). Confirmation bias gives rise to biased

Table 1.1 People have two systems of thinking

Individuals have two systems of thinking—the automatic system and the deliberative system. The automatic system influences nearly all our judgments and decisions.

Automatic system	Deliberative system
Considers what automatically comes to mind (<i>narrow frame</i>)	Considers a broad set of relevant factors (<i>wide frame</i>)
Effortless	Effortful
Associative	Based on reasoning
Intuitive	Reflective

Sources: Kahneman 2003; Evans 2008.

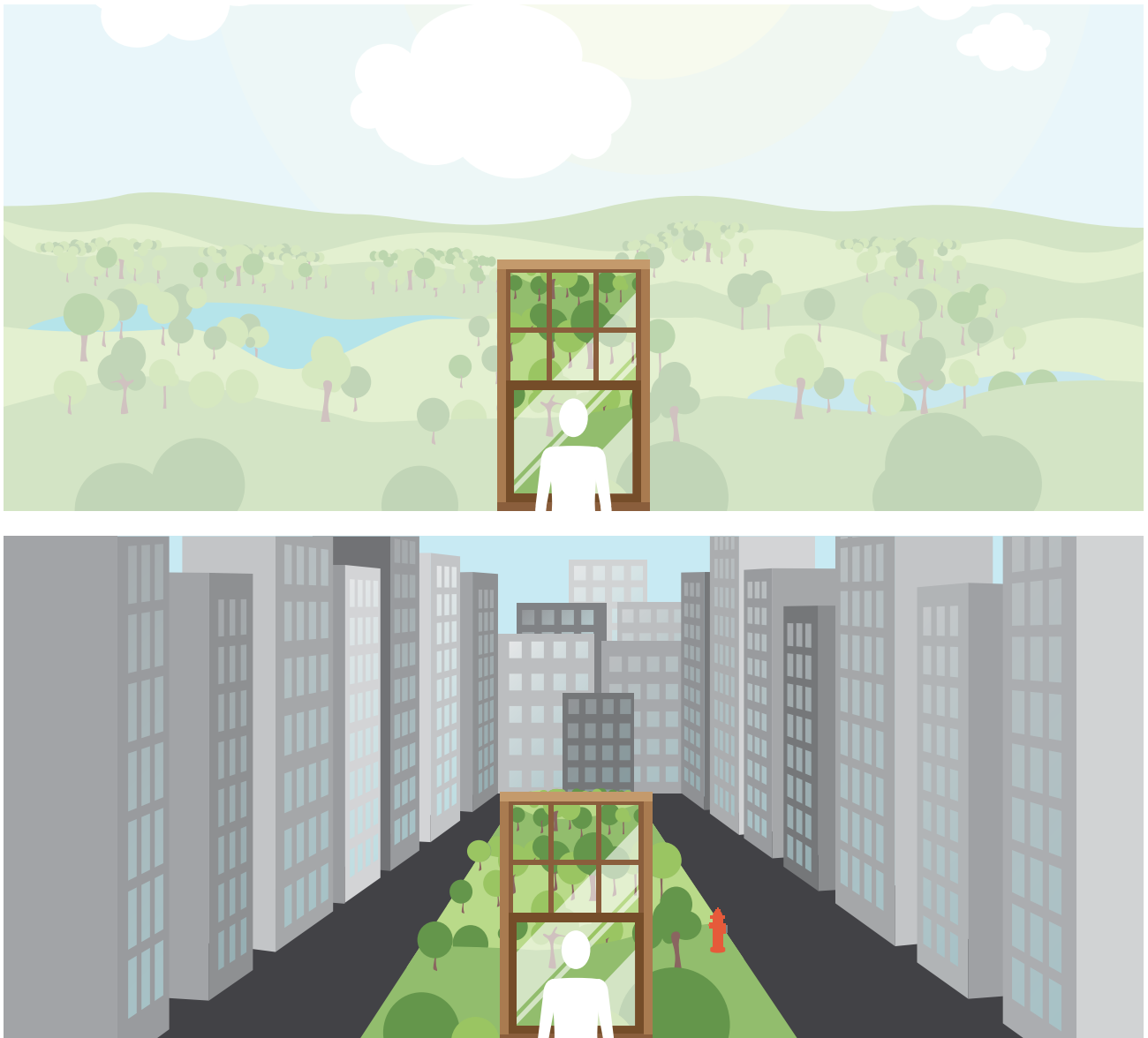
information search, as well. As novelist Jane Austen once wrote, “We each begin probably with a little bias and upon that bias build every circumstance in favor of it.”³ Confirmation bias contributes to overconfidence in personal beliefs. People may fail to recognize that they do not know what they claim to know, and they may fail to learn from new information (see chapter 10 for a discussion of how these biases affect development professionals and a survey experiment that explores possible confirmation bias among World Bank staff).

Persuasion and education must engage with the automatic system to overcome resistance to new points of view (see spotlight 2 on entertainment education). This is old news to political consultants and advertisers, and policy makers have also surely discovered it from their own experience.

This chapter offers a synthesis of the scientific evidence on the power of the automatic system to produce systematic behavioral biases. Thirty years ago, people might reasonably have viewed the findings of

Figure 1.1 Framing affects what we pay attention to and how we interpret it

To make most decisions and judgments, we use narrow framing and draw on default assumptions and associations, which can give us a misleading picture of the situation. Even seemingly irrelevant details of how a situation is presented can affect our perceptions, since we tend to jump to conclusions based on limited information.



behavioral economics as a few anomalies. “Sometimes, some people are loss averse,” the narrative might have gone, “but I don’t behave like that. And it certainly would be naïve to design policy based on this assumption.” But over the past few decades, evidence has mounted that automatic thinking cuts across wide swathes of human behavior to the point that it can no longer be ignored. The anomalies that behavioral economics is trying to explain are not minor and scattered. They are systematic regularities that can be of first-order importance for health, child development, productivity, resource allocation, and the process of policy design itself.

The analytical foundations of public policy have traditionally come from standard economic theory. In standard economic theory, an important behavioral assumption is that people use information in an unbiased way and perform careful calculations. The calculations allow them to make choices based on an unbiased consideration of all possible outcomes of alternative choices that might be made. After people make a choice and observe the outcome, they use the information in an unbiased way to make the next decision, and so on. Figure 1.2, panel a, represents this idealized process.

But confronted with the mounting empirical evidence on large and costly errors that people often make in critical choices—such as poor financial deci-

sions and the failure to adhere to health regimens, take health precautions, and adopt income-increasing techniques after receiving new information—economists have come to recognize the importance of considering the possible impacts on behavior of our dual system of thinking, automatic and deliberative, in the design and testing of policy. As shown in figure 1.2, panel b, a more behavioral model of decision making entails several departures from the standard economic model, of which two are among the most relevant for policy making:

- People may process only the information that is most *salient* to them, which may lead them to miss key information and overlook critical consequences.
- There may be a mismatch between intentions and actions (the *intention-action divide*). Even if people understand the full consequences of their actions, they may make decisions that favor the present at the expense of the future, so that they consistently fail to carry out plans that match their goals and fulfill their interests.

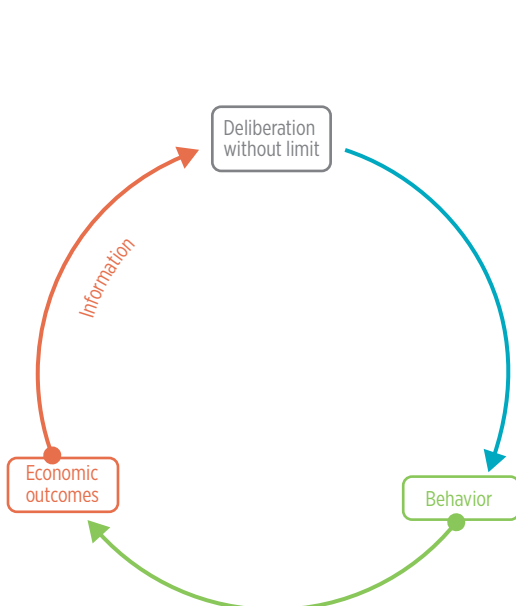
Biases in assessing information

The world is awash with information, most of which is irrelevant to any particular decision. When deciding what to eat for lunch, we must consider how much

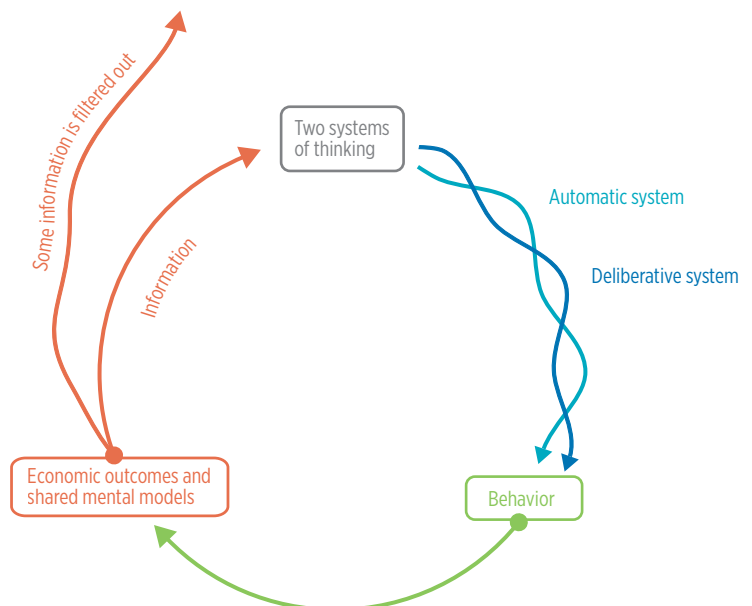
Figure 1.2 A more behavioral model of decision making expands the standard economic model

In the standard economic model (panel a), decision makers use information in an unbiased way and deliberate carefully about all choices and possible consequences. In a more behavioral model (panel b), decision makers may overlook some relevant information because they think automatically as well as deliberatively.

a. Standard economic model



b. Model of the psychological and social actor



money we have. There are, however, a myriad of things we are unlikely to find useful to consider, such as the color of our shirt. When people think about what to get for lunch, they do not first consider the color of their shirt and then decide it is irrelevant. Shirt color never enters their deliberative system because their automatic system has already decided that it is not important. And so the individual uses no cognitive energy to think about it.

The automatic system is relying on a framework of understanding—a frame, in short—to organize experience and distinguish between the things one needs to consider and the things one can ignore. Most frames are adaptive. People could not accomplish anything, or even survive, if they did not have some type of frame in place and use some mental shortcuts. A radically simplified set of frames and mental shortcuts can perform admirably well in many cases (Todd and Gigerenzer 2000). However, sometimes frames lead people to ignore what is necessary for optimal decision making.

Seemingly minor and low-cost policy changes may have a large impact on the achievement of development goals and the reduction of poverty.

Even if one has the tools of the deliberative system with which to assess evidence carefully and accurately, the automatic system may bias the information that the deliberative system is using.

Shirt color is not usually a relevant factor. However on occasion, it might be: for instance, a white shirt that we did not want to stain. The next sections examine the biases in judgment that result when relevant factors are overlooked. Chapters 2 and 3 will link this problem to social change, a fundamental aspect of development.

Framing

When making decisions, people may give greater weight than they should to information that has limited, if any, relevance. Consider the case of Mr. Sanders, who ran a stop sign while driving and collided with a garbage truck. He was accused of being drunk while driving and was being tried. Two groups of students were asked to judge Mr. Sanders' guilt or innocence in a mock jury. Except for the description of Mr. Sanders' behavior at

a party just before the accident, the two groups were given the same testimony. One group heard the first line, below, and the other heard the second line:

Version 1: On his way out the door, Sanders staggered against a serving table, knocking a bowl to the floor.

Version 2: On his way out the door, Sanders staggered against a serving table, knocking a bowl of guacamole dip to the floor and splattering guacamole on the white shag carpet.

Did the two groups of students reach a different judgment? Should they have? They did, but they should not have, since the information about what was in the bowl was arguably irrelevant to Mr. Sanders' possible drunkenness.⁴ But those who heard the additional detail about the guacamole were more likely to believe that he was guilty (Reyes, Thompson, and Bower 1980).

A natural interpretation is that the information about the guacamole made the incident more salient. A piece of information is *salient* when it stands out against other pieces of information. Even though students were actively thinking about whether Mr. Sanders was drunk and attempting to weigh the evidence objectively, their automatic system may have been "telling" some students that this piece of information was decisive.⁵

Given the role of salience, it will come as no surprise that the way in which facts are presented has a great influence on whether they are absorbed and how judgments are reached. What matters is not only the entire set of available information and how each piece might be logically weighed, but also the sequencing of information and the psychological salience of different types of information. The term for the ease with which mental content comes to mind is *accessibility* (Kahneman 2003). Automatic thinking is shaped by the accessibility of different features of the situation. Seemingly unimportant features of the context of decision making—how many choices one must make sense of, whether it resonates with us emotionally, whether it activates events in recent memory—can all affect accessibility and therefore judgment (and behavior).

Anchoring

An *anchor* is an aspect of the environment that has no direct relevance to a decision but that nonetheless affects judgments. Anchoring is an extreme example of automatic thinking. For example, sometimes the last thing that comes to mind has a disproportionate influence on decision making. Sometimes the anchor will be obvious and appropriate, as in the case of comparison

shopping. But sometimes the anchor will be inappropriate; the automatic system is grabbing onto anything it can to help it in its interpretation of a choice context. Even subliminal anchors can affect judgment.

Consider an experimental study of experts in the field of law. Experienced jurists participated in a study of sentencing decisions (English, Mussweiler, and Strack 2006). All the jurists, who were either judges or experienced lawyers, read a description of a criminal case that could end in a jail sentence of up to one year. They were asked what sentence they would hand down, given the facts of the case. Some were told that a newspaper article had speculated that the sentence would be three months, while others were told that an article had speculated that the sentence would be nine months. Those jurists given the larger anchor gave significantly longer sentences than those given the smaller anchor. In a companion study, the anchor came not from a newspaper report but from the roll of a pair of dice, rigged to come out three or nine when they were rolled in front of the jurist. Again, the high anchor produced longer sentences than the low one. This finding has been replicated in dozens of experiments.

You can confirm the importance of anchoring effects by a simple experiment. Ask people to compute, within five seconds, the product of the numbers one through eight, either as $1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$ or reversed as $8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$. Because your respondents will not have enough time to calculate the full set of products, they will have to estimate the answer. You will almost certainly find that when the sequence starts with small numbers, individuals will estimate the product to be smaller than when the sequence starts with big numbers. This experiment has been done rigorously (Montier 2007). When the sequence started with the small numbers, the median estimate was 512. When the sequence started with the large numbers, the median estimate was 2,250. (The correct answer is 40,320.) People jumped to conclusions based on a very partial view of the problem.

The power of anchors has implications for survey design and analysis. A prior question, or the inclusion of some specific candidate answers in a multiple-choice question, can influence what information an individual retrieves: this is the automatic system at work. As an illustration, consider a survey that included these two questions about personal happiness asked in two different orders (Schwartz, Strack, and Mai 1991):

- A. "How happy are you with life in general?"
- B. "How often do you normally go out on a date?"

When the dating question came first, the answers to the questions were highly correlated, but when it was asked second, the responses were uncorrelated. Evidently, the first question was an anchor for the response to the second question. The anchor automatically evoked thoughts that affected individuals' judgment about whether or not dating affected happiness.

To a surprising degree, the quality of decisions that an individual makes in life (like the quality of answers to subjective questions on surveys) depends on the anchors that happen to be present. Policy makers increasingly take heed of this fact. A change in context that makes one comparison (such as one number, one fact, one experience, one competitor, or one role model) particularly salient can change what people choose and whether a government program is taken up. The power of framing and anchoring is illustrated by consumers' decisions in the credit market, discussed next.

Application: Consumer decisions in credit markets

People in financial distress may resort to borrowing at extremely high interest rates. This practice has been a long-standing concern in fighting poverty. Appropriate policy remedies based on standard models would assume that choices are careful and consistent and therefore would focus on reducing the risks that the poor face (and hence the risk of financial distress) and on improving the terms on which the poor can borrow (and hence the opportunities to escape distress). But the implication of the findings from psychology and behavioral economics is that there are additional targets of policy; that is, policy makers can try to improve the quality of the decisions that people make that lead to distress or that perpetuate distress. Recent field trials among low-income populations in the United States and Mexico demonstrate the potential for very simple policies to improve financial decision making.

A field trial on payday borrowing

In many countries, some of the poorest individuals resort to payday borrowing, for which they incur extremely high interest costs. Payday loans (also called payday advances) are small, short-term, unsecured loans that anyone with a payroll record can normally obtain. Many payday borrowers have no access to alternative sources of funds—this is the last resort. For those individuals, the choice is thus not from whom to borrow, but only whether to borrow and, if so, how much. A field trial of payday borrowing in the United States tried to remedy the factors that could potentially lead people to borrow more than they would actually want

to if they assessed the full costs (Bertrand and Morse 2011). The field trial randomly divided borrowers into groups. A control group received the standard payday loan company envelope with the cash and the paperwork for their loan (figure 1.3, panel a). Another group received a cash envelope that showed, in addition, how the dollar fees accumulate when a loan is outstanding for three months, compared to the equivalent fees for borrowing the same amount on a credit card (figure 1.3, panel b). The envelopes provided some *anchoring* to help borrowers evaluate the cost of payday loans.

The experiment incorporated behavioral principles about possible cognitive biases and ways to debias consumers. Whereas the payday loan shops highlight the small dollar cost of the transaction (for example, \$15 for a two-week loan of \$100), individuals may be misled by the apparently low costs and fail to add up in their own minds the costs over time and thus recognize the high implicit interest rate of the loans.

The results of the field experiment suggest that borrowers were indeed biased: they were applying too narrow a decision frame. Compared to the control group, individuals who received the envelope with the “dollar anchor” were 11 percent less likely to borrow from the payday lenders in the four months that followed the intervention.

The findings illustrate the “peanuts effect”: people do not consider the consequences of a small dollar transaction because they view small amounts of money as “peanuts”; as a result, they incur high costs or forgo lucrative opportunities (Prelec and Loewenstein 1991). Fruit vendors in Chennai, India, provide a particularly vivid example (Banerjee and Duflo 2011). Each day, the vendors buy fruit on credit to sell during the day. They borrow about 1,000 rupees (the equivalent of \$45 in purchasing parity) each morning at the rate of almost 5 percent per day and pay back the funds with interest at the end of the day. By forgoing two cups of tea each day, they could save enough after 90 days to avoid having to borrow and would thus increase their incomes by 40 rupees a day, equivalent to about half a day’s wages. But they do not do that. “The point is that these vendors are sitting under what appears to be as close to a money tree as we are likely to find anywhere,” as Banerjee and Duflo (2011, 191) put it. “Why don’t they shake it a bit more?” The answer is clear, in behavioral terms. Thinking as they always do (automatically) rather than deliberately, the vendors fail to go through the exercise of adding up the small fees incurred over time to make the dollar costs salient enough to warrant consideration. This example illustrates why getting people to think more broadly

about their decisions can sometimes change their behavior. If the field test on payday lending had been an actual policy change in the way information was presented, then individuals would have been exposed to the more informative envelopes every time they visited a payday store instead of just once, and the effects probably would have been even stronger. And slight alterations in the envelopes might have had larger effects. Relative to other policy alternatives—such as subsidies to loans and measures to reduce risk—the intervention has a low cost. Thus it is reasonable to consider such interventions as complements to more standard policies in the credit market to help the poor.

Simplification of loan products

Consider next the plight of consumers who have limited experience in a market in which they must choose a product. An experiment in the credit market in Mexico City sheds light on the difficulties consumers have (Giné, Martinez Cuellar, and Mazer 2014). Low-income individuals from Mexico City were invited to choose the best one-year, 10,000 peso (\$800) loan product from a randomized list of loan products representative of the local credit market. Individuals could earn rewards if they identified the lowest-cost product. Only 39 percent of people could identify the lowest-cost product when presented with the actual brochures designed by the banks for their customers (figure 1.4, panel a). But a much larger fraction (68 percent) could identify the lowest-cost credit product from a user-friendly summary sheet designed by the Consumer Financial Credit Bureau of Mexico (figure 1.4, panel b).

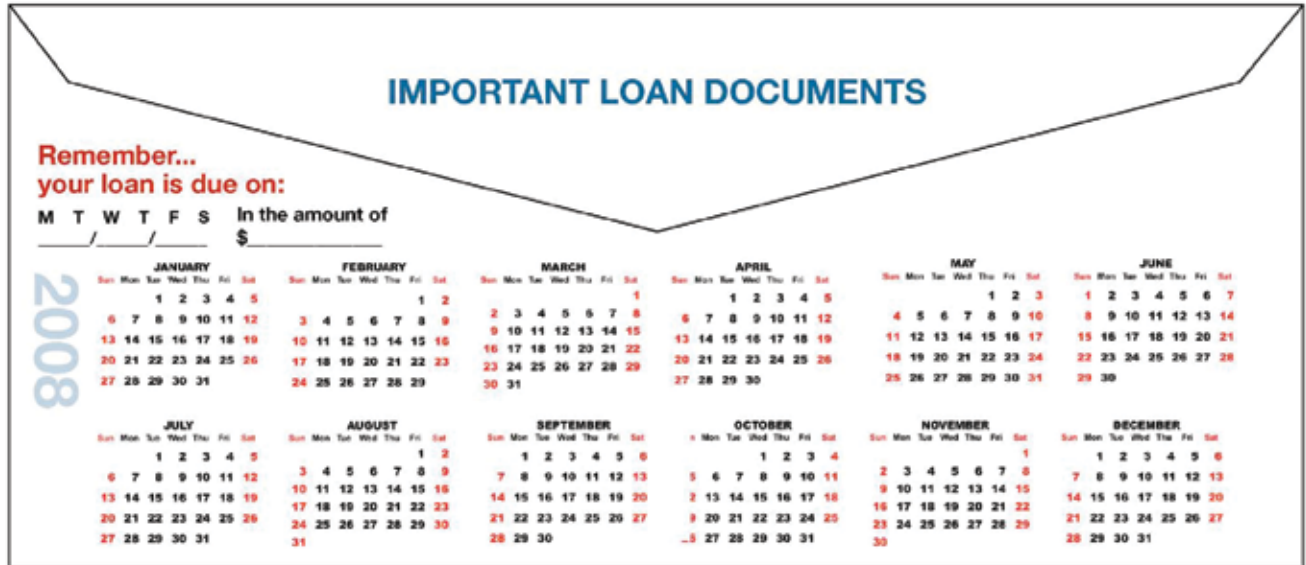
Some participants in the experiment received personalized text messages conveying financial information. No text message intervention significantly affected the ability to identify the lowest-cost loan product. In the experiment, only the way that information was disclosed on the loan products affected decision making.

Experimentation on finding the best ways to make the nature of their opportunities salient to individuals is an active area of research. Studies include how best to disseminate information about national employment programs in India (Dutta and others 2014); how best to inform young people and their parents about the return to higher education (Jensen 2010; Dinkelmann and Martinez 2014); how best to make people aware of the risks of AIDS (Dupas 2011); and how best to increase awareness and use of contraception (Munshi and Myaux 2006). Chapters in part 2 discuss many applications.

Figure 1.3 Reframing decisions can improve welfare: The case of payday borrowing

a. The standard envelope

A payday borrower receives his cash in an envelope. The standard envelope shows only a calendar and the due date of the loan.



b. The envelope comparing the costs of the payday loan and credit card borrowing

In a field experiment, randomly chosen borrowers received envelopes that showed how the dollar fees accumulate when a payday loan is outstanding for three months, compared to the fees to borrow the same amount with a credit card.

How much it will cost in fees or interest if you borrow \$300			
PAYDAY LENDER (assuming two-week fee is \$15 per \$100 loan) If you repay in:		CREDIT CARD (assuming a 20% APR) If you repay in:	
2 weeks	\$45	2 weeks	\$2.50
1 month	\$90	1 month	\$5
2 months	\$180	2 months	\$10
3 months	\$270	3 months	\$15

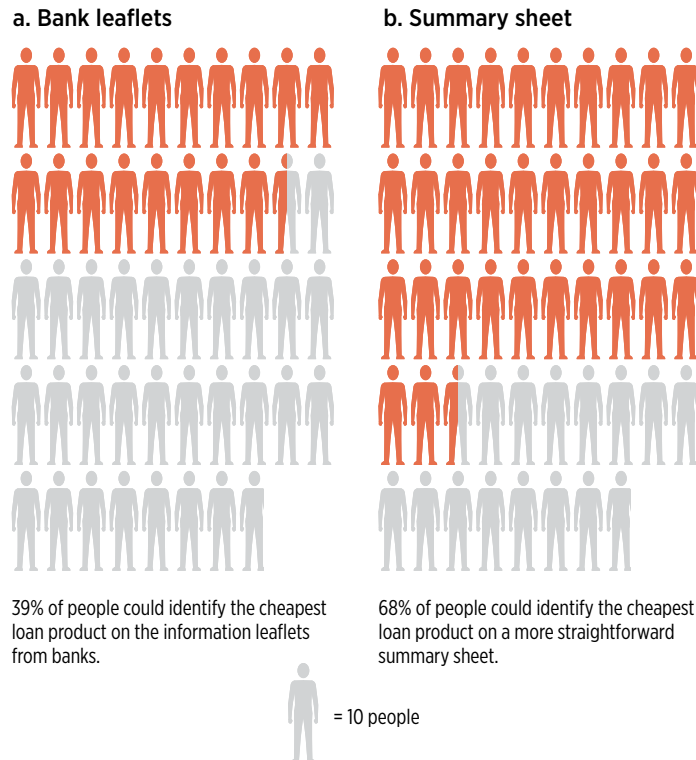
Borrowers who received the envelope with the costs of the loans expressed in dollar amounts were 11 percent less likely to borrow in the next four months compared to the group that received the standard envelope. Payday borrowing decreased when consumers could think more broadly about the true costs of the loan.

Source: Bertrand and Morse 2011.

Note: APR = annual percentage rate.

Figure 1.4 Clarifying a form can help borrowers find a better loan product

Low-income subjects from Mexico City were invited to classrooms to choose the cheapest one-year, \$800 (10,000 peso) loan product from a set of five products representative of actual credit products offered by banks in Mexico City. They could earn rewards by getting the right answer. When using the banks' descriptions of their products, only 39 percent of the people could identify the cheapest credit product. When using the more straightforward summary sheet, 68 percent could identify the cheapest credit.



Source: Giné, Martínez Cuellar, and Mazer 2014.

Biases in assessing value

Even when individuals make unbiased assessments of information, they may make biased assessments of value. When people think automatically, the way in which their choices are presented and the context in which they make decisions may systematically influence their preferences. Factors that would be unimportant under the standard assumption that people have unlimited capacities to process information, but that in fact can be quite important, include the following:

- The *default option*, to which decisions would revert if no other decision was made or no other action taken
- The labels on options
- The number of options
- The sequence in which the options are presented

- The connections, if any, that are drawn between the current decision problem and decisions that the individual made earlier
- The gap between the period when a decision maker forms an intention and the period when he has funds available to pay for it
- The salience of a social identity
- The salience of relevant norms.⁶

Well-thought-out policy can improve development outcomes by changing the context of decision making, especially in situations in which even people trained in deliberative thinking might struggle. Several examples related to default options—which are the choices that are selected automatically unless an alternative is specified—are considered next.

Default options and other framing effects

Many countries all over the world, both rich and poor, seek to remove the impediments students face in obtaining postsecondary education. Policies based on the standard model would focus on lowering the costs and increasing the information about opportunities. But policies based on the psychological and social actor would widen the focus to include framing, broadly understood to include the small details of the consumer's choice set. A recent study in the United States uncovered the enormous sensitivity of students' college application decisions to a small change in the cost of sending test scores to colleges (Pallais, forthcoming). In 1998, when a popular university readiness examination (the ACT) increased from three to four the number of free score reports that test takers could send to colleges, students sent substantially more reports. Figure 1.5 shows that most high school students graduating before 1998 sent exactly three reports and that most high school students graduating after 1998 sent exactly four reports.⁷ The change in behavior was the same for low- and high-income students, which suggests that the students' choices were not based on a deliberative decision that weighed benefits and costs, but instead on unthinking acceptance of a default option: three reports were free, and each additional report would have cost another \$6.

This is another money tree. While students did not need to limit the number of schools to which they applied to the number of free score reports, most students—both low income and high income—did. As a result, the low-income students were saving \$6 but forgoing \$1,700 in lifetime income for each dollar they saved, on average.

The vast influence of default options on decisions has been widely replicated in many domains, including

saving and insurance decisions with massive financial consequences.⁸ Why are these findings so surprising and important? It is not that money trees are everywhere, but the findings give us valuable information on decision making and on the potential for designing policies that improve welfare. If individuals carefully compared costs and benefits, as standard policy analysis assumes, a switch from three free options to four free options should not affect decisions as long as the costs of doing so are small (which, at \$6, they were in the United States). Defaults can influence choices in a number of ways. Until the moment an individual makes a decision, preferences often are not clearly specified. Since constructing a preference requires effort but accepting the default choice is effortless, people may choose the default. Decision makers might also construe the default as a recommendation. A default option is just one example of a frame, broadly defined as a way of structuring choices, that may affect an individual's behavior by influencing what is salient to him or her and the cognitive costs that a decision entails.

Loss aversion

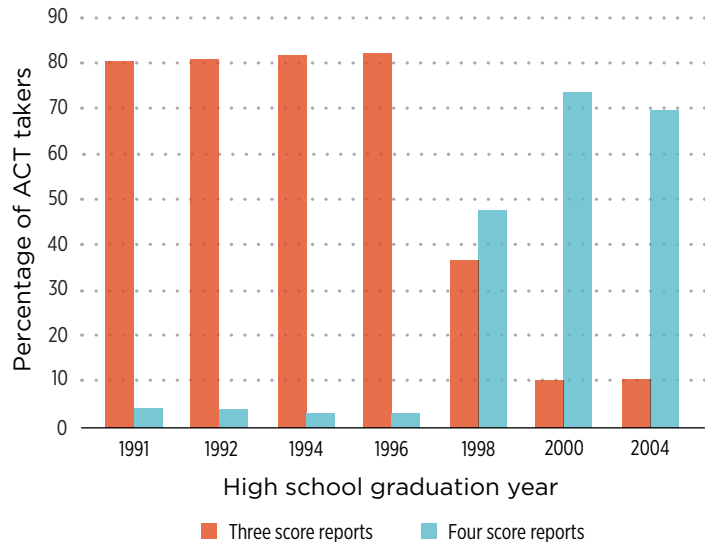
In general, people make decisions based on a consideration of changes in values from a *reference point*, rather than on the basis of absolute values. The reference point is the benchmark. When people evaluate whether or not they like something, they tend to implicitly ask themselves, “Compared to what?” It turns out that when thinking about something as a loss, people generally count the difference more than they would count it if they thought about the same thing as a gain. They feel the losses more acutely than they would feel the gains of a similar size (*loss aversion*). This psychological phenomenon is widespread and helps explain a large set of phenomena in financial markets (Kahneman and Tversky 1979; Shiller 2000).

Reference points are behind what economists call “money illusion.” Many people prefer a 6 percent income raise when there is 4 percent inflation to a 3 percent raise with no inflation (Shafir, Diamond, and Tversky 1997). They prefer the former option, which is expressed in high numerical terms, even though the real dollar value of the latter option is higher. Reference points can mislead when they are established in terms of nominal rather than real values.

By setting goals, individuals identify a particular value as a reference point against which to measure performance. If individuals do not meet the goal, they are likely to experience the disappointment as a loss (Suvorov and van de Ven 2008). Loss aversion may thus make goals a credible and effective instrument for self-regulation.

Figure 1.5 A small change in the college application process had a huge impact on college attendance

When the number of free test score reports that a high school student could send to colleges increased from three to four in the United States in 1998, low-income students applied for and attended more selective colleges, which increased their projected average lifetime income by roughly \$10,000, far outweighing the \$6 cost of sending an additional score report.



Source: Pallais, forthcoming.

Loss aversion can also be used to influence the behavior of others. In Chicago, for instance, teachers were paid a bonus at the beginning of the school year, in advance, but were told they would lose it if students did not meet a threshold level of achievement by the end of the school year (Fryer and others 2012). These teachers expended a substantially greater effort than did teachers who were in all other respects similar but who could receive the bonus only at the end of the year. The potential loss of the bonus was more salient than the potential gain of the bonus. The change in frame may also have had a powerful effect by changing the meaning of achieving high results. A gain may have been perceived as a reward for superior performance, whereas a loss may have been perceived as a punishment for failing to meet a certain performance norm. Policies that increase aspirations may affect behavior in part by changing the benchmark for what is considered a loss. Chapter 3 will discuss early work that suggests that interventions have raised the aspirations and accordingly changed behaviors among teenage girls in rural India (Beaman and others 2009) and households in rural Ethiopia (Bernard and others 2014). Chapter 2 will discuss an intervention regarding aspirations for sex workers in India (Ghosal and others 2013).

Factoring in psychological aversion to losses with reference to the status quo can be important in understanding the decisions of policy makers, too. Trade policy may offer an example. Industries suffering losses are more likely than others to receive trade protection (Trefler 1993; Baron and Kemp 2004). Intuitively, the prospect of losing tens of thousands of jobs in old sectors may loom much larger than the prospect of creating many more jobs under free-market policies in new sectors (Freund and Ozden 2008). According to some economists, the reason that political reform often occurs during crises is that when large numbers of people have experienced losses, they are more willing to gamble to recover what they have lost; that is, they become risk seeking (Weyland 1996).

Choice architecture

A *choice architect* is someone who organizes the context in which people make decisions. Many people are choice architects, most without realizing it. Think of doctors describing the available treatments to patients, matchmakers describing marriage choices, or moneylenders describing loan products. *Choice architecture* influences decision making by simplifying the presentation of options, by automatically evoking particular associations, or by making one option more salient or easier to choose than the alternatives (Thaler and Sunstein 2008).

The policy mechanisms discussed in this chapter include framing, anchoring, simplification, reminders, and commitment devices. Policy makers can employ these mechanisms to help people make better decisions, which in turn can reduce poverty.

When individuals are thinking automatically, a mere “nudge” may change their behavior. A *nudge* is a policy that achieves behavior change without actually changing the set of choices. It does not forbid, penalize, or reward any particular choices. Instead, it points people toward a particular choice by changing the default option, the description, the anchor, or the reference point. To encourage people to choose a more healthy

diet, for example, according to Thaler and Sunstein, “Putting the fruit at eye level counts as a nudge. Banning junk food does not” (2008, 6). Putting the fruit at eye level is a change in framing.

A component of choice architecture is simplicity. Too many options or too much complexity may lead individuals to avoid thinking through a decision, to postpone indefinitely making an active decision, or to make error-ridden decisions. Consider an example in voting in which individuals may have to make choices in scenarios for which they have limited experience and little or no education or training to prepare them.

Application: Simplification at the ballot box in Brazil

A common policy recommendation to promote development is to improve public services by increasing the political influence of the neediest citizens. But how can it be done? The *World Development Report 2004: Making Services Work for Poor People* cites the fact that “the poor have little clout with politicians” as a cause of underprovision of public services. The report devotes a whole chapter to increasing citizen influence on politicians by strengthening “elections, informed voting, and other traditional voice mechanisms” (World Bank 2004, 78). After the report was written, a simple way to achieve this objective occurred in Brazil.

Federal law in Brazil makes voting compulsory for all citizens aged 18–70.⁹ Although turnout was thus very high, over 30 percent of votes were blank or error ridden and were therefore discarded in 1994 (Fujiwara 2010, figure 2). Some 42 percent of adult Brazilians had not completed fourth grade. For them, the demands of voting by writing down the names of the candidates on paper ballots were heavy. Beginning in 1998, Brazil introduced electronic voting technology (see figure 1.6). Using the new technology, a voter saw a photo of the candidate he selected. The technology provided step-by-step directions that “walked” voters through the process of voting for candidates in the many different races and gave them an error message if they incorrectly marked a ballot. The new technology reduced the number of error-ridden and undercounted votes among the less educated. The intervention effectively enfranchised 11 percent of citizens, mainly the less educated. After the change, the share of valid votes increased to more than 90 percent of total votes. With more votes of the poor counted, more candidates from pro-poor parties have been elected to state legislatures.

An evaluation of this policy change identifies these effects by using the fact that when electronic voting technology was introduced in 1998, only municipalities

Figure 1.6 Simplifying voting procedures in Brazil is having positive welfare effects on the poor across generations

When Brazil simplified its voting procedures, more poor, illiterate, and semilliterate voters could cast proper ballots. The increase in the clout of the poor shifted state spending toward public health care. As a result, the number of low-birth-weight babies fell, paving the way for better adult health.

Until 1998, Brazilian elections used only paper ballots.



But only about 60% of voters had completed fourth grade. Less than 70% of the votes were correctly filled out. The rest had to be discarded.



Beginning in 1998, Brazil began to shift to electronic voting, where individuals didn't need to write anything.

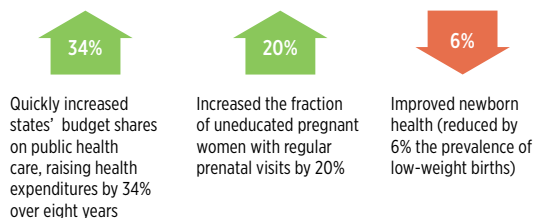
To vote for a candidate, an individual typed the candidate's ID number into a simple keypad, which called up the candidate's photo. The voter confirmed his choice by pressing the green button, or canceled a mistake by pressing the orange button.



The reduction in error-ridden ballots meant the de facto enfranchisement of 11% of the electorate.



With more votes of the poor counted, more candidates from pro-poor parties were elected in state legislatures, which:



Source: Fujiwara 2010.

with more than a threshold level of voters used the new technology because of the limited supply of devices, while the rest used paper ballots (Fujiwara 2010). Thus the study can compare outcomes for municipalities just above and just below the threshold to assess the effect of the introduction of electronic voting.

One of the things that legislators could quickly affect in Brazil is funding for health care. Because of the shift in the political strength of the parties on the Left, state spending on public health care increased by 34 percent over eight years. Public health care is free in Brazil. The shift in the funding, for example, enabled 20 percent more uneducated pregnant women to make regular prenatal visits and improved newborn health (reducing the prevalence of low-weight births by 6 percent). This is a major development success, since newborn health, controlling for other factors, predicts lifetime health, education, and income.

These findings suggest that too little attention has been paid to the unrealistic demands on voters with little education to read instructions and fill out paper ballots at the voting booth. The head designer of Brazil's electronic voting technology described the new system's reduction in error-ridden votes as "a surprise" (Fujiwara 2010, 6). This design change in balloting was a simple policy that accomplished something quite difficult—a shift in the political clout of the neediest citizens and a shift in the allocation of public spending toward health services for the poor.

Overcoming intention-action divides

This chapter concludes with one additional way in which human behavior systematically departs from that assumed in the standard economic model: individuals have bounded willpower. The deliberative system can restrain the impulses of the automatic system, but as the chapter has repeatedly emphasized, the deliberative system has limited capacity. Consider the case of HIV/AIDS. A major cause of treatment failure all over the world is incomplete adherence to treatment regimens. In many cases, patients will receive pills from a clinic each month. If taken daily, the pills will postpone the worst symptoms of the disease for many years. Individuals who understand this and intend to take the pills may nonetheless find it hard to carry out their intention. The press of demands on them—caring for their children and earning a living—impairs their ability to remember to take the pills two times each day.

This is one of many instances of a divide between intentions and actions. Underlying many intention-action divides is *present bias*, an overweighting of the

present relative to the future that results in inconsistencies in choices over time. Achieving goals often requires incurring a cost in the present for a payoff in the future. Since the present is more salient than the future, people tend to overweight the costs relative to the benefit. The tendency increases the farther away the deadline lies (see, for example, Shu and Gneezy 2010). Later, individuals feel regret.

Policies that create reminders or remove small impediments in such areas as savings, adherence to health regimens, and voting in elections have had successes in narrowing intention-action divides. To improve adherence to HIV/AIDS drug regimens, a small-scale study tested the effect of reminders to take the antiretroviral medicine (Pop-Eleches and others 2011). Patients in Kenya were randomly divided into three groups. No reminders were given to the first group, weekly reminders were given to the second group, and daily reminders were given to the third group. The reminders were made through a low-cost messaging system on cell phones dispensed by the experimenters. The results were promising. Individuals who received a weekly reminder (through a low-cost short messaging service, often called SMS) increased adherence to the drug regimen by 13 percentage points, although a daily reminder had virtually no effect on adherence.¹⁰ (Adherence was counted as positive if individuals took their drugs at least 90 percent of the days.) The findings suggest that despite SMS outages, accidental phone loss, and a dispersed rural population, the weekly intervention was effective at a very low marginal cost.

In Colombia, the government uses a conditional cash transfer (CCT) program under which families of students are paid every two months for attendance at school at least 80 percent of the time. Yet there is still a large drop in school enrollment in the higher grades of secondary school and a low rate of matriculation at tertiary institutions. Then a simple variation of the CCT was implemented that distributed two-thirds of the “good attendance” funds on the same bimonthly basis but distributed the remaining funds for all the months in a lump sum upon high school graduation. Students could receive the payment sooner by matriculating at an institution of higher education. The policy began to work much better. It increased matriculation by 49 percentage points (Barrera-Osorio and others 2011).

Commitment devices are an additional promising area of intervention to address present bias. They combine an awareness of the intention-action divide with an understanding of loss aversion. *Commitment devices* are strategies whereby people agree to have a penalty imposed on them (that is, they agree to incur a loss)

if they do not reach a particular goal. People who are aware of their own tendency to procrastinate may find commitment devices attractive. Commitment devices helped people save money in a field experiment in the Philippines (Ashraf, Karlan, and Yin 2006) and helped people quit smoking in another field experiment in that country (Giné, Karlan, and Zinman 2010).

Conclusion

We have two systems of thinking: the automatic system and the deliberative system. When making decisions, we cannot manage without the automatic system, and it can produce remarkably well-adapted choices at a trivial cost of effort in decision making. The automatic system draws heavily on default assumptions and interpretive frames. It is very sensitive to what is salient and what associations effortlessly come to mind.

This chapter has demonstrated ways in which development practitioners might make the world easier to navigate for people who rely primarily on the automatic system—that is, for everyone. Since every choice set is presented in one way or another, making the crucial aspects of the choice salient and making it cognitively less costly to arrive at the right decision (such as choosing the lowest-cost loan product, following a medical regimen, or investing for retirement) can help people make better decisions.

The behavioral perspective on decision making suggests that seemingly minor and low-cost policy changes may have a large impact on the achievement of development goals and the reduction of poverty. The policy mechanisms discussed in this chapter include framing, anchoring, simplification, reminders, and commitment devices. Policy makers can employ these mechanisms to help people make better decisions, which in turn can reduce poverty.

Notes

1. Surveys are Kahneman (2003, 2011). A collection of pathbreaking findings is Slovic (1987). Popular accounts are Ariely (2008) and Vedantam (2010).
2. Daniel Kahneman (2003) describes this example in his Nobel Lecture, citing personal communication with Shane Frederick.
3. Cited by Michael Suk-Young Chwe (2014).
4. It may not have been completely irrelevant. Knowing that guacamole was available at the party could affect beliefs about how much he drank and how strongly the liquor affected him.
5. The finding from this experiment accords with a theme in literary criticism, in which “irrelevant” detail adds to believability. Pierre in *War and Peace*

notes how a man just before he dies adjusts his blindfold because it is too tight; Orwell notes how a condemned man swerves to avoid a puddle (Wood 2008).

6. A review is Schwartz (2013).
7. Those graduating in 1998 could send three score reports for free if they took the test as 11th graders and four reports for free if they took the test as 12th graders.
8. See Johnson and others (1993); Madrian and Shea (2001); Choi, Hardigree, and Thistle (2002); Johnson and Goldstein (2003); Thaler and Sunstein (2008).
9. A failure to register or vote makes a citizen ineligible to receive several public services until a fine is paid.
10. The reminders varied in content. Tailoring the content and implementation of a policy to overcome psychological resistance or cognitive biases requires experimentation. This is a theme throughout the Report. To take another example, a study of safe-sex programs in Uganda and Botswana suggests that interventions actually can be more effective when they establish a collective narrative and a shared fate than when they appeal only to self-interest (Swidler 2009). The success of different messages can vary across groups, perhaps due to different interpretive frames, which reinforces the need for piloting framing interventions, an idea developed in chapter 11.

References

- Ariely, Dan. 2008. *Predictably Irrational: The Hidden Forces That Shape Our Decisions*. New York: HarperCollins.
- Ashraf, Nava, Dean Karlan, and Wesley Yin. 2006. "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines." *Quarterly Journal of Economics* 121 (2): 635–72.
- Banerjee, Abhijit, and Esther Duflo. 2011. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. New York: PublicAffairs.
- Baron, Jonathan, and Simon Kemp. 2004. "Support for Trade Restrictions, Attitudes, and Understanding of Comparative Advantage." *Journal of Economic Psychology* 25 (5): 565–80.
- Barrera-Orsorio, Felipe, Marianne Bertrand, Leigh L. Linden, and Francisco Perez-Calle. 2011. "Improving the Design of Conditional Transfer Programs: Evidence from a Randomized Education Experiment in Colombia." *American Economic Journal: Applied Economics* 3 (2): 167–95.
- Beaman, Lori, Raghavendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?" *Quarterly Journal of Economics* 124 (4): 1497–1540.
- Bernard, Tanguy, Stefan Dercon, Kate Orkin, and Alemayehu Seyoum Taffesse. 2014. "The Future in Mind: Aspirations and Forward-Looking Behaviour in Rural Ethiopia." Working Paper, Centre for the Study of African Economies, University of Oxford, Oxford, U.K.
- Bertrand, Marianne, and Adair Morse. 2011. "Information Disclosure, Cognitive Biases, and Payday Borrowing." *Journal of Finance* 66 (6): 1865–93.
- Bertrand, Marianne, and Sendhil Mullainathan. 2001. "Do People Mean What They Say? Implications for Subjective Survey Data." *American Economic Review* 91 (2): 67–72.
- Choi, Seungmook, Don Hardigree, and Paul D. Thistle. 2002. "The Property/Liability Insurance Cycle: A Comparison of Alternative Models." *Southern Economic Journal* 68 (3): 530–48.
- Chwe, Michael Suk-Young. 2014. "Scientific Pride and Prejudice." *New York Times*, January 31. http://www.nytimes.com/2014/02/02/opinion/sunday/scientific-pride-and-prejudice.html?_r=1.
- Dawson, Erica, Thomas Gilovich, and Dennis T. Regan. 2002. "Motivated Reasoning and Performance on the Wason Selection Task." *Personality and Social Psychology Bulletin* 28 (10): 1379–87.
- Dinkelman, Taryn, and A. Martínez. 2014. "Investing in Schooling in Chile: The Role of Information about Financial Aid for Higher Education." *Review of Economics and Statistics* 96 (2): 244–57.
- Dupas, Pascaline. 2011. "Health Behavior in Developing Countries." *Annual Review of Economics* 3 (1): 425–49.
- Dutta, Pujia, Rinku Murgai, Martin Ravallion, and Dominique van de Walle. 2014. "Right to Work? Assessing India's Employment Guarantee Scheme in Bihar." Report 85414, Equity and Development Series, World Bank, Washington, DC.
- Englich, Birte, Thomas Mussweiler, and Fritz Strack. 2006. "Playing Dice with Criminal Sentences: The Influence of Irrelevant Anchors on Experts' Judicial Decision Making." *Personality and Social Psychology Bulletin* 32 (2): 188–200.
- Evans, Jonathan St. B. T. 2008. "Dual-Processing Accounts of Reasoning, Judgment, and Social Cognition." *Annual Review of Psychology* 59 (January): 255–78.
- Frankish, Keith, and Jonathan Evans. 2009. "The Duality of Mind: An Historical Perspective." In *Two Minds: Dual Processes and Beyond*, edited by Jonathan Evans and Keith Frankish, 1–29. Oxford, U.K.: Oxford University Press.
- Freund, Caroline, and Caglar Ozden. 2008. "Trade Policy and Loss Aversion." *American Economic Review* 98 (4): 1675–91.
- Fryer Jr., Roland G., Steven D. Levitt, John List, and Sally Sadoff. 2012. "Enhancing the Efficacy of Teacher Incentives through Loss Aversion: A Field Experiment." Working Paper 18237, National Bureau of Economic Research, Cambridge, MA.

- Fujiwara, Thomas. 2010. "Voting Technology, Political Responsiveness, and Infant Health: Evidence from Brazil." Department of Economics, University of British Columbia, Vancouver.
- Ghosal, Sayantan, Smarajit Jana, Anandi Mani, Sandip Mitra, and Sanchari Roy. 2013. "Sex Workers, Stigma, and Self-Belief: Evidence from a Psychological Training Program in India." Working Paper, University of Warwick, U.K.
- Giné, Xavier, Christian Martinez Cuellar, and Rafael Keenan Mazer. 2014. "Financial (Dis-)Information: Evidence from an Audit Study in Mexico." Policy Research Working Paper 6902, World Bank, Washington, DC.
- Giné, Xavier, Dean Karlan, and Jonathan Zinman. 2010. "Put Your Money Where Your Butt Is: A Commitment Contract for Smoking Cessation." *American Economic Journal: Applied Economics* 2 (4): 213–35.
- Jensen, Robert. 2010. "The (Perceived) Returns to Education and the Demand for Schooling." *Quarterly Journal of Economics* 125 (2): 515–48.
- Johnson, Eric J., and Daniel Goldstein. 2003. "Do Defaults Save Lives?" *Science* 302: 1338–39.
- Johnson, Eric J., John Hershey, Jacqueline Meszaros, and Howard Kunreuther. 1993. *Framing, Probability Distortions, and Insurance Decisions*. New York: Springer.
- Kahneman, Daniel. 2003. "Maps of Bounded Rationality: Psychology for Behavioral Economics." *American Economic Review* 93 (5): 1449–75.
- . 2011. *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux.
- Kahneman, Daniel, and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47 (2): 263–91.
- . 2000. *Choices, Values, and Frames*. Cambridge, U.K.: Cambridge University Press and Russell Sage Foundation.
- Madrian, Brigitte C., and Dennis F. Shea. 2001. "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior." *Quarterly Journal of Economics* 116 (4): 1149–87.
- Mani, Anandi, Sendhil Mullainathan, Eldar Shafir, and Jiaying Zhao. 2013. "Poverty Impedes Cognitive Function." *Science* 341 (6149): 976–80.
- Montier, James. 2007. *Applied Behavioural Finance*. Chichester, England: Wiley.
- Munshi, Kaivan, and Jacques Myaux. 2006. "Social Norms and the Fertility Transition." *Journal of Development Economics* 80 (1): 1–38.
- Pallais, Amanda. Forthcoming. "Small Differences That Matter: Mistakes in Applying to College." *Journal of Labor Economics*.
- Pop-Eleches, Cristian, Harsha Thirumurthy, James Habyarimana, Joshua Graff Zivin, Markus Goldstein, Damien de Walque, Leslie Mackeen, Jessica Haberer, John Sidle, and Duncan Ngare. 2011. "Mobile Phone Technologies Improve Adherence to Antiretroviral Treatment in Resource-Limited Settings: A Randomized Controlled Trial of Text Message Reminders." *AIDS* 25 (6): 825–34.
- Prelec, Drazen, and George Loewenstein. 1991. "Decision Making over Time and under Uncertainty: A Common Approach." *Management Science* 37 (7): 770–86.
- Reyes, Robert M., William C. Thompson, and Gordon H. Bower. 1980. "Judgmental Biases Resulting from Differing Availabilities of Arguments." *Journal of Personality and Social Psychology* 39 (1): 2–12.
- Schwartz, Barry. 2013. "How We Decide." Background paper for the *World Development Report 2015*.
- Schwarz, Norbert, Fritz Strack, and Hans-Peter Mai. 1991. "Assimilation and Contrast Effects in Part-Whole Question Sequences: A Conversational Logic Analysis." *Public Opinion Quarterly* 55 (1): 3–23.
- Shafir, Eldar, Peter Diamond, and Amos Tversky. 1997. "Money Illusion." *Quarterly Journal of Economics* 112 (2): 341–74.
- Shiller, Robert J. 2000. "Measuring Bubble Expectations and Investor Confidence." *Journal of Psychology and Financial Markets* 1 (1): 49–60.
- Shu, Suzanne B., and Ayelet Gneezy. 2010. "Procrastination of Enjoyable Experiences." *Journal of Marketing Research* 47 (5): 933–44.
- Slovic, Paul. 1987. "Perception of Risk." *Science* 236 (4799): 280–85.
- Stanovich, Keith E., and Richard F. West. 2000. "Advancing the Rationality Debate." *Behavioral and Brain Sciences* 23 (5): 701–17.
- Suvorov, Anton, and Jeroen van de Ven. 2008. "Goal Setting as a Self-Regulation Mechanism." Working Paper 0122, Center for Economic and Financial Research, Moscow.
- Swidler, Ann. 2009. "Responding to AIDS in Sub-Saharan Africa." In *Successful Societies: Institutions, Cultural Repertoires and Population Health*, edited by Peter Hall and Michelè Lamont, 128–50. Cambridge, U.K.: Cambridge University Press.
- Thaler, Richard H., and Cass R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven, CT: Yale University Press.
- Todd, Peter M., and Gerd Gigerenzer. 2000. "Précis of Simple Heuristics That Make Us Smart." *Behavioral and Brain Sciences* 23 (5): 727–41.
- Trefler, Daniel. 1993. "Trade Liberalization and the Theory of Endogenous Protection: An Econometric Study of U.S. Import Policy." *Journal of Political Economy* 101 (1): 138–60.
- Vedantam, Shankar. 2010. *The Hidden Brain: How Our Unconscious Minds Elect Presidents, Control Markets, Wage Wars, and Save Our Lives*. New York: Random House.
- Weyland, Kurt. 1996. "Risk Taking in Latin American Economic Restructuring: Lessons from Prospect Theory." *International Studies Quarterly* 40 (2): 185–207.
- Wood, James. 2008. *How Fiction Works*. New York: Farrar, Straus and Giroux.
- World Bank. 2004. *World Development Report 2004: Making Services Work for Poor People*. Washington, DC: World Bank.

CHAPTER 2 Thinking socially

Humans are deeply social animals. Our beliefs, desires, and behaviors are affected by social preferences, our relationships, and the social contexts in which we live and make decisions. We are “group-minded individuals” who see the world from a social as well as an individual perspective; we understand what is in the minds of others and often act as if our brains are networked with the brains of other people (Tomasello 2014).

Human *sociality*—the tendency among humans to associate and behave as members of groups—affects decision making and behavior and has important consequences for development.¹ Our social tendencies mean that we are not purely selfish and wealth-

interests of no one. Yet by the same token, temporary interventions can have large and lasting positive effects on a community by shifting a pattern of social interactions from one suboptimal self-reinforcing arrangement (or “equilibrium”) to another arrangement that better promotes well-being and becomes self-sustaining (see spotlight 1, on fighting a social norm tolerating corruption). Sociality is also a lever for new types of development interventions that harness the tendencies of individuals to seek social status, to build and maintain social identities, and to cooperate with others under certain conditions.

Policy makers often underestimate the social component in behavior change. The purpose of this chapter is to summarize recent findings on the social microfoundations of action and their implications for development policy. To demonstrate that there is a fundamentally social component to thinking and decision making, the discussion begins by examining “*other-regarding*” preferences—including the innate human desire for social status, tendencies to identify with groups and help others, and propensities to cooperate with others who are cooperating—and their implications for institutional design and development interventions. Because social networks are the key pathway through which social influences are transmitted, the chapter then considers how social networks affect the development process and interventions that leverage networks to spur social change. Finally, since sociality leads to the informal rules known as *social norms* that coordinate behavior, the chapter examines some of the social outcomes that such norms create and the policies that take account of norms to better achieve development objectives.

Human sociality is like a river running through society; it is a current that is constantly, if often

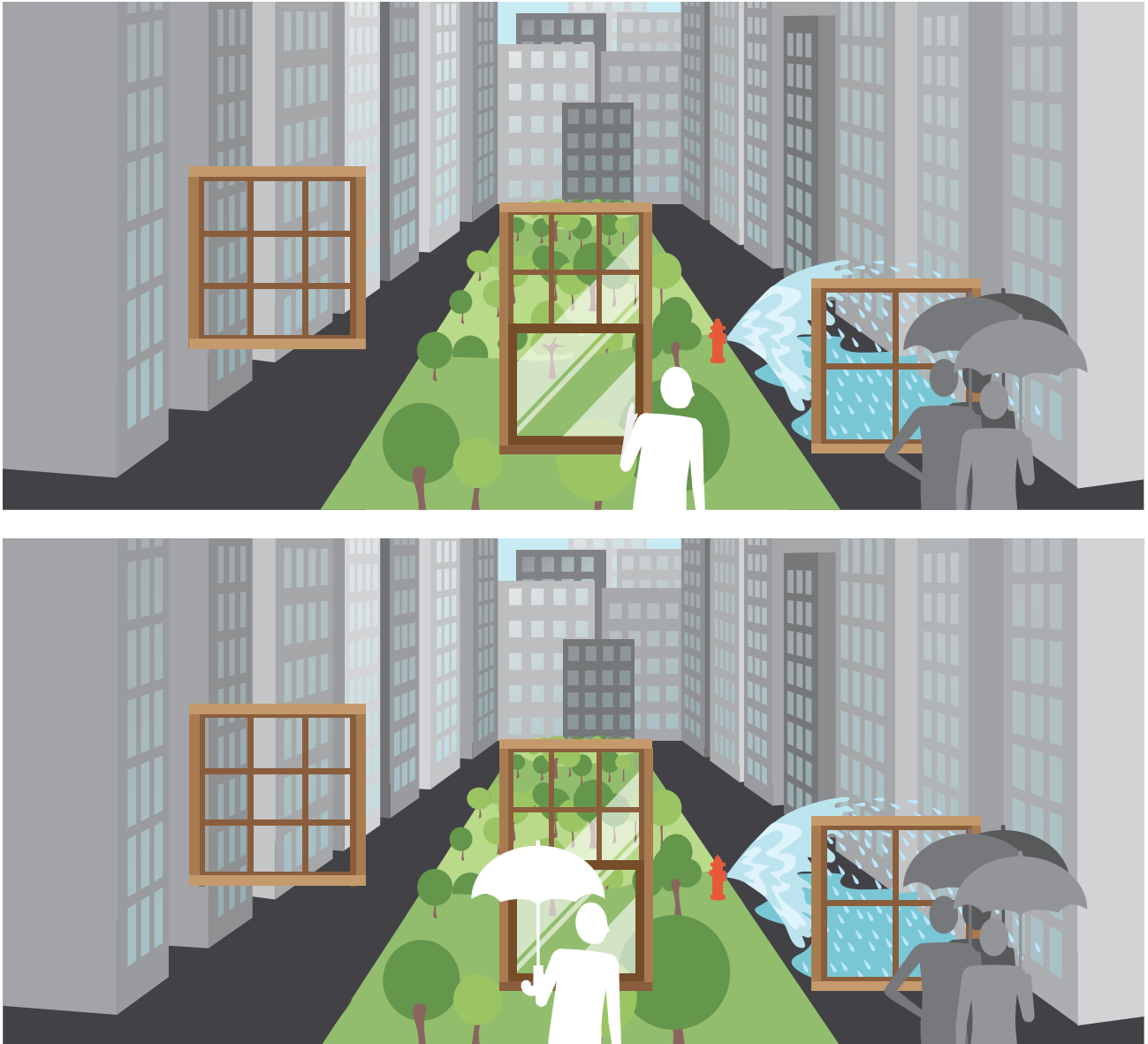
Policies can tap people’s social tendencies to associate and behave as members of groups to generate social change.

maximizing actors, as many economic models and policies assume; rather, we value reciprocity and fairness, we are willing to cooperate in the attainment of shared goals, and we have a tendency to develop and adhere to common understandings and rules of behavior, whether or not they benefit us individually and collectively. Since what we do is often contingent on what others do, local social networks and the ideas, norms, and identities that propagate through them exert important influences on individual behavior (see figure 2.1).

A key consequence of sociality for development is that groups and even entire societies can get stuck in collective patterns of behavior—such as corruption, segregation, and civil war—that arguably serve the

Figure 2.1 What others think, expect, and do influences our own preferences and decisions

Humans are inherently social. In making decisions, we are often affected by what others are thinking and doing and what they expect from us. Others can pull us toward certain frames and patterns of collective behavior.



imperceptibly, shaping individuals, just as flowing water shapes individual stones in a riverbed. Policy makers can either work with these social currents when designing interventions or ignore them and find themselves swimming upstream. Just as a dam taps a river's kinetic energy to generate electricity, interventions can tap sociality to facilitate cost-effective social change. This chapter offers examples of how sociality can serve as a starting point for new kinds of development interventions.

Social preferences and their implications

Social recognition and the power of social incentives

Everyone knows that economic incentives can influence behavior.² What is less commonly recognized is that social incentives can also exert a powerful effect on behavior. In fact, social rewards, such as status and recognition, can motivate people to exert effort and

can even substitute for monetary rewards in some situations. In a field experiment in Switzerland, for example, researchers disentangled the economically relevant (“instrumental”) and economically irrelevant (“noninstrumental”) aspects of social rewards by showing that individuals’ performance improved on a one-time data entry task when they were told that the two people who put in the most effort would be rewarded with a congratulatory card and a personal thank-you from the managing director. These noneconomic rewards increased performance by 12 percent, the equivalent of a hypothetical wage increase of 35–72 percent, according to previous studies of output elasticity in gift-exchange experiments (Kosfeld and Neckermann 2011). Similarly, salespeople in a U.S. company were willing to trade off approximately \$30,000 in income to achieve membership in the firm’s “club” for top performers—the benefits of which were a gold star on their name card, companywide recognition, and an e-mail from the chief executive officer (Larkin 2009).

Development interventions can harness the human desire for status and recognition. In a field experiment in Zambia, hairstylists and barbers recruited by a public health organization to sell female condoms in their shops were randomly assigned to one of four groups receiving different awards based on condom sales (Ashraf, Bandiera, and Jack, forthcoming). People in the control group received no rewards, while people in the treatment groups received one of the following: a 90 percent margin on condom sales; a 10 percent margin on condom sales; or a nonfinancial reward in the form of stars stamped on a publicly displayed chart to represent each condom sale. The “star treatment” was designed to make social impact salient by publicizing the stylist’s contribution to the health of his or her community. After one year, hairdressers in the star treatment had sold twice as many condoms as hairdressers in any other group, on average. For this group of individuals, the marginal utility of public recognition was higher than the marginal utility of money.

When should social awards be used, and how powerful and enduring are they really? Status awards may be especially useful when the quality of individual outputs is difficult to measure precisely (Besley and Ghatak 2008) and when financial resources are scarce. Thus many noneconomic organizations, including political parties, religious groups, the military, and educational institutions, use status awards to achieve solidarity and elicit contributions to collective goods (Hechter 1987). Firms use employee-of-the-month clubs alongside traditional salaries to recognize and incentivize contributions to organizational goals that

are advantageous and exemplary but often difficult to quantify. In fact, humans may have an innate, unconscious tendency to reward strong contributors to group goals with esteem, which helps groups overcome barriers to collective action (Willer 2009).

A study of contributions to Wikipedia (an online encyclopedia produced through voluntary efforts) illustrates how bestowals of status may contribute to the production of collective goods. Contributors who were randomly awarded peer esteem in the form of a “Barnstar” (an editing award that is publicly displayed) were 60 percent more productive over the course of the 90 days following the receipt of the award than members of a control group, on average (Restivo and van de Rijt 2012). The informal rewards are free to give and carry no immediate material benefits but have a substantial effect on productivity and may play a key role in sustaining volunteer effort over time.

Prestige can incentivize countries, too. When states’ different values and norms inhibit cooperation, status awards in the form of participation in international summits and strategic partnerships may be more effective than conventional strategies of containment and integration for achieving cooperation on global governance initiatives (Larson and Shevchenko 2010). Chapter 9 on climate change examines the use of status awards and indicators to motivate policy makers and firms.

Ranking schemes, which bestow status on exemplary states and shame underperforming ones, may be a cost-effective means of shifting state actions. Numerical indicators, such as the World Bank’s Doing Business rankings and the United Nations’ Gender Empowerment Measure, do not simply provide performance information, but they also serve as “psychological rules of thumb” (Sinclair 2005) that simplify and frame information (chapter 1) according to an ideology of what a “good society” looks like. Indicators enable comparisons that motivate a variety of actors, including citizens, nongovernmental organizations (NGOs), elites, bureaucrats, and governments (Davis and others 2012). The U.S. “Trafficking in Persons Report,” for example, played an important role in spurring states to criminalize human trafficking, even though the ranking system is “hardly scientific” (Kelley and Simmons, forthcoming). In a world in which national control over policy is valued and information is becoming ever cheaper to collect, analyze, and disseminate, indicators may become important tools for shifting state action.

Altruism, identity, and group dynamics

Some humans genuinely care about others’ well-being, and few of us are selfish all the time. This aspect of

sociality has been investigated by economists using an experimental tool called the “dictator game.” In the game, the dictator gets to decide how much of an initial endowment (say, \$10) he would like to give to the second player (in some versions, the dictator’s choices include taking some of the other player’s endowment). Economic theory predicts that the dictator will always make the most self-interested choice. But in experimental situations, fully selfish behavior is the exception, not the rule (Forsythe and others 1994; List 2007).

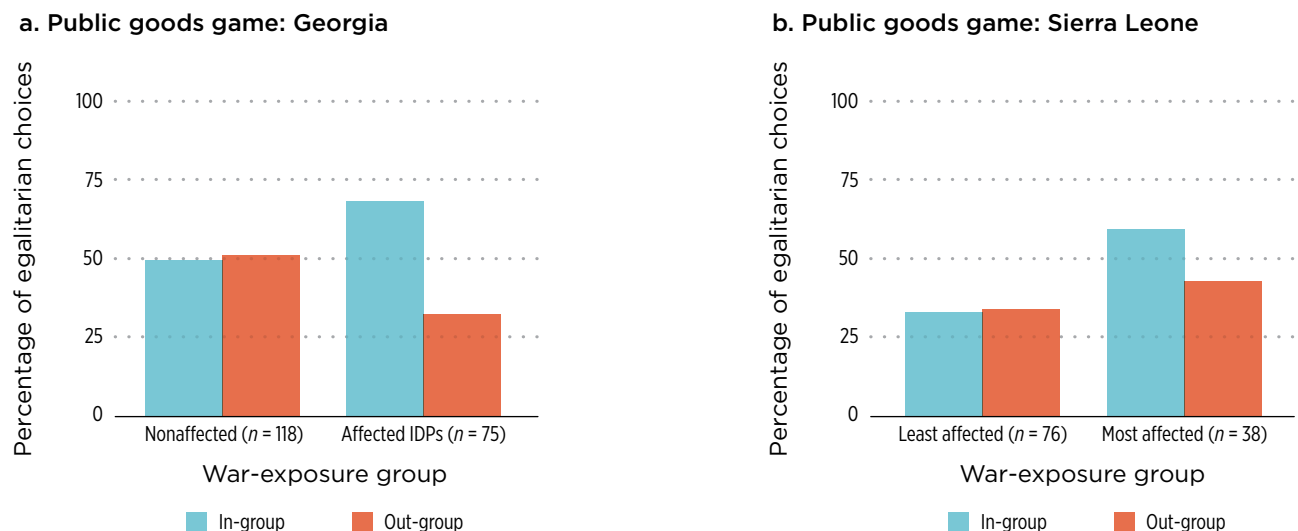
What determines whether someone acts generously or selfishly? Expressions of altruism and other socially beneficial behavior often depend on the social setting. In the game, dictators are much more generous when they are giving to a charity. They also give more to welfare recipients who express strong rather than weak desires to work (Eckel and Grossman 1996; Fong, Bowles, and Gintis 2006). In Uganda, members of coffee-producer cooperatives played the dictator game and allocated more resources to anonymous members of their farmer co-ops than to anonymous covillagers (Baldassarri and Grossman 2013).³ The study controlled for the effect of social proximity, demonstrating the independent effect of group attachment in which identification with a group causes individuals to perceive even unknown members of the group more positively

than nonmembers. In addition, individuals holding a formal leadership position in either a farmer group or a village group were more generous toward members of the group in which they were a leader. Experiments indicated that group members hold leaders to a higher standard of caring for fellow group members.

While altruism and group identification can support mutual prosperity, they can also set the stage for the in-group favoritism and out-group hostilities that contribute to social unrest. For instance, a recent study indicated that exposure to war between the ages of 7 and 20 was associated with a lasting increase in people’s egalitarian motivations toward their in-group. The children and young adults most affected by civil wars in Georgia and Sierra Leone were more willing to sacrifice their own self-interest in a social choice task to improve equality within their group (thought to enhance group cohesion and cooperation) than were people who were least affected by violence (see figure 2.2; Bauer and others 2014). Exposure to war-related violence can also heighten preferences for military solutions as opposed to negotiations, according to the findings of researchers studying the attitudes of former combatants (Grossman, Manekin, and Miodownik, forthcoming). Such “war effects” may help explain why conflict becomes a persistent state of affairs, although

Figure 2.2 Children and young adults most affected by war are more likely to favor members of their own group

Children and young adults in postconflict societies played games in which they chose how to share money. Individuals least affected by war behaved in similar ways toward in-group and out-group members, whereas those most affected by war were much more likely to choose the egalitarian option when playing with an in-group member than an out-group member. In both countries, exposure to war increased in-group favoritism.



Source: Bauer and others 2014.

Note: IDPs = internally displaced persons.

scientific understanding of the link between exposure to conflict and group dynamics is limited.

If identities are malleable rather than fixed, interventions may be able to target social identities as a means of changing behavior. In Liberia, a local non-profit organization randomly selected three groups of poor young men with high rates of crime and anti-social behavior to receive cognitive behavioral therapy, a cash transfer, or both (Blattman, Jamison, and Sheridan 2014). Researchers found that the combined treatment was associated with large and sustained decreases in antisocial behavior such as crime and violence, as well as modest long-term improvements in savings and reduced homelessness, while the cash transfer had a short-run but no persistent effect on poverty. The intervention was designed to promote future orientation, self-discipline, and new norms of nonviolent, cooperative behavior; it was not about delivering information but about helping individuals adopt a new “socially aligned” identity and a related set of skills and behaviors.

Cognitive interventions can also help address the psychologically destructive consequences of negative social identities. In India, female sex workers often face considerable stigma and social exclusion, which can lead to self-defeating behavior and attitudes that contribute to the persistence of poverty. Working with an NGO, researchers designed an eight-week training program in which participants met once a week for discussion sessions aimed at building women’s self-esteem and increasing their sense of agency (Ghosal and others 2013). The randomized experiment showed that the intervention improved self-reported measures of self-esteem, agency, and happiness among members of the treatment group and improved workers’ future-orientation: women who participated in the program were more likely to choose a future-oriented savings product and to have visited a doctor, even though the training program included no specific mention of health issues.

Intrinsic reciprocity and the attainment of collective goods

A key assumption in standard economics is that public and collective goods are problematic because everyone prefers to take advantage of (free ride on) the efforts of others. Yet experiments show that many people are willing to reward others who cooperate, and punish those who do not. There are two different motives that can explain this behavior: instrumental reciprocity and intrinsic reciprocity. Responding to kindness with kindness in order to sustain a profitable long-term relationship is an example of *instrumental reciprocity*. In contrast, *intrinsic reciprocity* is an intrinsically moti-

vated willingness to reward or punish the behavior of others, even at a cost to oneself (see Sobel 2005).

Economists use a tool called the “ultimatum game” to study intrinsic reciprocity. The game begins with two players being shown a sum of money, say, \$10. One player, the proposer, is instructed to offer some dollar figure (ranging from \$1 to \$10) to the second player, who is the responder. If the responder accepts the proposer’s offer, the money is shared according to the offer. But if the responder refuses the offer, each player gets nothing. The self-interest hypothesis suggests that the proposer should offer the minimum (\$1) and the responder should accept it—\$1 isn’t much, but it is still a gain.

However, only a minority of people behave in this manner. Average proposer offers are often one-third to one-half of the overall amount, and low offers are routinely rejected by responders (Gintis and others 2005). This finding can hold even as the sums grow quite large: when the game was played in Indonesia, proposers continued to make sizable offers when the amount was approximately three times the participants’ average monthly expenditures (Cameron 1999). An interesting twist on the game reveals why this may occur: low offers randomly generated by a computer rather than a person are rarely rejected (Blount 1995, cited in Gintis and others 2005), indicating that it is uncooperative intentions rather than particular outcomes that trigger a desire to punish. Similarly, brain imaging studies show that punishing norm violators activates neural pathways associated with reward processing (de Quervain and others 2004). Language also captures the idea; many cultures have proverbs expressing the feeling that “revenge is sweet.”

Another experimental tool, the “public goods game,” shows how critical punishment opportunities are for achieving broader-scale cooperation. The game begins with each player privately choosing how much of his or her individual endowment to contribute to a public fund. Contributions are then multiplied such that the public good payoff is maximized when players contribute their entire endowments. At first, researchers set up the game so that there was no way for players to punish low contributors (Fehr and Gächter 2000). In the first round of play, approximately half the participants contributed to the public fund. But over time, cooperation unraveled as people realized that others were not “doing their share” and stopped contributing themselves. The result was a very low level of cooperation after 10 periods. However, when researchers introduced opportunities for players to award noncontributors “punishment points” (the laboratory equivalent of being able to scold or ostracize a free rider), things changed. Although punishing was personally costly

for the individuals doing it, contributions to the public good immediately increased, and behavior converged to almost its full cooperative potential after another 10 periods. Figure 2.3 shows the strikingly different patterns of cooperation under the two regimes.

The key implication from this body of work is that many people are *conditional cooperators* who prefer to cooperate to the degree that others are cooperating. Figure 2.4 contrasts the assumption from standard economics—that everyone is a free rider—(panel a) with the actual distribution of free riders versus conditional cooperators observed in eight countries, including Colombia and Vietnam, when subjects played public goods games (panel b) (Martinsson, Pham-Khanh, and Villegas-Palacio 2013). Although the proportion of cooperators varies substantially by country, in no country do free riders make up a dominant share of the population. In other words, the canonical model of human behavior is not supported in any society that has been studied (Henrich and others 2004).

To investigate whether conditional cooperation could help support management of a commons, Rustagi, Engel, and Kosfeld (2010) studied 49 forest user groups in Ethiopia. Combining experimental measures of conditional cooperation and survey measures of monitoring activity, they showed that the percentage of conditional cooperators varied per group, that groups with a higher share of conditional cooperators were more successful in managing forest commons, and that costly behavior monitoring was a key means by which conditional cooperators enforced cooperation. In line with theoretical predictions, the conditional cooperators spent the most time conducting forest patrols, spending on average 32 hours per month monitoring—1.5 times more than free riders spent. The study demonstrates that voluntary cooperation can be an important element of commons management.

Voluntary cooperation is fragile because individual willingness to cooperate depends on expectations about the cooperation of others. However, research indicates that people will select into institutions with like-minded cooperators and use efficient punishment to sustain cooperation when they have a chance to do so (Gürerk, Irlenbusch, and Rockenbach 2006; Fehr and Williams 2013). The implication is that policy makers should take into account not only selfish but also cooperative instincts when considering interventions and societal institutions. Building in opportunities for people to observe others' behaviors—for instance, by making behaviors more public—may be a useful means of bolstering the expectations and therefore the practice of cooperation.

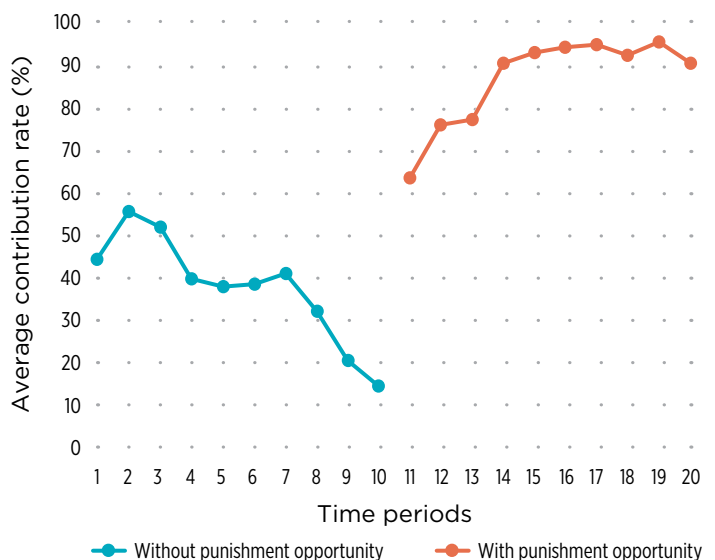
To see why, consider what happened when researchers created the illusion of “being watched” at an honor

beverage bar (that is, where the consumer is expected to be on his or her honor and pay for drinks reliably) in a university department in England (figure 2.5). Researchers alternated pictures of watchful eyes with pictures of flowers above the price list for tea, coffee, and milk pasted on a cupboard each week and observed how monetary contributions to the cash box varied over 10 weeks (Bateson, Nettle, and Roberts 2006). The results were striking. The contributions per liter of milk consumed (the best available measure of total beverage consumption) were much higher in “eye weeks” than in “flower weeks.” Every time the picture was changed to a pair of eyes, contributions for the week soared. The precise nature of the mechanism responsible for the effect is unclear: the eyes might have reminded people about the cooperative nature of the honor bar, or they might have triggered a concern for individual reputation. Either way, however, the study points to the influence that perceived observation has on behavior.

This dynamic may help explain why in Nepal, among 200 irrigation systems studied, farmer-managed systems achieved higher agricultural yields and more equitable distributions of water and were better maintained than government-managed systems. Farmers in farmer-managed systems were about twice as likely as farmers in government-managed systems to report that rules were observed and that

Figure 2.3 Opportunities to punish free riding increase cooperation

Cooperation quickly unravels in a public goods game when individuals cannot punish free riding. The introduction of costly punishment opportunities immediately increased cooperation, which converged to almost its full potential after 10 rounds of play.



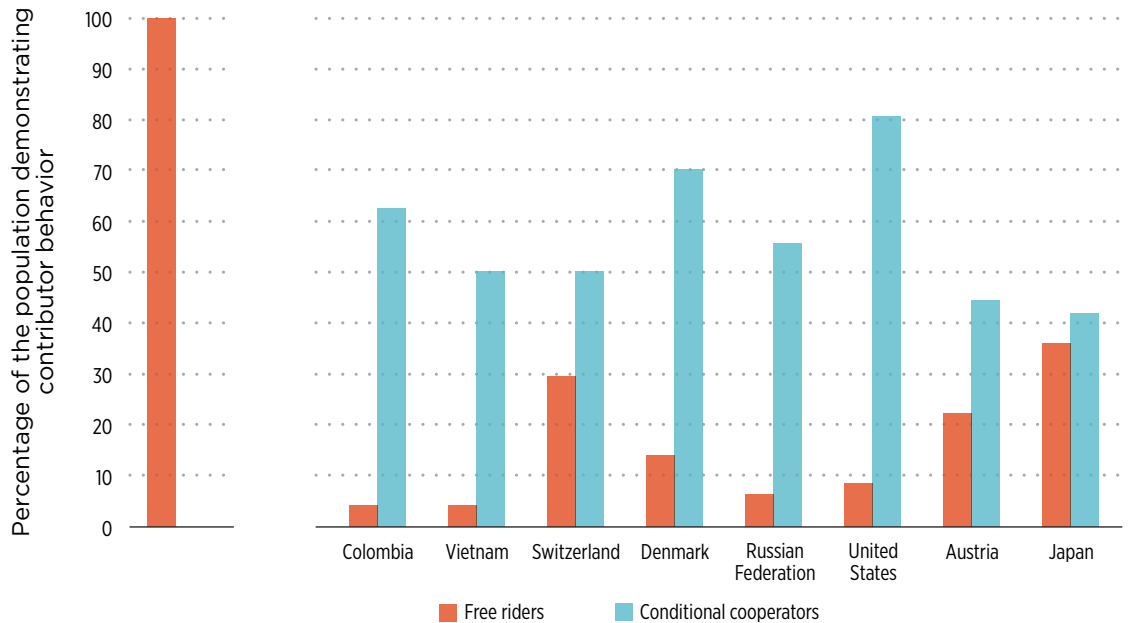
Source: Fehr and Gächter 2000.

Figure 2.4 In experimental situations, most people behave as conditional cooperators rather than free riders

The standard economic model (panel a) assumes that people free ride. Actual experimental data (panel b) show that across eight societies, the majority of individuals behave as conditional cooperators rather than free riders when playing a public goods game. The model of free riding was not supported in any society studied.

a. Behavior predicted in standard economic model

b. Actual behavior revealed in experiments



Source: Martinsson, Pham-Khanh, and Villegas-Palacio 2013.

Note: Other players did not fit into either of the two categories, which is why the bars do not sum to 100 percent.

rule infractions were recorded, and farmer-managed systems were more likely to impose fines for misbehavior (Joshi and others 2000, reported in Ostrom 2005). Thus placing control of a resource system and associated sanctioning powers in the hands of beneficiaries rather than the government may improve outcomes by harnessing people's natural instincts to monitor others and respond to watchful observation by those around them.

Similarly, in Uganda, parental participation in a social accountability process proved more effective than a process that was more top down. Researchers tested two variants of a community monitoring intervention involving a school scorecard (Serneels, Zeitlin, and Barr 2014). In one variant, a monitoring committee was given a scorecard designed by researchers in conjunction with the Ministry of Education. In the second variant, committees designed their own scorecards in a participatory process. Although the scorecards were substantively similar, the participatory variant signifi-

cantly improved student learning, student presence, and teacher presence compared to the government-led process, which had no impact. An experiment indicated that the participatory process succeeded by increasing parents' willingness to contribute to a shared good—improved school performance. Here, altering the institutional environment was a low-cost means of eliciting socially beneficial behavior and improving school performance. Programs that harness cooperative motivations in this manner may represent an alternative to more traditional incentive programs for school performance.

Policies to “crowd in” rather than “crowd out” cooperation

The apparent ubiquity of preferences for cooperation raises questions about the appropriate role of incentives in policy. Many policies rest on the assumption that external incentives must be used to induce people to contribute to collective goods. But what if people

are motivated to cooperate out of altruism or intrinsic reciprocity, as the previous section suggested that many are? A body of research examining this question indicates that incentives and other institutional arrangements can both “crowd out” and “crowd in” innate preferences for cooperation (see Bowles and Polania-Reyes 2012 for a review of this literature; a meta-analysis of relevant studies is Deci, Koestner, and Ryan 1999).

The crowding-out phenomenon is illustrated by a study of day-care centers in Israel that began fining parents who arrived late to collect their children. While the intent was to deter tardy pickups, the program increased the number of late-coming parents. What happened? The program put a price on what had previously been a moral behavior (punctuality); it reframed late pickups from a morally inappropriate action into an economically legitimate one in which parents could simply “buy” extra time in a consensual exchange (Gneezy and Rustichini 2000). Relatedly, paying people to participate in the communal task of cutting grass in a schoolyard in Tanzania diminished their satisfaction compared to those who simply volunteered (Kerr, Vardhan, and Jindal 2012).

The crowding-in phenomenon was illustrated in figure 2.3. In that case, giving Swiss students the ability to punish (fine) noncooperation “crowded in” preferences for cooperation by penalizing free riding and reassuring people that cooperation was likely to prevail.

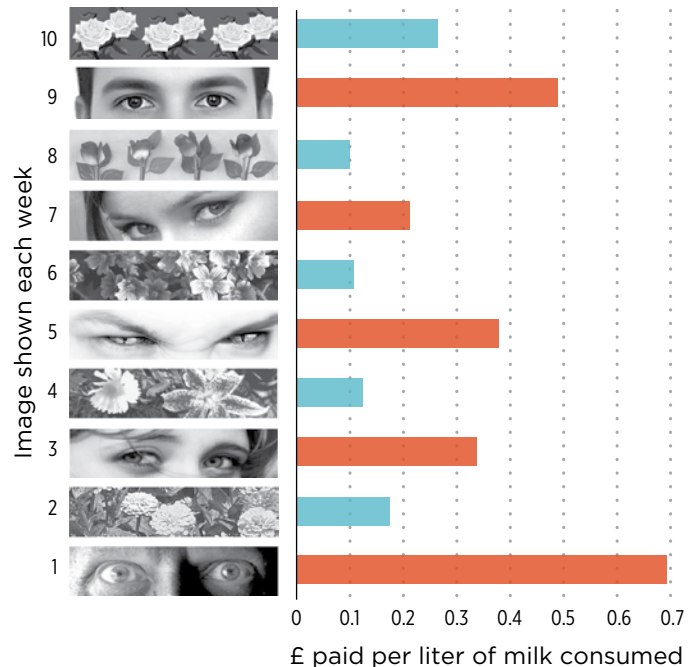
Thus incentives and social preferences are sometimes complementary and sometimes substitutes, in part because incentives do not simply change prices; they also carry social meanings that depend on the relationships among the actors and their preexisting cultural frameworks (Bowles and Polania-Reyes 2012). In addition, because preferences for altruistic contributions and altruistic punishment vary across individuals and societies, the optimal policy response may include targeting different behavioral types with different interventions (Herrmann, Thöni, and Gächter 2008). The implication for policy makers is twofold. First, predicting the effect of an incentive is challenging—meaning that testing incentive programs in the population where they will be deployed is likely to be an important step in getting a program right (chapter 11). Second, altering the institutional environment to nurture social preferences can be a means of motivating contributions to a collective good.

The influence of social networks on individual decision making

All of us are embedded in networks of social relations that shape our preferences, beliefs, resources, and

Figure 2.5 The power of social monitoring: Pictures of eyes increased contributions to a beverage honor bar

Voluntary contributions to a beverage honor bar increased when a picture of eyes placed on a cupboard suggested that individuals' behavior was being watched. The figure shows the amount of money contributed per liter of milk each week for 10 weeks, as pictures of eyes were alternated with pictures of flowers. Eye images were always associated with higher contributions.



Source: Adapted from Bateson, Nettle, and Roberts 2006.

choices (see, for example Simmel 1955; Granovetter 1985). *Social networks* are the sets of actors and relational ties that form the building blocks of human social experience. Networks provide scope for individuals to reinforce existing behaviors among one another, but they can also transmit novel information and normative pressures, sometimes sparking social change.⁴ The ability of social networks to both stabilize and shift patterns of behavior means that they may be able to play an important role in social settings where formal institutions are lacking.

Social networks are a foundational—and often overlooked—basis of social order. They are a distinctive form of economic coordination with their own logic, in which price and authority—the coordinating mechanisms of markets and hierarchies, respectively—are downplayed, but social obligation and reputation loom large (Powell 1990). Networks also have implications for political and governance outcomes. In India, cities in which voluntary associations contained both Hindu and Muslim members experienced much less religious

violence in the latter half of the 20th century than cities where such civic links did not exist. Evidence from cities experiencing similar types of “conflict shocks” but different outcomes in terms of riots suggests that civic leaders’ interactions within ethnically diverse networks played a critical role in controlling tensions (Varshney 2001).

Social networks can both aid and undermine the achievement of development goals. The success of microfinance in developing countries, for instance, is often attributed in part to the close relationships among borrowers that channel social pressure to encourage repayment (see chapter 6). Yet development goals are also achieved with technologies such as commitment devices that encourage savings by insulating people from social demands for financial assistance (see chapter 4). In other words, interventions achieve their objectives by harnessing some social pressures and diminishing others.

Taking the effect of social norms into account can lead to better policy design.

Complicating things even more is the fact that interventions can initiate broad changes in the social fabric that are difficult to foresee. Commitment devices, for instance, can increase savings among target individuals by reducing the social pressure to share financial resources with kin, but what if they do so by weakening broader sharing norms, thereby compromising individuals’ access to food and child-rearing assistance from others during tough times? The trade-off may not be worth it (Case 2007). In a similar vein, offering insurance to only those farmers who possess an insurable asset (common in developing countries) may actually increase the wage risk for landless laborers in Indian villages by increasing labor demand volatility (Mobarak and Rosenzweig 2013). In light of these studies, when policies that target social networks are being considered, policy makers must pay close attention to how interventions may affect social relationships in the population.

There are several promising policy interventions that harness the influence of social networks to spur social change.

Increasing interactions to support new behaviors and build civic capacity

Some important traits of communities and groups—such as trust, social cohesion, and cooperation—reside within relationships more than in individuals. Increasing

the number or quality of interactions among people can build those qualities to support development. In India, researchers found that microfinance clients randomly assigned to meet weekly rather than monthly with their repayment groups had much more informal social contact with others in the group even two years after the loan cycle ended, exhibited a greater willingness to pool risk with group members at that time, and were three times less likely to default on their second loans (Feigenberg, Field, and Pande 2013).

Increasing social ties is also a focus of health researchers who have explored how relationships help shift health behaviors (see chapter 8). A new program in Lebanon is striving to increase breastfeeding by training female friends of new mothers to serve as “support mothers” and soliciting women in the community who have successfully breastfed to also serve in this capacity. These “social supports” are paired with informational breastfeeding classes before birth and professional lactation support to create a multifaceted approach to changing health behavior (Nabulsi and others 2014; for a review of the efficacy of community-based interventions for breastfeeding in low- and middle-income countries, see Hall 2011). Results are not yet available, but the program is a model of how a social network approach may be combined with standard informational interventions in an attempt to increase program success.

A network perspective suggests that increasing the density of social relations can also improve the civic culture or “social capital” of a community (Putnam, Leonardi, and Nanetti 1993; for an analysis of the limitations of this approach as applied to development, see Portes and Landolt 2000). Community-driven development (CDD) programs are a class of intervention founded on this logic. A recent review of CDD projects found that greater community involvement modestly improves resource sustainability, infrastructure quality, and the delivery of health and education services (Mansuri and Rao 2013).

Yet increasing social ties with the aim of transforming civic culture can be challenging for policy makers. For instance, an analysis of a field experiment in a World Bank program in Sudan aimed at increasing civic participation in the wake of a civil war found that the intervention did not increase altruistic and cooperative behaviors in lab-in-the-field experiments nor did it increase social network density (Avdeenko and Gilligan 2014). Researchers suggested that CDD programs too often involve social mobilizers telling citizens about the benefits of participation while failing to actually increase social interactions. Both theory and empirical research suggest that for CDD programs to be effective, practitioners must find ways to help

citizens actually engage with one another and ways to help those interactions continue after project incentives disappear (Mansuri and Rao 2013).

Targeting specific individuals to lead and amplify social change

Targeting particular types of individuals within a network can make policies more effective and less costly because they tap into *social learning* processes that leverage social influence to shift behavior. People learn new ways of doing things from one another, and they often are more likely to change their behaviors when new practices are embraced by close associates or others who are most similar or most salient to them. A randomized experiment in China, for instance, showed that farmers were more likely to take up weather insurance when they had a friend who had participated in an intensive information session about the nature and benefits of the product first; the “network effect” was half that of attending an information session directly and was equivalent to decreasing the average insurance premium by 13 percent (Cai, de Janvry, and Sadoulet, forthcoming). The study suggests that social networks can amplify the effects of a standard information program to increase adoption of new products and services. Combining social network strategies with a traditional incentive approach is similarly promising. A recent experiment showed that offering farmers a small performance incentive to communicate to peers the benefits of a new seed technology was a cost-effective means of inducing adoption of new agricultural technologies in Malawi villages compared to deploying government-employed extension workers or strategically chosen lead farmers (BenYishay and Mobarak 2014).

The role of social norms in individual decision making

Social norms—broadly shared beliefs about what group members are likely to do and ought to do—are informal governance mechanisms that exert a powerful influence on individual decision making and behavior. Norms are the “glue” or “cement” of society (Elster 1989). Humans are hard wired to develop and adhere to norms; imitation is one of the key ways humans learn strategies for interacting in the world (Henrich and Henrich 2007), and young children quickly learn the “social rules of the game,” following norms and punishing violators (Rakoczy, Warneken, and Tomasello 2008). The human propensity to develop norms is so strong that norms emerge for almost every behavior: there are norms for “littering, dating, smoking, singing, when to stand, when to sit, when to show anger, when, how, and with whom to express affection, when

to talk, when to listen, when to discuss personal matters, when to use contractions, when (and with respect to what) to purchase insurance” (Sunstein 1996, 914).⁵

However, social norms are rarely chosen by those who are subject to them. Many social norms are the result of historical circumstances and accumulation of precedent and are self-reinforcing, regardless of whether they promote welfare or not (see also chapter 3). Consider a simple example regarding punctuality. Although we often think of punctuality and tardiness as innate traits of particular individuals or cultures, these behaviors are also just “best responses” to the expectations we have about others (Basu and Weibull 2003). If I expect you to be on time and to shame me for being late, I will arrive on time. But if I expect you to be 15 minutes late, then I may well prefer to use those 15 minutes to finish up some paperwork and arrive late myself.

Such so-called equilibrium behaviors can have very serious consequences for development. For instance, a society can settle into a discriminatory equilibrium in which immigrants do not assimilate because they expect systematic discrimination by the natives, and rooted natives are able to identify immigrants who have not assimilated and reveal their distaste for them (Adida, Laitin, and Valfort 2014). Although it might be that most individuals would prefer a society that fostered assimilation and equal treatment, neither the immigrants nor the rooted natives may have a reason to change their behavior, given their expectations about what others will do. In such a situation, the economic integration and success of immigrants remains limited.

In the examples above, inefficient social norms may be maintained simply because of the coordinating role they play in a society. Yet social norms are also maintained due to their “grip on the mind” (Elster 1989). Social norms can evoke strong emotions in people, and they often possess an expressive value in the communities in which they operate. As a result, breaking a social norm often creates shame and stigma for the person doing it (Goffman 1959).⁶ In these ways, social norms can have large effects on both collective welfare and individual agency (Boudet and others 2013). For instance, social and legal norms around gender and sexuality strongly influence whether women and sexual minorities can be educated and employed, whether they can serve as leaders and participate in civic activities, and under what conditions they bring honor or shame to their families (Klugman and others 2014).

Altering social norms that contribute to undesirable social outcomes is an obvious policy goal. However, predicting how norms may interact with policy is difficult. In a recent field experiment, a civic education course in Mali actually widened the gender gap in

civic participation by increasing the salience of civic activity, which increased the social costs for females who participated in civic life (Gottlieb 2014). The intervention reduced knowledge gaps, but it exacerbated gender inequality.

Knowledge about the intersection of policy, social norms, and behavior is only just beginning to accumulate, and a great deal more research is needed. This section offers a glimpse of some policies that use an understanding of norms to generate social change.

Designing policy to “work around” the behavioral effects of social norms

In some cases, policy makers may be able to bypass the behavioral effects of social norms. Consider the problem of where to locate public schools. In Pakistan, many girls who wish to attend school must cross two types of social boundaries: caste boundaries and gender boundaries. Low-caste girls may experience stigma and face discrimination if they attend a school dominated by high castes, and all girls are subject to *purdah*, a form of female seclusion that restricts women's mobility and social interactions.⁷ These social constraints limit educational opportunities for girls. Contrasting two hypothetical policies, Jacoby and Mansuri (2011) show that a policy of providing schools to hamlets dominated by low-caste individuals would increase enrollment by almost twice as much as a policy of placing a school in every unserved hamlet, and would do so at one-sixth of the cost.

“Marketing” existing social norms to shift behavior

Some behaviors that are important for development, such as paying taxes and using toilets, vary within a population. And sometimes, people misperceive how common or how accepted certain behaviors are within their community. Where this is the case, “marketing” social norms can be an effective and low-cost means of increasing awareness of the number of people engaging in a behavior and correcting misperceptions about the frequency of a behavior. If people understand what others think and do, they may shift their understanding of existing social norms and in turn change their own behavior.

For instance, many policies aimed at increasing tax revenues are based on the assumption that people are wealth maximizers who will evade their taxes unless they face the right incentives, such as financial penalties and the possibility of jail time. Yet expected penalties explain very little of the variation in tax compliance across countries or over time (Cowell 1990). One reason is that taxpaying is a social norm involving conditional

cooperation, a phenomenon discussed earlier in this chapter (Frey and Torgler 2007). When people feel that the tax system is fair and that others are obeying the law, they are much more likely to comply with their obligations (Rothstein 1998). And since most individuals are reciprocators, their decisions in a collective setting feed on one another, setting a society on a trend toward either higher or lower tax compliance (Kahan 2005).

Viewing taxpaying through the lens of norm adherence, fairness concerns, and reciprocity provides an explanation for why standard tax policies sometimes fail and suggests the utility of new types of policies. Auditing crackdowns that emphasize penalties may have exactly the opposite of the intended effect, if the increased sanctions “cue” the idea that evasion is widespread (Sheffrin and Triest 1992). In contrast, policies that emphasize the extent of tax compliance and encourage the perception that tax evaders are deviants may be successful. Tax payments in the state of Minnesota increased when people were informed of high compliance rates, but did not increase when people were informed of higher audit rates (Coleman 1996). In the United Kingdom, compliance increased more when citizens received letters noting that most people in their postal code had already paid their taxes than when the letter did not contain this information about social norms (BIT 2012).

Policies that use brief communication interventions to correct misperceptions of other people's behaviors and attitudes may be particularly useful in reducing risky behavior when the difficulty of observing a behavior makes it difficult to correctly estimate how common it is. In a township in South Africa, a country with one of the highest HIV infection rates in the world, men consistently overestimated the prevalence and approval of risky sexual behaviors and underestimated the prevalence and approval of protective behaviors. Since expectations about others' behavior often play into personal decision making, such beliefs may constitute a public health concern that could be addressed by marketing the desirable social norms (Carey and others 2011).

Activating norms to shift behavior

A powerful example of the utility of activating norms comes from an effort to reduce traffic deaths. Every year, about 1.25 million people die from traffic accidents—more than twice the number of victims from war and violence combined. Ninety percent of the road deaths occur in low- and middle-income countries (Lopez and others 2006). In Kenya, many of the people killed are passengers in minibuses, and people are aware of the danger: one-third of respondents to

Figure 2.6 Stickers placed in Kenyan minibuses reduced traffic accidents

English translation of bottom sticker: Hey, will you complain after he causes an accident? BE AWAKE. BE STEADY. SPEAK UP!



Source: Habyarimana and Jack 2011.

a passenger survey conducted before an intervention reported having felt that their life was in danger on a recent trip (Habyarimana and Jack 2011).

Researchers decided to try an inexpensive behavioral intervention to reduce accidents. Buses were randomly divided into two groups. In one group, nothing was done. In the other group, passengers were reminded of their right to a safe ride on public transportation. Stickers posted in the buses encouraged passengers to “heckle and chide” reckless drivers (figure 2.6). The intervention was a remarkable success. Insurance claims involving injury or death fell by half, from 10 percent to 5 percent of claims. Results of a driver survey during the intervention suggested that passenger heckling played a role in improving safety (Habyarimana and Jack 2009). The cost per year for a life saved was about \$5.80, making the program even more cost-effective than childhood vaccination, one of the most cost-effective health interventions available.

Changing social norms to shift behavior

Engineering shifts in social norms is a far from trivial task. Yet norms can and do change. One tool for shifting norms is law (Sunstein 1996). Law can change not only incentives for action but also the social meaning of actions. The social meanings and therefore the desirability of wearing a helmet, declining an invita-

tion to duel, and smoking cigarettes have been altered through various legal changes (Lessig 1995).

What is more, since people can come to value things they experience, legal changes that shift the short-term costs and benefits of action can actually contribute to longer-term and self-sustaining behavior changes. Recycling programs in North American communities often triggered a great deal of grumbling when they were first instituted, and people complied mostly to avoid the increased costs of not doing so. But over time, recycling has become a normative behavior in many places, even in areas with low enforcement. Thus behaviors and values can evolve together; formal policy instruments that temporarily change prices may have long-term effects on preferences and social norms (Kinzig and others 2013).

However, the efficacy of law for changing social norms has limits. Laws that are greatly at odds with existing social norms are unlikely to induce desired social changes. The majority of African countries have laws banning female genital cutting, for example, yet the practice remains widespread in many areas (UNICEF 2013).

Informal strategies can also be effective for changing norms. The use of mass media is one such strategy. In a randomized experiment, Rwandese communities listened to radio soap operas containing messages about

social conflict and resolution (the treatment group) or reproductive health (the control group). Results from interviews, focus groups, role-playing exercises, and unobtrusive measures of collective decision making indicated that the treatment program changed people's perceptions of social norms regarding the appropriateness of open expression and dissenting behavior (Paluck and Green 2009a). Interestingly, the intervention altered both perceptions of norms and individual behavior, even though individual attitudes were unchanged. The implication is that targeting social norms may be a more fruitful avenue for changing prejudiced behaviors than targeting personal beliefs, although the staying power of such interventions needs further investigation. Radio soap operas are especially interesting because they changed people's perceptions of norms in conflict areas, whereas an extensive review of the literature indicates that many other policies to reduce prejudices have been ineffective (Paluck and Green 2009b).

Human sociality is like a river running through society; it is a current constantly shaping individuals, just as flowing water shapes stones in a riverbed. Policy makers can either work with these social currents or ignore them and find themselves swimming upstream.

Some individuals and organizational actors may be well-suited to leading the charge to change a social norm. An actor who has a passionate interest in changing the status quo, who is well connected or highly central to a social network, or who has high status can play a key role in effecting broader change in a society. Such “norm entrepreneurs” can alert people to the existence of a shared complaint and suggest collective solutions (Sunstein 1996; see also chapter 8 for an example involving quitting smoking). If the norm entrepreneur is able to reduce the perceived cost of violating an existing norm, increase the perceived benefit of a new behavior, or create a persuasive new frame for action by naming, interpreting, and dramatizing social phenomena in new ways, social change can occur very quickly (see spotlight 5 for an example from Colombia).

A successful example was an intervention in the United States to reduce bullying in school. Highly connected students and “highly salient” clique leaders participated in a program designed to broadcast students' experiences with and reactions to harassment and to facilitate public discussion on the issue. The “social referents” wrote and read aloud essays about harassment, performed skits demonstrating the emotional effects of bullying, and sold wristbands signaling the wearers' commitment to reducing harassment. Changing the behavior of social referents changed peers' perceptions of schools' collective norms as well as actual harassment behavior through the mechanism of “everyday interaction” (Paluck and Shepherd 2012).

A key to success in many interventions is to identify the group or social network within which a relevant norm is enforced. Is it the family, the friendship group, the peer group, the neighborhood, or the entire community?

Although many developing countries seek to reduce birthrates, for instance, the success of economic incentives designed to achieve this outcome, such as free contraception, has been mixed. One explanation is that fertility is regulated by social norms, so that women tend to choose the same, socially approved reproductive practices as their most important social referents. The result is that either most women within a tightly connected social network choose to use contraceptives or very few do. In Bangladesh, the institution of *purdah*, which limits women's social interactions to other women within their religious group, meant that fertility shifts occurred at the level of these religious groups rather than across villages, in spite of common family-planning inputs across villages (Munshi and Myaux 2006). This evidence suggests that fertility transitions may be better viewed as a norm-driven process than as the aggregate outcome of autonomous decisions. Thus the researchers concluded that a program that encouraged women to meet at a primary health clinic, where they could discuss their options together, might have been more effective than the contraceptive program that delivered information and inputs to women individually in their homes.

Conclusion

A great deal of economic policy relies on a model of human behavior that takes little account of human sociality. Yet humans are innately social creatures, and the fact that we are always “thinking socially” has enormous implications for decision making and behavior, and thus for development. This chapter demonstrates that recognizing the effect of social influences on action can help development practitioners understand

why standard policies sometimes fail and to develop new interventions to combat poverty and promote shared prosperity.

Human sociality has several broad implications for development interventions. First, economic incentives are not necessarily the best or the only way to motivate individuals. The drive for status and social recognition means that in many situations, social incentives can be used alongside or even instead of economic incentives to elicit desired behaviors. This is true for both individual and organizational actors. Moreover, economic incentives can both “crowd out” intrinsic motivations and “crowd in” social preferences. The role for incentives in policy is therefore more complicated than is generally recognized.

Second, we act as members of groups, for better and for worse. Sharing and reciprocity among group members and the other-regarding behavior of those who take on social roles such as “group leader” can contribute to the well-being of a community. Interventions that increase interactions or create groups among individuals who have a common interest in goals such as loan repayment and breastfeeding may facilitate the achievement of these objectives. Yet membership in marginalized groups can also lead to the development of negative social identities that affected individuals would likely not have chosen and would be better off without. From this perspective, cognitive interventions that change identities and self-perceptions can be powerful sources of positive social change.

Third, the widespread willingness of individuals to cooperate in the pursuit of shared goals means that institutions and interventions can be designed to harness social preferences. An important lab finding replicated across almost every society that has been studied is that most people prefer to cooperate as long as others are cooperating. This finding stands in contrast to the traditional assumption that people prefer to shirk social obligations. One implication is that making behavior more visible and “marketing” adherence to norms such as paying taxes or using condoms may be a cost-effective means of increasing contributions to collective goods.

Finally, human societies develop social norms as a means of coordinating and regulating behavior as well as expressing community values, and these informal governance mechanisms have profound consequences for societies. However, in contrast to an economic perspective in which social norms enhance the utility of the individuals who uphold them, this chapter suggests that societies can get stuck in collective patterns of behavior that arguably do not serve anyone’s interests; since social norms are often taken-for-granted aspects

of the environment, “optimizing behavior” by individuals can lead to very suboptimal social outcomes. As a result, norm change may sometimes be a necessary component of social change.

Notes

1. Sociality, social networks, and social norms also support the *mental models* that are internalized—and often shared—representations of the world. Mental models are the primary subject of the next chapter. Although there is considerable overlap among the concepts explored in the two chapters, this chapter addresses the direct social influences on decision making, while chapter 3 focuses on internalized and enduring understandings of the world and self that often operate independently of immediate social dynamics.
2. Kamenica (2012) provides a review of how behavioral economics has shaped thinking about incentives. Madrian (2014) discusses uses of incentives informed by a behavioral approach in public policy making.
3. Researchers anticipated that subjects would exhibit a stronger attachment to their farmer group than to their village for several reasons: the cooperatives play a central role in individuals’ welfare; membership in farmer groups is voluntary rather than ascribed; member similarity within farmer groups in landholdings, income, age, and the like may promote bonding and identification.
4. See, for example, Munshi and Rosenzweig (2006); Conley and Udry (2010); Kandpal and Baylis (2013).
5. For book-length treatments of social norms, see Bicchieri 2006; Posner 2002; Hechter and Opp 2005; Brennan and others 2013.
6. Of course, some oppositional cultures define themselves by breaking the norms of a “dominant group,” but in such cases, norm breaking becomes itself a normatively prescribed activity.
7. For example, the Pakistan Rural Household Survey (PRHS-II) from 2004–05 revealed that among married women ages 15–40, 80 percent felt safe alone within their own settlement while only 27 percent felt safe alone outside it (Jacoby and Mansuri 2011).

References

- Adida, Claire L., David D. Laitin, and Marie-Anne Valfort. 2014. “Muslims in France: Identifying a Discriminatory Equilibrium.” *Journal of Population Economics* 27: 1039–86.
- Ashraf, Nava, Oriana Bandiera, and B. Kelsey Jack. Forthcoming. “No Margin, No Mission? A Field Experiment on Incentives for Public Service Delivery.” *Journal of Public Economics*.
- Avdeenko, Alexandra, and Michael J. Gilligan. 2014. “International Interventions to Build Social Capital: Evidence from a Field Experiment in Sudan.” Policy Research Working Paper 6772, World Bank, Washington, DC.

- Baldassarri, Delia, and Guy Grossman. 2013. "The Effect of Group Attachment and Social Position on Prosocial Behavior: Evidence from Lab-in-the-Field Experiments." *PLoS ONE* 8 (3): 1–9. <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0058750>.
- Basu, K., and J. W. Weibull. 2003. "Punctuality: A Cultural Trait as Equilibrium." In *Economics for an Imperfect World: Essays in Honor of Joseph Stiglitz*, edited by Richard Arnott, Bruce Greenwald, Ravi Kanbur, and Barry Nalebuff, 163–82. Cambridge, MA: MIT Press.
- Bateson, Melissa, Daniel Nettle, and Gilbert Roberts. 2006. "Cues of Being Watched Enhance Cooperation in a Real-World Setting." *Biology Letters* 2: 412–14.
- Bauer, Michael, Alessandra Cassar, Julie Chytlova, and Joseph Henrich. 2014. "War's Enduring Effects on the Development of Egalitarian Motivations and In-Group Biases." *Psychological Science* 25 (1): 47–57.
- Ben-Yishay, Ariel, and A. Mushfiq Mobarak. 2014. "Social Learning and Communication." Working Paper 20139, National Bureau of Economic Research, Cambridge, MA.
- Besley, Timothy, and Maitreesh Ghatak. 2008. "Status Incentives." *American Economic Review* 98 (2): 206–11.
- Bicchieri, Cristina. 2006. *The Grammar of Society*. Cambridge, U.K.: Cambridge University Press.
- BIT (Behavioural Insights Team). 2012. *Applying Behavioural Insights to Reduce Fraud, Error and Debt*. London: Cabinet Office, BIT.
- Blattman, Christopher, Julian C. Jamison, and Margaret Sheridan. 2014. "Reducing Youth Poverty, Crime and Violence: Experimental Evidence from Unconditional Cash Transfers and Behavior Change with High-Risk Men." Unpublished paper.
- Blount, Sally. 1995. "When Social Outcomes Aren't Fair: The Effect of Causal Attributions on Preferences." *Organizational Behavior and Human Decision Processes* 63 (2): 131–44.
- Boudet, Ana Maria Muñoz, Patti Petesch, and Carolyn Turk, with Angélica Thumala. 2013. *On Norms and Agency: Conversations about Gender Equality with Women and Men in 20 Countries*. Directions in Development Series. Washington, DC: World Bank.
- Bowles, Samuel, and Sandra Polania-Reyes. 2012. "Economic Incentives and Social Preferences: Substitutes or Complements?" *Journal of Economic Literature* 50 (2): 368–425.
- Brennan, Geoffrey, Lina Eriksson, Robert Goodin, and Nicholas Southwood. 2013. *Explaining Norms*. Oxford, U.K.: Oxford University Press.
- Cai, Jinh, Alain de Janvry, and Elisabeth Sadoulet. Forthcoming. "Social Networks and the Decision to Insure." *American Economic Journal: Applied Economics*.
- Cameron, Lisa A. 1999. "Raising the Stakes in the Ultimatum Game: Experimental Evidence from Indonesia." *Economic Inquiry* 37 (1): 47–59.
- Carey, Kate B., Lori A. J. Scott-Sheldon, Michael P. Carey, Demetria Cain, Regina Mlobeli, Redwaan Vermaak, Jacqueline Mthembu, Leickness C. Simbayi, and Seth C. Kalichman. 2011. "Community Norms for HIV Risk Behaviors among Men in a South African Township." *Journal of Behavioral Medicine* 34 (1): 32–40.
- Case, Anne. 2007. "Comment." In *Behavioral Economics and Its Applications*, edited by Peter Diamond and Hannu Vartiainen. Princeton, N.J.: Princeton University Press.
- Coleman, Stephen. 1996. "The Minnesota Income Tax Compliance Experiment: State Tax Results." Research Report. Minnesota Department of Revenue. http://www.revenue.state.mn.us/research_stats/research_reports/19xx/research_reports_content_complnce.pdf.
- Conley, Timothy G., and Christopher R. Udry. 2010. "Learning about a New Technology: Pineapple in Ghana." *American Economic Review* 100 (1): 35–69.
- Cowell, Frank A. 1990. *Cheating the Government: The Economics of Evasion*. Cambridge, MA: MIT Press.
- Davis, Kevin, Angelina Fisher, Benedict Kingsbury, and Sally Engle Merry. 2012. *Governance by Indicators: Global Power through Classification and Rankings*. Vol. 1. Oxford, U.K.: Oxford University Press.
- Deci, Edward L., Richard Koestner, and Richard M. Ryan. 1999. "A Meta-Analytic Review of Experiments Examining the Effects of Extrinsic Rewards on Intrinsic Motivation." *Psychological Bulletin* 125 (6): 627.
- De Quervain, Dominique J.-F., Urs Fischbacher, Valerie Treyer, Melanie Schellhammer, Ulrich Schnyder, Alfred Buck, and Ernst Fehr. 2004. "The Neural Basis of Altruistic Punishment." *Science* 305 (5688): 1254–58.
- Eckel, Catherine C., and Philip J. Grossman. 1996. "Altruism in Anonymous Dictator Games." *Games and Economic Behavior* 16 (2): 181–91.
- Elster, Jon. 1989. *The Cement of Society*. Cambridge, U.K.: Cambridge University Press.
- Fehr, Ernst, and Simon Gächter. 2000. "Cooperation and Punishment in Public Goods Experiments." *American Economic Review* 90 (4): 980–94.
- Fehr, Ernst, and Tony Williams. 2013. "Endogenous Emergence of Institutions to Sustain Cooperation." http://www.fdeuw.unimass.nl/meteor-seminar-et/spring-2014/papers-and-abstracts/Paper_williams.pdf.
- Feigenberg, Benjamin, Erica Field, and Rohini Pande. 2013. "The Economic Returns to Social Interaction: Experimental Evidence from Microfinance." *Review of Economic Studies* 80 (4): 1459–83.
- Fong, Christina, Samuel Bowles, and Herbert Gintis. 2006. "Strong Reciprocity and the Welfare State." In *Handbook of the Economics of Giving, Altruism and Reciprocity*, vol. 2, edited by Serge-Christophe Kolm and Jean Mercier Ythier, 1439–64. Amsterdam: Elsevier.
- Forsythe, Robert, Joel L. Horowitz, Nathan E. Savin, and Martin Sefton. 1994. "Fairness in Simple Bargaining Experiments." *Games and Economic Behavior* 6 (3): 347–69.
- Frey, Bruno S., and Benno Torgler. 2007. "Tax Morale and Conditional Cooperation." *Journal of Comparative Economics* 35 (1): 136–59.
- Ghosal, Sayantan, Smarajit Jana, Anandi Mani, Sandip Mitra, and Sanchari Roy. 2013. "Sex Workers, Stigma and Self-Belief: Evidence from a Psychological Train-

- ing Program in India." Unpublished paper. http://www2.warwick.ac.uk/fac/soc/economics/staff/sroy/sanchari_roy_j-m-p.pdf.
- Gintis, Herbert, Samuel Bowles, Robert Boyd, and Ernst Fehr, eds. 2005. "Moral Sentiments and Material Interests: Origins, Evidence, and Consequences." In *Moral Sentiments and Material Interests: The Foundations of Cooperation in Economic Life*, edited by Herbert Gintis, Samuel Bowles, Robert Boyd, and Ernest Fehr, 3–40. Cambridge, MA: MIT Press.
- Gneezy, Uri, and Aldo Rustichini. 2000. "A Fine Is a Price." *Journal of Legal Studies* 29 (1): 1–17.
- Goffman, Erving. 1959. *The Presentation of Self in Everyday Life*. Garden City, NY: Doubleday Anchor Books.
- Gottlieb, Jessica. 2014. "Why Women Participate Less in Civic Activity: Evidence from Mali." Unpublished paper. http://mgape.files.wordpress.com/2013/06/gottlieb_civic-behavior.pdf.
- Granovetter, Mark. 1985. "Economic Action and Social Structure: The Problem of Embeddedness." *American Journal of Sociology* 91 (3): 481–510.
- Grossman, Guy, Devorah Manekin, and Dan Miodownik. Forthcoming. "The Political Legacies of Combat: Attitudes towards War and Peace among Israeli Ex-Combatants." *International Organization*.
- Gürerk, Özgür, Bernd Irlenbusch, and Bettina Rockenbach. 2006. "The Competitive Advantage of Sanctioning Institutions." *Science* 312 (5770): 108–11.
- Habyarimana, James, and William Jack. 2009. "Heckle and Chide: Results of a Randomized Road Safety Intervention in Kenya." Working Paper 169, Center for Global Development, Washington, DC. <http://www.cgdev.org/content/publications/detail/1421541/>.
- . 2011. "Heckle and Chide: Results of a Randomized Road Safety Intervention in Kenya." *Journal of Public Economics* 95 (11): 1438–46.
- Hall, Jennifer. 2011. "Effective Community-Based Interventions to Improve Exclusive Breast Feeding at Four to Six Months in Low- and Low-Middle-Income Countries: A Systematic Review of Randomised Controlled Trials." *Midwifery* 27 (4): 497–502.
- Hechter, Michael. 1987. *Principles of Group Solidarity*. Berkeley, CA: University of California Press.
- Hechter, Michael, and Karl-Dieter Opp, eds. 2005. *Social Norms*. New York: Russell Sage Foundation.
- Henrich, Joseph, Robert Boyd, Samuel Bowles, Colin Camerer, Ernst Fehr, and Herbert Gintis. 2004. *Foundations of Human Sociality: Economic Experiments and Ethnographic Evidence from Fifteen Small-Scale Societies*. Oxford, U.K.: Oxford University Press.
- Henrich, Joseph, and Natalie Henrich. 2007. *Why Humans Cooperate: A Cultural and Evolutionary Explanation*. Oxford, U.K.: Oxford University Press.
- Herrmann, Bendikt, Christian Thöni, and Simon Gächter. 2008. "Antisocial Punishment across Societies." *Science* 319: 1362–67.
- Jacoby, Hanan G., and Ghazala Mansuri. 2011. "Crossing Boundaries: Gender, Caste and Schooling in Rural Pakistan." Policy Research Working Paper 5710, World Bank, Washington, DC.
- Joshi, Neeraj N., Elinor Ostrom, Ganesh P. Shivakoti, and Wai Fung Lam. 2000. "Institutional Opportunities and Constraints in the Performance of Farmer-Managed Irrigation Systems in Nepal." *Asia-Pacific Journal of Rural Development* 10 (2): 67–92.
- Kahan, Dan M. 2005. "The Logic of Reciprocity: Trust, Collective Action and Law." In *Moral Sentiments and Material Interests: The Foundations of Cooperation in Economic Life*, edited by Herbert Gintis, Samuel Bowles, Robert Boyd, and Ernst Fehr, 339–78. Cambridge, MA: MIT Press.
- Kamenica, Emir. 2012. "Behavioral Economics and the Psychology of Incentives." *Annual Review of Economics* 4 (13): 1–13, 26.
- Kandpal, Eeshani, and Kathy Baylis. 2013. "Expanding Horizons: Can Women's Support Groups Diversify Peer Networks in Rural India?" *American Journal of Agricultural Economics* 95 (2): 360–67.
- Kelley, Judith G., and Beth A. Simmons. Forthcoming. "Politics by Number: Indicators as Social Pressure in International Relations." *American Journal of Political Science*.
- Kerr, John, Mamta Vardhan, and Rohit Jindal. 2012. "Pro-social Behavior and Incentives: Evidence from Field Experiments in Rural Mexico and Tanzania." *Ecological Economics* 73: 220–27.
- Kinzig, Ann P., Paul R. Ehrlich, Lee J. Alston, Kenneth Arrow, Scott Barrett, Timothy G. Buchman, Gretchen C. Daily, Bruce Levin, Simon Levin, Michael Oppenheimer, Elinor Ostrom, and Donald Saari. 2013. "Social Norms and Global Environmental Challenges: The Complex Interaction of Behaviors, Values, and Policy." *BioScience* 63 (3): 164–75.
- Klugman, Jeni, Lucia Hanmer, Sarah Twigg, Tazeen Hasan, Jennifer McCleary-Sills, and Julieth Santamaria. 2014. *Voice and Agency: Empowering Women and Girls for Shared Prosperity*. Washington, DC: World Bank. <http://documents.worldbank.org/curated/en/2014/10/20274040/voice-agency-empowering-women-girls-shared-prosperity>.
- Kosfeld, Michael, and Susanne Neckermann. 2011. "Getting More Work for Nothing? Symbolic Awards and Worker Performance." *American Economic Journal: Microeconomics* 3 (3): 86–99.
- Larkin, I. 2009. "Paying \$30,000 for a Gold Star: An Empirical Investigation into the Value of Peer Recognition to Software Salespeople." Working Paper, Harvard Business School, Boston.
- Larson, Deborah Welch, and Alexei Shevchenko. 2010. "Status Seekers: Chinese and Russian Responses to U.S. Primacy." *International Security* 34 (4): 63–95.
- Lessig, Lawrence. 1995. "The Regulation of Social Meaning." *University of Chicago Law Review* 62 (3): 943–1045.
- List, John A. 2007. "On the Interpretation of Giving in Dictator Games." *Journal of Political Economy* 115 (3): 482–93.

- Lopez, Alan D., Colin D. Mathers, Majid Ezzati, Dean T. Jamison, and Christopher J. L. Murray. 2006. "Global and Regional Burden of Disease and Risk Factors, 2001: Systematic Analysis of Population Health Data." *Lancet* 367 (9524): 1747–57.
- Madrian, Brigitte C. 2014. "Applying Insights from Behavioral Economics to Policy Design." Working Paper 20318, National Bureau of Economic Research, Cambridge, MA.
- Mansuri, Ghazala, and Vijayendra Rao. 2013. "Localizing Development: Does Participation Work?" Policy Research Report, World Bank, Washington, DC.
- Martinsson, Peter, Nam Pham-Khanh, and Clara Villegas-Palacio. 2013. "Conditional Cooperation and Disclosure in Developing Countries." *Journal of Economic Psychology* 34: 148–55.
- Mobarak, Ahmed Mushfiq, and Mark R. Rosenzweig. 2013. "Informal Risk Sharing, Index Insurance, and Risk Taking in Developing Countries." *American Economic Review* 103 (3): 375–80.
- Munshi, Kaivan, and Jacques Myaux. 2006. "Social Norms and the Fertility Transition." *Journal of Development Economics* 80 (1): 1–38.
- Munshi, Kaivan, and Mark Rosenzweig. 2006. "Traditional Institutions Meet the Modern World: Caste, Gender, and Schooling Choice in a Globalizing Economy." *American Economic Review* 96 (4): 1225–52.
- Nabulsi, Mona, Haya Hamadeh, Hani Tamim, Tamar Kabakian, Lama Charafeddine, Nadine Yehya, Duriyah Sinno, and Saadieh Sidani. 2014. "A Complex Breastfeeding Promotion and Support Intervention in a Developing Country: Study Protocol for a Randomized Clinical Trial." *BMC Public Health* 14 (1): 1–11. doi: 10.1186/1471-2458-14-36.
- Ostrom, Elinor. 2005. "Policies That Crowd Out Reciprocity and Collective Action." In *Moral Sentiments and Material Interests: The Foundations of Cooperation in Economic Life*, edited by Herbert Gintis, Samuel Bowles, Robert Boyd, and Ernst Fehr, 253–76. Cambridge, MA: MIT Press.
- Paluck, Elizabeth Levy, and Donald P. Green. 2009a. "Defence, Dissent, and Dispute Resolution: An Experimental Intervention Using Mass Media to Change Norms and Behavior in Rwanda." *American Political Science Review* 103 (4): 622–44.
- . 2009b. "Prejudice Reduction: What Do We Know? A Critical Look at Evidence from the Field and the Laboratory." *Annual Review of Psychology* 60: 339–67.
- Paluck, Elizabeth Levy, and Hana Shepherd. 2012. "The Salience of Social Referents: A Field Experiment on Collective Norms and Harassment Behavior in a School Social Network." *Journal of Personality and Social Psychology* 103 (6): 899.
- Portes, Alejandro, and Patricia Landolt. 2000. "Social Capital: Promises and Pitfalls of Its Role in Development." *Journal of Latin American Studies* 32: 529–47.
- Posner, Eric A. 2002. *Law and Social Norms*. Cambridge, MA: Harvard University Press.
- Powell, Walter, ed. 1990. "Neither Market nor Hierarchy: Network Forms of Organization." *Research in Organizational Behavior* 12: 295–336.
- Putnam, Robert D., Robert Leonardi, and Raffaella Y. Nanetti. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
- Rakoczy, Hannes, Felix Warneken, and Michael Tomasello. 2008. "The Sources of Normativity: Young Children's Awareness of the Normative Structure of Games." *Developmental Psychology* 44 (3): 875.
- Restivo, Michael, and Arnout van de Rijt. 2012. "Experimental Study of Informal Rewards in Peer Production." *PLoS ONE* 7 (3): 34358. doi: 10.1371/journal.pone.0034358.
- Rothstein, Bo. 1998. *Just Institutions Matter: The Moral and Political Logic of the Universal Welfare State*. Cambridge, U.K.: Cambridge University Press.
- Rustagi, Devesh, Stefanie Engel, and Michael Kosfeld. 2010. "Conditional Cooperation and Costly Monitoring Explain Success in Forest Commons Management." *Science* 330 (6006): 961–65.
- Serneels, Pieter, Andrew Zeitlin, and Abigail Barr. 2014. "Participatory Monitoring of Public Services by Beneficiaries: Insights from Education Services." Background note for *World Development Report 2015*.
- Sheffrin, Steven M., and Robert K. Triest. 1992. "Can Brute Deterrence Backfire? Perceptions and Attitudes in Taxpayer Compliance." In *Why People Pay Taxes: Tax Compliance and Enforcement*, edited by J. Slemrod, 193–218. Ann Arbor: University of Michigan Press.
- Simmel, Georg. 1955. *Conflict and the Web of Group Affiliations*. New York: Free Press. (Originally published in 1922.)
- Sinclair, Ian. 2005. *Fostering Now: Messages from Research*. London: Jessica Kingsley Publishers.
- Sobel, Joel. 2005. "Interdependent Preferences and Reciprocity." *Journal of Economic Literature* 43 (June): 392–436.
- Sunstein, Cass R. 1996. "Social Norms and Social Roles." *Columbia Law Review* 96 (4): 903–68.
- Tomasello, Michael. 2014. *A Natural History of Human Thinking*. Cambridge, MA: Harvard University Press.
- UNICEF (United Nations Children's Fund). 2013. *Female Genital Mutilation/Cutting: A Statistical Overview and Exploration of the Dynamics of Change*. New York: UNICEF.
- Varshney, Ashutosh. 2001. "Ethnic Conflict and Civil Society." *World Politics* 53 (3): 362–98.
- Willer, Robb. 2009. "Groups Reward Individual Sacrifice: The Status Solution to the Collective Action Problem." *American Sociological Review* 74 (1): 23–43.

When corruption is the norm

Corruption, broadly defined as the use of public office for private gain, exists in many forms. Bribery, fraud, extortion, influence peddling, kickbacks, cronyism, nepotism, patronage, embezzlement, vote buying, and election rigging are all examples of actions that fit under that umbrella term (see UNDP 2008 for full typology of types of corruption). A common response to all forms of corruption is to view them as acts committed by autonomous individuals: a bureaucrat takes a bribe; a traffic cop shakes down a driver; a judge sells his decision. A focus on deterring individual corrupt acts provides a powerful foundation for reform, yet misses the social element that makes corruption a persistent problem.

Corruption in the social sense is a shared belief that using public office to benefit oneself and one's family and friends is widespread, expected, and tolerated. In other words, corruption can be a social norm. Moreover, it has been the default social norm throughout much of history. Only gradually has the principle of equal treatment for all before the law emerged, and in most states it is still a work in progress (Mungiu-Pippidi 2013).

Social expectations and mental models perpetuate corruption

It is important to understand how the decision to engage in corruption takes place in the mind of a public official. If people believe that the purpose of obtaining office is to provide one's family and friends with money, goods, favors, or appointments, then social networks can perpetuate the norm of corruption. Social networks can even serve as a source of punishment for public servants who violate that norm. In Uganda, for instance, reciprocal obligations of kinship and community loyalty may have contributed to a governance outcome in which public officials needed to use their position to benefit their network in order to be regarded as good people (Fjeldstad 2005). Holders of public positions who did not use their influence to assist friends and relatives risked derision and disrespect (Fjeldstad, Kolstad, and Lange 2003).

Even people who privately deplore a norm of corruption might go along with it publicly because of perceived social pressure in support of the system. Since people who express different opinions may find themselves treated as outsiders, they will often choose to express support for the status quo simply to avoid the costs of being different (Kuran 1997). Thus societies can get stuck in an equilibrium in which corruption is the norm, even though privately much of the population would prefer a clean public service.

Social pressures can force even clean officials to capitulate. In China, for instance, a local official was hounded by villagers who pressured him to accept gifts every time he went home. Told he would be unable to get anything accomplished politically by refusing, the official capitulated. He was later arrested on charges of corruption (McGregor 2010). Similarly, a study of India between

1976 and 1982 found that refusing to grant favors could subject a public official to complaints filed by constituents. The norm of corruption was so entrenched that the social meaning of an honest official was someone who demanded no more than the going rate as a bribe for providing a public service (Wade 1985).

Pressure to engage in corruption often comes from within the bureaucracy. In the Indian example, a highly institutionalized informal system had developed for the purchase of transfers from one position to another, with the price dependent on how much the officeholder could expect to extract from his constituents for providing agricultural services: "By long-established convention, 8½ percent of each contract is kicked back to the officers and clerical staff of the Division—2½ percent to the [executive engineer] . . . 1 percent to the clerical staff and draughtsmen, and 5 percent to the Supervisor and [assistant engineer] to be split between them" (Wade 1982, 292–93). Officials who did not participate risked punishment: supervisors developed a code language to use in reports to the authorities in charge of promotions to indicate officers who were not willing to extract side payments, identifying them as "tactless," "having no grip over the people," or "unable to manage" (Wade 1985, 483). Those who resisted might be coaxed into compliance with stories about how the bribes received were "gifts" from farmers grateful for how hard they were working on their behalf (Wade 1982). Ironically, officials who resisted the system might be threatened with bogus public charges of corruption to encourage them to fall into line (Bayley 1966).

These types of social expectations can become internalized, as demonstrated in a study that found that when diplomatic immunity meant they had no legal obligation to pay for parking violations in New York City, diplomats from countries where corruption is high had significantly more unpaid fines than those from countries where corruption is low (Fisman and Miguel 2007). The finding that country of origin can predict corrupt actions has been replicated (Barr and Serra 2010) and suggests that corruption is at least in part associated with social norms.

Strategies to address corruption

Where corruption is common, acting corruptly may become automatic thinking for officials. If so, an appropriate countermeasure might be to create novel situations to get them to think deliberately about their behavior and reassess their attitudes and mental models about public service. When a nongovernmental organization (NGO) called 5th Pillar created a zero-rupee note in India with the inscription "I promise to neither accept nor give a bribe" for people to hand out when asked for bribes, one official was supposedly "so stunned to receive the note that he handed back all the bribes he had solicited for providing electricity to a village." Another "stood up, offered tea to the woman from whom he was trying to extort money,

and approved a loan so her granddaughter could go to college” (Panth 2011, 21).

Because people behave differently in private from how they behave when they are (or think they are) being observed, transforming opaque corrupt acts into public behavior may exert social pressure on officials to uphold their positions as intended. Low-cost Internet platforms such as *ipaidabribe.com*, an NGO initiative by Janaagraha in India, have made it easier for citizens to publicize and stigmatize bribery and shame public servants who solicit bribes, although the impact of such social media initiatives has yet to be evaluated. Newspapers also can make corrupt behavior public and empower citizens with information to monitor officials. In Uganda, corruption by officials was so extensive that local schools were receiving only 24 percent, on average, of the central government grants to which they were entitled, until newspapers began publishing the actual amounts the schools were supposed to receive. As a result, average funding received by the schools increased to 80 percent of the entitled amount (Reinikka and Svensson 2005).

The persistent nature of long-held mental models may make it challenging to convince the public that governance reforms are real. Thus anticorruption campaigns may be more successful when their enforcement is highly conspicuous, especially when public enforcement action is taken against politically powerful individuals widely believed to be above the law (Rothstein 2005). As an example, when the government of Georgia decided to crack down on organized crime, it televised “truckloads of heavily armed police in ski masks round[ing] up high-profile crime bosses” (World Bank 2012, 15). Social marketing campaigns to advertise anticorruption efforts, as well as targeting areas where the government can achieve “quick wins” of easily observable reductions in corruption, might be another way to build citizen support and start shifting public perceptions (Recanatini 2013). In Georgia, a public relations campaign to advertise the reformed traffic safety police included brand-new uniforms, remodeled police buildings that were open and full of windows to indicate transparency, and television commercials portraying civil servants as good people (World Bank 2012). As the headline of a magazine article explaining the anticorruption efforts in Georgia noted, the process involved a “mental revolution” (*Economist* 2010). Seeing things differently may be a critical component of doing things differently.

Viewed through a social lens, changing a social norm about corruption constitutes a collective action problem rather than simply the repression of deviant behavior (Mungiu-Pippidi 2013). Establishing social action coalitions to unite and mobilize public and private actors with overlapping political interests is one promising strategy that has been pursued in Ghana and in Bangalore, India. Providing nonmaterial incentives for participation, such as a shared sense of purpose, feelings of solidarity, and public prestige, may be particularly important to sustaining a broad coalition with varied interests (Johnston and Kpundeh 2004). The Internet may make it easier for dispersed interests to organize. In Brazil, the campaign at *avaaz.org* collected signatures from 3 million citizens and may have encouraged the legislature to pass a bill preventing candidates with criminal records from running for office (Panth 2011).

As this Report argues, fostering collective action is not purely a matter of incentivizing self-interested individuals. People can be intrinsically motivated to cooperate and to punish norm violators. In fact, as experimental findings show, “a social norm, especially where there is communication between parties, can work as well or nearly as well at generating cooperative behavior as an externally imposed set of rules and system of monitoring and sanctioning” (Ostrom 2000). Practitioners wishing to fight corruption might therefore wish to experiment with campaigns that emphasize the social norm of clean government.

References

- Barr, Abigail, and Danila Serra. 2010. “Corruption and Culture: An Experimental Analysis.” *Journal of Public Economics* 94 (11): 862–69.
- Bayley, David H. 1966. “The Effects of Corruption in a Developing Nation.” *Political Research Quarterly* 19 (4): 719–32.
- Economist*. 2010. “Georgia’s Mental Revolution.” August 19.
- Fisman, Raymond, and Edward Miguel. 2007. “Corruption, Norms, and Legal Enforcement: Evidence from Diplomatic Parking Tickets.” *Journal of Political Economy* 115 (6): 1020–48.
- Fjeldstad, Odd-Helge. 2005. “Corruption in Tax Administration: Lessons from Institutional Reforms in Uganda.” Working Paper 2005: 10, Chr. Michelsen Institute, Bergen, Norway.
- Fjeldstad, Odd-Helge, Ivar Kolstad, and Siri Lange. 2003. *Autonomy, Incentives and Patronage: A Study of Corruption in the Tanzania and Uganda Revenue Authorities*. CMI Report 2003: 9, Chr. Michelsen Institute, Bergen, Norway.
- Johnston, Michael, and Sahr John Kpundeh. 2004. *Building a Clean Machine: Anti-Corruption Coalitions and Sustainable Reform*, Vol. 3466. Washington, DC: World Bank.
- Kuran, Timur. 1997. *Private Truths, Public Lies: The Social Consequences of Preference Falsification*. Cambridge, MA: Harvard University Press.
- McGregor, Richard. 2010. *The Party: The Secret World of China’s Communist Rulers*. London: Penguin UK.
- Mungiu-Pippidi, Alina. 2013. “Becoming Denmark: Historical Designs of Corruption Control.” *Social Research* 80 (4): 1259–86.
- Ostrom, Elinor. 2000. “Collective Action and the Evolution of Social Norms.” *Journal of Economic Perspectives* 14 (3): 137–58.
- Panth, Sabina. 2011. “Changing Norms Is Key to Fighting Everyday Corruption.” CommGAP Discussion Papers, Communication for Governance and Accountability Program, World Bank, Washington, DC.
- Recanatini, Francesca. 2013. “Tackling Corruption and Promoting Better Governance: The Road Ahead.” In *Anticorruption Policy: Can International Actors Play a Role?* edited by Susan Rose Ackerman and Paul Carrington, 55–71. Durham, NC: Carolina Academic Press.
- Reinikka, Ritva, and Jakob Svensson. 2005. “Fighting Corruption to Improve Schooling: Evidence from a Newspaper Campaign in Uganda.” *Journal of the European Economic Association* 3 (23): 259–67.
- Rothstein, Bo, ed. 2005. *Social Traps and the Problem of Trust*. Cambridge, U.K.: Cambridge University Press.
- UNDP (United Nations Development Programme). 2008. *Corruption and Development: A Primer*. New York: UNDP.
- Wade, Robert. 1982. “The System of Administrative and Political Corruption: Canal Irrigation in South India.” *Journal of Development Studies* 18 (3): 287–328.
- . 1985. “The Market for Public Office: Why the Indian State Is Not Better at Development.” *World Development* 13 (4): 467–97.
- World Bank. 2012. *Fighting Corruption in Public Services: Chronically Georgia’s Reforms*. Directions in Development: Public Sector Governance. Washington, DC: World Bank. <http://elibrary.worldbank.org/doi/book/10.1596/978-0-8213-9475-5>.

CHAPTER 3

Thinking with mental models

When we think, we generally use concepts that we have not invented ourselves but that reflect the shared understandings of our community. We tend not to question views when they reflect an outlook on the world that is shared by everyone around us. An important example for development pertains to how people view the need to provide cognitive stimulation to children. In many societies, parents take for granted that their role is to love their children and keep them safe and healthy, but they do not view young children as needing extensive cognitive and linguistic stimulation. This view is an example of a “mental model.”¹ In some societies, there are even norms against verbal

it would be impossible for people to make most decisions in daily life. And without *shared* mental models, it would be impossible in many cases for people to develop institutions, solve collective action problems, feel a sense of belonging and solidarity, or even understand one another. Although mental models are often shared and arise, in part, from human sociality (chapter 2), they differ from social norms, which were discussed in the preceding chapter. Mental models, which need not be enforced by direct social pressure, often capture broad ideas about how the world works and one’s place in it. In contrast, social norms tend to focus on particular behaviors and to be socially enforced.

There is immense variation in mental models across societies, including different perceptions of the way the world “works.” Individuals can adapt their mental models, updating them when they learn that outcomes are inconsistent with expectations. But this chapter will explain that individuals may hold on to mental models that have destructive consequences for their lives and may continue to use them to validate their interpretations, even when those models and interpretations are patently false. Individuals can also hold onto multiple and sometimes even contradictory mental models—drawing on one or another mental model when the context triggers a particular way of looking at the world.

Mental models matter for development because they affect decision making. Since a great deal of policy is based on changing people’s decisions—to save and invest, to enroll children in school, to be active citizens, to be honest—understanding the role that mental models play in individual decision making opens up the possibility of new levers for policy, while at the same time highlighting potential problems in design

Mental models help people make sense of the world—to interpret their environment and understand themselves. Mental models include categories, concepts, identities, prototypes, stereotypes, causal narratives, and worldviews.

engagement between parents and young children (see chapter 5). This particular mental model can have huge consequences, even leading to the intergenerational transmission of poverty.

Mental models include categories, concepts, identities, prototypes, stereotypes, causal narratives, and worldviews.² Without mental models of the world,

and implementation. Development interventions can go wrong when policy designers have a faulty mental model of how a population will react to a program. This chapter highlights recent progress in understanding the role that mental models play in economic development and the implications for policy.

The first part of the chapter outlines some of the main ways that mental models affect decisions associated with development. Mental models bear on the evolution of institutions, and on firm behavior and cognitive performance. The chapter explains how mental models, which may once have been well adapted to the situation at hand or may once have reflected the distribution of political power, can persist even when they are no longer adaptive or when the political forces that gave rise to them have changed. The chapter then discusses implications for policy.

Institutions and mental models are closely related; sometimes a change in a mental model requires a change in an institution. But in some cases, exposure to alternative ways of thinking and to new role models—in real life, in fiction, and through public deliberation—can have a measurable influence on mental models and on behaviors, such as investment and education.

Where mental models come from and why they matter

Some mental models seem innate among humans. For example, there is some evidence that humans are innately attuned to the category of “dangerous animal.” It is easy to condition individuals to fear rats, but it may be impossible to condition infants to fear wooden objects and cloth curtains (Bregman 1934). Humans may also be innately susceptible to finding certain objects or behaviors disgusting, such as incest (Haidt 2012). Other mental models are idiosyncratic—acquired through experience particular to the individual. Many mental models come from experiences that are particular to an environment and thus are widely shared within one society but not in others (Berger and Luckmann 1966; Zerubavel 1999).

Mental models enable thought and action, but also constrain them. When the mental models people use are well adapted to the task at hand, they make individuals better off: “Time and energy are saved, rumination and doubt are reduced, and nothing important is lost,” note Ross and Nisbett (1991, 77; see also Todd and Gigerenzer 2000). But mental models may be out of sync with the real world, may substantially limit the amount of information decision makers use, and may cause them to fill in uncertain details of a situation with incorrect assumptions. When this happens

systematically to a group of people, mental models can entrench poverty.

For example, in Ethiopia disadvantaged individuals sometimes report feelings of low psychological agency: “We have neither a dream nor an imagination”; “We live only for today” (Bernard, Dercon, and Taffesse 2011, 1). They may believe that they cannot change their future, and that belief limits their ability to see opportunities they might have, for example, to invest. In 2010, a team of researchers set out to discover whether they could change that mental model. They transported video equipment to remote Ethiopian villages with camels and four-wheel-drive vehicles. They invited a randomly selected group of villagers to watch an hour of inspirational videos—four documentaries in which individuals from the region described how they had improved their socioeconomic positions by setting goals, making careful choices, persevering, and working hard. A survey conducted six months later found that the treatment had increased aspirations and brought about small but tangible changes in behavior: viewers had higher total savings and had invested more resources in their children’s schooling (Bernard and others 2014).

How mental models work and how we use them

At a given moment, there are potentially thousands of details that could be observed, but we have limited powers of observation. Mental models affect where we direct our attention.³ Mental models provide us with default assumptions about the people we interact with and the situations we face. As a result, we may ignore information that violates our assumptions and automatically fill in missing information based on what our mental models suggest is likely to be true.⁴

The links between perception and automatic thinking are strong, as emphasized by Kahneman (2003) and discussed in chapter 1. While both involve the construction of meaning, in both cases the perceiver or thinker is not aware of constructing anything. He imagines that he is responding objectively to the stimulus or the situation. Since we are social animals, our mental models often incorporate the taken-for-granted beliefs and routines of the culture in which we were raised. One way of thinking about culture is as a set of widely shared tools for perception and construal.⁵ The tools may not be fully consistent with one another. Thus, as this chapter will show, a given person might exhibit different behaviors when the mental model that is most accessible to him or her changes (Swidler 1986; DiMaggio 1997).

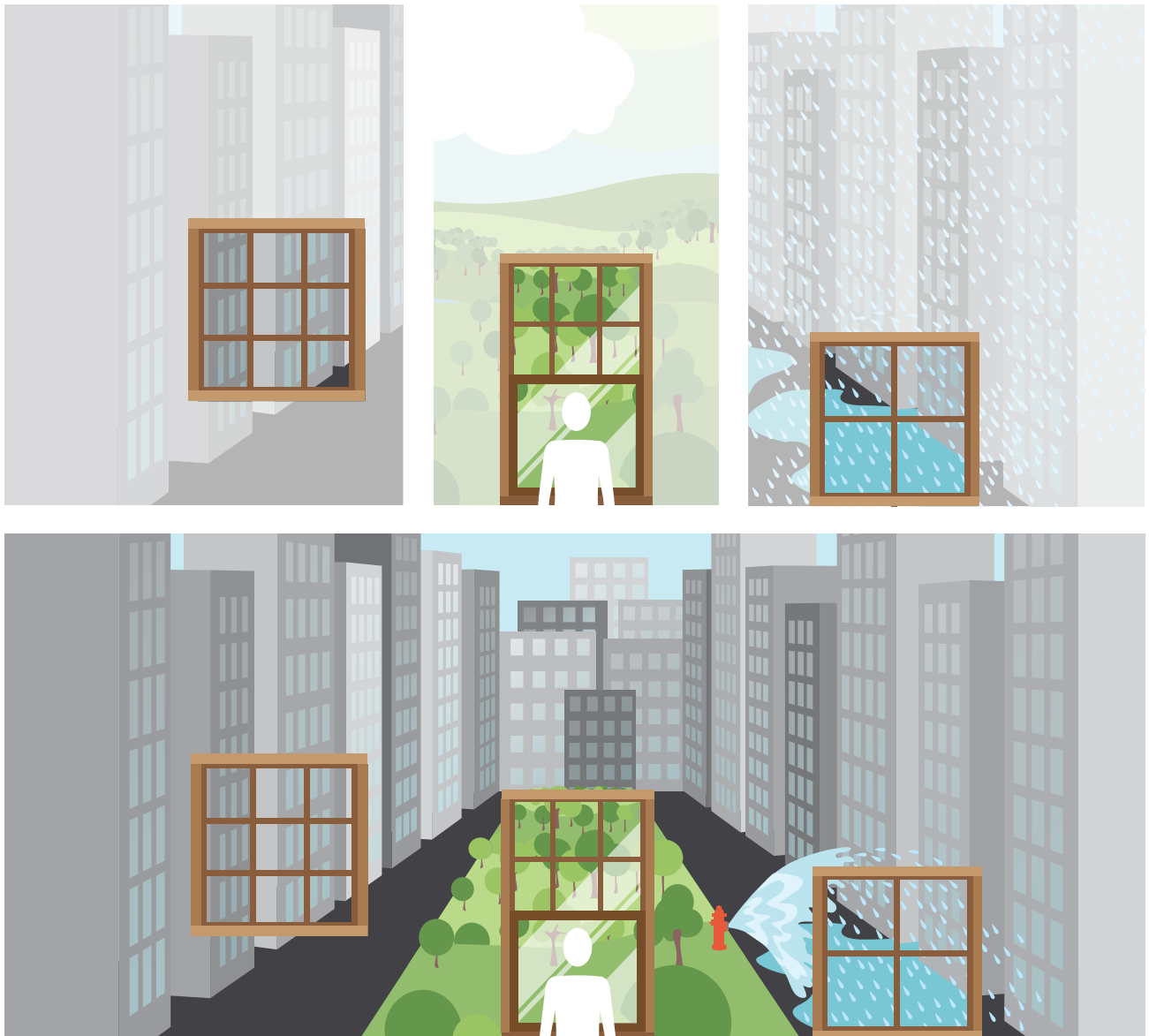
Context can activate a particular mental model, as illustrated in figure 3.1. The windows provide partial views of an urban street. Depending on which window a spectator looks out of—a metaphor for which mental model he uses to interpret the world around him—his mental representation of the scene will be very different. He is unlikely to be aware that his view might be different if he were standing somewhere else or using a different mental model. This figure illustrates

a theme introduced in chapter 1—individuals tend to automatically jump to conclusions based on limited information—and also the main idea of this chapter: thinking processes (both automatic and deliberative, as discussed in chapter 1) draw heavily on learned mental models.

As studies of immigrants show, mental models can be passed down from generation to generation: mental models of trust, gender, fertility, and government, for

Figure 3.1 What we perceive and how we interpret it depend on the frame through which we view the world around us

Individuals do not respond to objective experience but to their mental representations of experience. In constructing their mental representations, people use interpretive frames provided by mental models. People may have access to multiple and conflicting mental models. Context can activate a particular mental model. Using a different mental model can change the individual's mental representation of the world around him.



instance, are typically learned from the culture one grows up in. Social learning processes allow for the intergenerational transfer of mental models.⁶ A society's past may affect the perceptions and evaluations of opportunities by current members of the society.

The roots of mental models

Evidence suggests that historical experience exerts a powerful influence on mental models and, consequently, on how individuals understand and react to the world. An example is the legacy of the Atlantic slave trade. Slavery was ubiquitous in many eras and in many societies, but the slavery associated with the Atlantic slave trade had some properties that made it especially destructive. The middlemen for the white slave traders included local Africans. To protect themselves from being captured and sold as slaves, individuals needed guns, but to buy guns they needed cash. The main way of obtaining cash was to kidnap someone and sell him into slavery. Thus the Atlantic slave trade turned brothers against each other, chiefs against subjects, and judges against defendants. Lower levels of trust in some parts of Africa today are related to the intensity of slave trading centuries ago. Regions that were more susceptible to slave raids due to accidental features of geography have lower levels of trust today—trust toward strangers, friends, relatives, and institutions (Nunn 2008; Nunn and Wantchekon 2011).

Historical modes of production, determined by geography or circumstance, also influence mental models. One way to coordinate production within the household is to use social norms for the division of labor by gender. A technology that increases the comparative advantage of one sex in a given productive activity increases the benefits to specialization. The plough is such a technology. Because it requires a great deal of upper-body strength, it gave men a large comparative advantage in agriculture. Its adoption may have been the source of social norms that are now used to enforce gender differences in nonagricultural domains. Today, ethnic groups that used plough-based agricultural techniques in the distant past have more unequal gender norms and stricter norms about gendered activity, as Alesina, Giuliano, and Nunn (2013) show. The norms persist even when people leave these societies. The children of immigrants to Europe and the United States have gender norms that depend on whether or not their culture of origin used plough-based agricultural technology. Working women are viewed more favorably in societies that did not have the plough than in societies that did, and they represent a higher share of the labor force.

Agricultural modes of production influence mental models in other ways, as well. Cultivating rice requires more specialization by teams than cultivating wheat. People from areas of China suited for growing rice tend to have more collectivist views, while people from areas suited for growing wheat tend to have more individualist views, controlling for other factors (Talhelm and others 2014).

Societies whose current economic activities yield greater gains to cooperation (for example, because they rely on whale-hunting, which requires large teams, as contrasted with economic activities carried out at the individual or family level) exhibit more cooperative behavior in experimental games, Henrich and others (2001) show. The link between economic activities and modes of societal organization has long been recognized, whereas it is only more recently that social scientists have demonstrated that economic activities also shape individuals' mental models of social interaction.

The relationship between institutions and mental models

Some of the best evidence of the impact of mental models on development is that changes in exposure to alternative historical institutions appear to change trajectories of growth, holding constant all other factors (Guiso, Sapienza, and Zingales 2013; Nunn and Wantchekon 2011). Much of this work focuses on the effect of historical institutions on interpersonal trust. The weight of a large body of evidence is that trust in people outside one's own family or social group is strongly positively related to economic growth.⁷ Economic efficiency and growth require the exchange of goods and services to capture economies of scale. Such exchange requires trust: trust that one will be paid as promised, that disputes will be resolved in good faith, or, if not resolved, that a third party can step in and apply rules in a predictable and fair way. In the absence of trust, microevidence shows that parties will also be less willing to delegate responsibilities and less willing to specialize, which can result in inefficiency within a firm and reduced growth within a country (Bloom, Sadun, and Van Reenen 2012).

Weak constraints on a ruling group are a potent cause of low national incomes that remain remarkably persistent over time (Acemoglu and Robinson 2012). The standard argument for explaining that persistence is that inequality of wealth shapes rules, which then tend to preserve the initial inequality of wealth. But social scientists have long argued that institutions have a "schematizing role"; they are not just rules, but also a way of seeing.⁸ Institutions shape the categories

and concepts that people accept as natural and use to interpret the world.

Recent work on governance in Sierra Leone and India can be interpreted in this light. In Sierra Leone, “paramount chiefs,” who are elected for life, rule the villages. The only people who can compete to be a paramount chief are those from one of the ruling families originally recognized by British colonial authorities. For accidental historical reasons, villages differ in the number of such families, ranging from 1 to 12. Villages with fewer ruling families and thus less political competition have systematically worse government (in particular, less secure property rights in land) and systematically worse development outcomes (such as lower rates of child health, of nonagricultural employment, and of educational attainment), Acemoglu, Reed, and Robinson (2013) find. Standard economic models would predict that individuals in the villages with fewer ruling families (and thus poorer development) would have less respect for the chiefs’ authority and be less satisfied with their government than individuals in the villages with many families (and thus generally better governance). But this is not the case.

Acemoglu, Reed, and Robinson (2013) asked respondents to agree with one, both, or neither of the following statements: (1) As citizens, we should be more active in questioning the actions of leaders; and (2) In our country these days, we should have more respect for authority.

Chieftaincies with *fewer* ruling families, which are correlated with *worse* governance, reported *higher* respect for authority, as measured by higher agreement with the second statement. One explanation, which is emphasized by the authors, is that individuals have entered into a patron-client relationship, which gives them an interest in perpetuating the traditional

much land the traditional landlord caste owns. In villages in which the traditional caste is dominant (dominant caste members own at least half the land), a system of clientelism appears to prevail that does not occur in other villages. Workers “sell” their votes to landlords in the dominant caste in exchange for insurance and access to the trading network. The vote selling eliminates political competition. Just as in the villages in Sierra Leone that have limited competition, in Maharashtra villages with a dominant landlord group, governance is worse: in particular, there is a 75–100 percent decline in the availability of pro-poor national programs. However, surveys indicate that the low-caste individuals tend to view the situation as satisfactory. Low-caste individuals are 14 percent more likely to say that they trust the large landholders in villages in which the government is dominated by the landlord class than in villages in which the landlord class is not dominant. It seems plausible that in the traditional oligarchic villages, individuals expect little, get what they expect, and so count themselves not unfairly treated. “Legitimacy follows power,” as Ribot (2009, 125) notes, but for a reason that may have more to do with ways of seeing the world than with the quality of services provided.

A recent experiment in India sheds more light on the power of institutions to shape perceptions. The experiment investigated whether the social interactions in a community can lead community members to overlook or fail to seize opportunities for mutually beneficial cooperation. To investigate the question, the authors invented a simple variant of the public goods game and gave anonymous players the opportunity to vote on a rule to require a minimum contribution to the public good (Hoff, Somanathan, and Strimling 2014). The higher the required contribution (up to the maximum feasible level), the higher each individual’s payoff would be. Villages varied in how high they raised the required contribution. The less socially inclusive villages and those with lower trust adopted a lower rule for contributions.

To get independent information on village characteristics that might affect cooperation, the authors conducted a survey in the villages where the experimental subjects lived. The respondents were not related to the subjects of the experiment. Nonetheless, village cooperation and trust, as measured by the surveys, predict cooperation in the experiment. The villages that were more inclusive (for example, those in which different social groups collectively celebrated festivals together) and in which trust and perceptions of security were higher (for instance, individuals reported that they could leave their bikes unlocked), as well as the villages

Most mental models emerge in a society through shared experiences, and they can be passed down across generations. They can persist even if they are dysfunctional.

authority. But a study of clientelism in the Indian state of Maharashtra suggests that a mental model may also play a role in enhancing the legitimacy of the oligarchic institutions (Anderson, Francois, and Kotwal 2014).

In Maharashtra, all villages have democratic rules, but the villages differ, by historical accident, in how

in which respondents felt that they had benefited from government programs, were the villages that raised the public good rule the most. These findings are consistent with those of Guiso, Sapienza, and Zingales (2013): history shapes the ability to recognize the possibility for improving outcomes through collective action.

Mental models may create beliefs that limit individuals' ability to adapt to new opportunities. The culture of honor in the U.S. South is associated with the sentiment, "If you wrong me, I'll punish you." This cultural response to conflict may have been adaptive in an environment without centralized means of protecting property, so that a man's willingness to punish the merest slight was important in deterring theft. Experiments show that insulting men in these cultures causes a jump in the levels of cortisol (a stress hormone) and testosterone (an aggression hormone) and triggers an urge to punish, whereas it provokes no such responses among men from communities without a culture of honor (Cohen and others 1996). Perhaps not surprisingly, a culture of honor impairs the ability of individuals to build cooperative conventions: when mistakes in coordination occur, the hurt party tends to withdraw cooperation, which can lead to less coordination, more misunderstanding, and an unraveling of cooperative behavior (Brooks, Hoff, and Pandey 2014).

The effects of making an identity salient

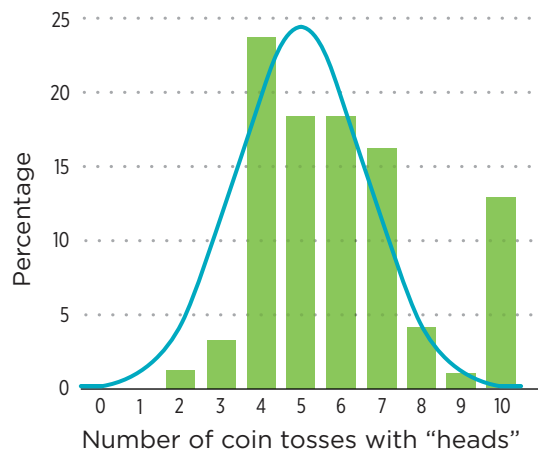
An individual's self-concept consists of multiple identities (that is, multiple mental models), each associated with different norms that guide behavior (Turner 1985). One way to test the influence of mental models on behavior is to experimentally manipulate the salience of a mental model.

A study in a maximum security prison in Zurich, Switzerland, found that increasing the salience of an individual's criminal identity increased his dishonesty (Cohn, Maréchal, and Noll 2013). The prisoners were asked, in private, to report the outcomes of flipping 10 coins and were promised that they could keep those coins for which they reported "heads," while they had to return the coins for which they reported "tails." Before flipping the coins, the prisoners filled out a survey. Randomly, prisoners received a survey that either included questions about their prisoner identity or that did not. In the group that had been primed to think about themselves as prisoners, more subjects cheated (figure 3.2, panel b). Since the decision-making situation was exactly the same and only the prior set of thoughts triggered by the questionnaire had changed, it is clear that context changed the way the subjects evaluated their choices. Cheating was 60

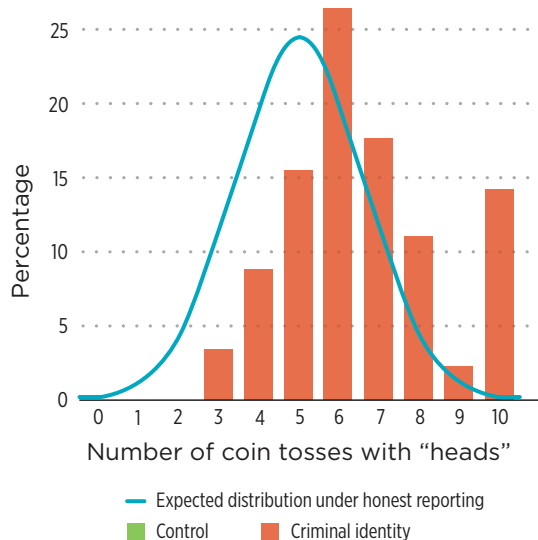
Figure 3.2 Making criminal identity more salient increases dishonesty in prison inmates

Prisoners were asked, in private, to report the outcome of flipping 10 coins and were promised that they could keep those coins for which they reported "heads." Panel a shows the distribution of heads in 10 coin tosses that prisoners reported when their criminal identity was not made salient. Panel b shows the distribution of heads that prisoners reported when their prisoner identity was made salient. In both figures, the blue curve depicts the distribution of heads that would be expected if everyone honestly reported the outcomes of his coin tosses. In both figures, the reported distribution is skewed toward a greater number of heads than honest behavior predicts. But the distribution of the criminal identity treatment is shifted toward more heads (resulting in higher payoffs) than the distribution for the group whose criminal identity was not made salient.

a. Criminal identity not made salient



b. Criminal identity made salient



Source: Cohn, Maréchal, and Noll 2013.

percent higher in the criminal identity group than in the control group.

A follow-up experiment sheds light on why. The experiment again randomly assigned the “criminal identity” survey to one group of prisoners and the control survey to the other group. After completing the survey, prisoners were asked to complete a word whose initial letters were, for example, “pol.” Those in the criminal identity group were almost twice as likely to complete “pol” with a crime-related word, such as “police,” than to choose words not related to crime, such as “politics.” The results of the word-completion task show that the criminal identity survey increased the mental accessibility of crime-related thoughts. The results support the interpretation that individuals in the Zurich coin-flipping game were made more dishonest by the context that made their criminal identity more salient in their minds. Significantly, the effect is

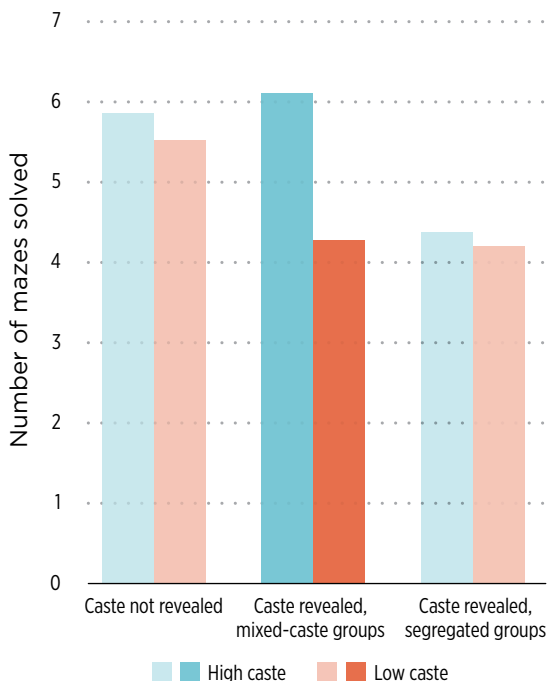
specific to individuals who have a criminal identity. No similar effect occurred when participants were drawn from the general population.

Research on performance and identity shows that context also influences the ability and motivation to learn and to expend effort, with potentially large effects on human capital formation. Context seems to trigger beliefs about what one is capable of and what one should achieve. An experiment on caste in India finds that context can have an important impact on performance.

The experiment assessed the effect of manipulating the salience of caste on children’s intellectual performance in classrooms (Hoff and Pandey 2006, 2014).⁹ The control condition, in which caste identity was not revealed, demonstrated that low-caste boys solve mazes just as well as high-caste boys. However, publicly revealing caste in mixed-caste groups reduced the performance of the low-caste boys, which (controlling for individual characteristics) created a 23 percent caste gap in total mazes solved in favor of the high castes (figure 3.3). Here, a context that primed a social identity (by revealing caste) affected performance. When caste was revealed in segregated groups, the high-caste boys also underperformed. Why might this be? If segregation, a mark of the privileges of the high caste, evokes a sense of entitlement in which the high-caste boys feel less need to achieve, then the effect of making caste salient may be to cause the high-caste students to feel, “Why try?” Meanwhile, the low-caste may feel, “I can’t, or don’t dare to, excel.”¹⁰

Figure 3.3 Cuing a stigmatized or entitled identity can affect students’ performance

High-caste and low-caste boys from villages in India were randomly assigned to groups that varied the salience of caste identity. When their caste was not revealed, high-caste and low-caste boys were statistically indistinguishable in solving mazes. Revealing caste in mixed classrooms decreased the performance of low-caste boys. But publicly revealing caste in caste-segregated classrooms—a marker of high-caste entitlement—depressed the performance of both high-caste and low-caste boys, and again their performance was statistically indistinguishable.



Source: Hoff and Pandey 2014.

The staying power of mental models

The power and persistence of mental models are strikingly captured by a story Nelson Mandela told of a time when he flew from Sudan to Ethiopia (Mandela 1995, 292). He started to worry when he noticed that the pilot was black:

We put down briefly in Khartoum, where we changed to an Ethiopian Airways flight to Addis. Here I experienced a rather strange sensation. As I was boarding the plane I saw that the pilot was black. I had never seen a black pilot before, and the instant I did I had to quell my panic. How could a black man fly an airplane?

Mental models may outlive their usefulness or, indeed, may persist when they were never useful to begin with. We have a hard time abandoning mental models that are not serving us well. The Atlantic slave trade, and the immense destruction of local institutions that it caused, ended over 100 years ago. Few people are

now exposed to the risk of being sold into slavery. Why don't people change their mental model and become more trusting, now that the danger has passed?

In standard economic models, many of the mismatches described here between mental models and reality would not persist. Individuals make inferences from their experiences about what works and what does not. If beliefs are inconsistent with outcomes, then the decision maker in the standard economic model (see figure 1.2, panel a, in chapter 1) would revise his beliefs as he observes new information. In contrast, what a “psychological, social, and cultural actor” sees and the inferences he draws from it are themselves affected by his mental models. The result is that we can live in a world that Hoff and Stiglitz (2010) describe as an “equilibrium fiction.” A belief in a race-based or gender-based hierarchy can affect self-confidence in ways that create productivity differences that sustain the beliefs, although no underlying differences exist. Four broad factors, discussed next, can explain the staying power of mental models that are not serving individuals well.

Attention and perception

Mental models influence what individuals perceive, pay attention to, and recall from memory. If, for instance, people continually perceive leaders as untrustworthy, the perceptions will reinforce the mental model that they must be on guard against betrayal. Without realizing it, people tend to fill in information gaps based on default assumptions consistent with their mental models. Individuals may even reinterpret information about a person or object that seems inconsistent with the category to which the person or object is assigned so that the information fits the category (Baldwin 1992).

The need to test some types of beliefs at the level of the society

Some beliefs—for example, that women cannot be capable political leaders—cannot be tested at the individual level. There must be a critical mass in society that tests the belief together by experiencing the alternative world. Thus a test requires an event that leads many people to question old beliefs.

For example, one of the factors that support trust in society is a norm against taking advantage of other people's trust. Beliefs about whether others are trustworthy influence whether parents teach children to trust others. As a result, mental models about whether others are trustworthy or not are transmitted across generations, and initial beliefs are reinforced and therefore never tested at a wide scale (Frank 1997; Tabellini 2008).

Belief traps

The beliefs that people hold today may lead to choices that foreclose putting the belief to a test tomorrow. It is easy to see how this can happen in the case of trust. If people believe that trusting strangers or putting money in a bank is risky, they will be reluctant to use financial intermediaries. If they did, they might discover that the trust they placed in them was warranted, and after enough good experiences, they would revise their belief. But the potential cost (as they see it) of testing the belief may be too high. People who live in high-trust areas of Italy, for example, use banking services, such as checks, savings accounts, financial instruments, and formal credit, rather than cash (Guiso, Sapienza, and Zingales 2013). People in low-trust areas use banking services less—which could deprive them of the opportunity to update their beliefs when, and if, banking services became secure.

When the stakes are even higher, it is asking a great deal of people to challenge their mental model. For example, the practice of female genital cutting is supported by many social norms and beliefs, including, in some groups, a belief that it increases fertility or that contact with a woman's genitals in their natural state can be harmful or even fatal (Mackie 1996; WHO 1999; Gollaher 2000). When people hold such beliefs as these, it takes a brave soul to test them. In some countries, mothers bring their ill newborns to visit tooth extractors who dig out the undeveloped baby tooth with a sharp metal stick in order to avoid contamination from “false teeth,” which are believed to be dangerous or even deadly (Borrell 2012). It may be asking a great deal from a parent to test this belief.

Ideology and confirmation bias

Beliefs can lead people to ignore, suppress, or forget observations that would tend to undermine their beliefs. *Confirmation bias*, discussed in chapter 1, is the tendency to search for and use information that supports one's beliefs. If the bias is sufficiently strong, it is possible that the false hypothesis will never be discarded, no matter how much evidence exists that favors the alternative hypothesis (Rabin and Schrag 1999). The absence of a concept of a particular phenomenon can leave individuals unable to discern actual patterns, or able to discern them only incompletely. For instance, a woman who suffers sexual harassment before the concept exists in her society cannot properly comprehend her experience or communicate it intelligibly to others; the problem “stems from a gap in shared tools of social interpretation” (Fricker 2007, 6). Chapter 10 presents experimental evidence that individuals, including development professionals, who are otherwise quite capable of solving numerical

problems, struggle to interpret data correctly when the implications of the data conflict with their mental models. The general point is that just as mental models are tools for constructing mental representations, inappropriate mental models limit our ability to perceive and communicate a pattern accurately.

The lack of an appropriate mental model can also impede learning. In experiments in Malawi, women farmers who are trying to communicate new agricultural techniques are consistently rated as less knowledgeable than men, even though they have the same knowledge base (BenYishay and Mobarak 2014). In an experiment in India, women who are in a dispute with men have less power of persuasion than their male counterparts, even when they are judged equally articulate, wise, and otherwise credible (Hoff, Rahman, and Rao 2014). The findings provide an example of what Fricker (2007) calls “epistemic injustice”—discrimination against an individual as a source of knowledge because of his or her social identity. The historical distribution of power and prestige between groups affects perceptions of their credibility and thus can perpetuate these inequities.

Policies to improve the match of mental models with a decision context

The close relationship between mental models and institutions such as caste and gender roles makes the process of changing mental models difficult. Some policies, such as self-help group programs, try to change institutions and mental models at the same time: they try to decrease economic dependence or other forms of dependence and to expand ways of understanding the world. Other policies try to change only institutions, with the hope that the intervention will change mental models as an indirect effect. Still other policies target mental models alone. This section considers the latter two types of policy.

Changing institutions

An example of the potential for policy that changes institutions to change mental models comes from a program of political affirmative action for women in West Bengal, India. The policy led some villages to have female leaders for the first time. Just seven years’ exposure to women leaders reduced men’s bias in evaluating women in leadership positions. The men still preferred male leaders to female leaders. However, in evaluating the performance of a given leader, gender was no longer a strong source of bias. Seven years’ exposure to women leaders also raised parents’ aspira-

tions for their teenage daughters, raised the daughters’ aspirations for themselves, and led to a slight narrowing of the gender gap in schooling (Beaman and others 2009, 2012). The evidence suggests that the change in mental models caused the changes in behavior.

However, it is only under certain circumstances that changes in interactions—created by political affirmative action or other policies—lead to a positive change in attitudes. If negative stereotypes shape perceptions strongly enough, interaction may simply reinforce the negative stereotypes, undermining the hoped-for effects of the policy. A study of political affirmation for low-caste individuals in village government in India finds evidence that it increased absenteeism by high-caste teachers and lowered outcomes in primary schools, which were under the jurisdiction of the local village government (Pandey 2010). High-caste teachers essentially boycotted the attempted change in the status of low-caste individuals.

Changing mental models through the media

Exposure to fiction, such as a serial drama, can change mental models (see spotlight 2 on entertainment education). For example, when people who have not been exposed to societies with low fertility were exposed to engaging soap operas about families with few children, fertility rates declined (Jensen and Oster 2009; La Ferrara, Chong, and Duryea 2012). The impact of exposure to long-running serial dramas in Brazil, which deliberately crafted soap operas with small families to bring about social change, was large and immediate. The fertility decline across municipalities in Brazil began after the first year the municipality had access to TV soap operas. The decline was especially great for respondents close in age to the leading female character in at least one of the soap operas aired in a given year, which is consistent with a role model effect. The decline was comparable to the effect of two additional years in women’s education. For women ages 35–44, the decrease was 11 percent of mean fertility.

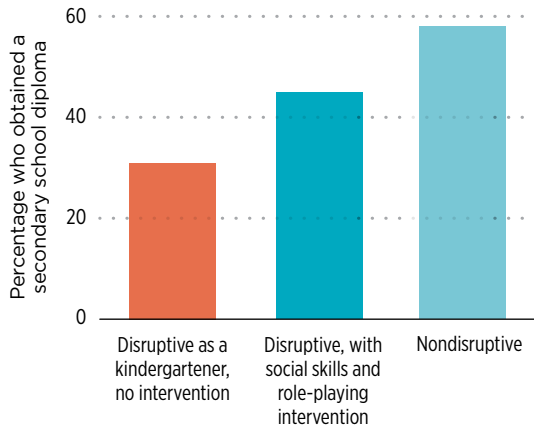
Changing mental models through education methods and early childhood interventions

A promising arena in which policy can affect mental models is early education. Primary school is a formative experience for children. The experience can shape the mental models that the individuals possess as adults. There is some evidence that “horizontal teaching systems,” in which children interact with one another and engage in class discussions, are an important learning tool and increase their level of trust. This

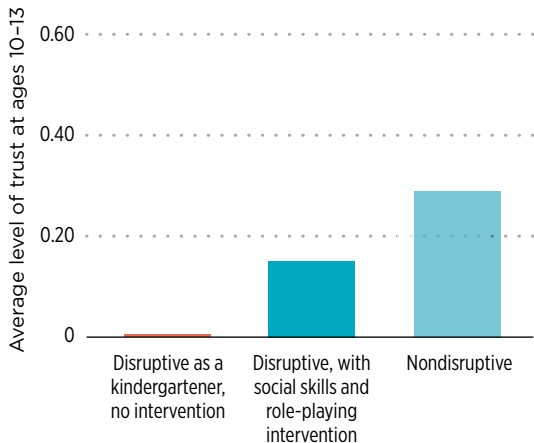
Figure 3.4 Changing disruptive children's mental models related to trust improved adult outcomes

A role-playing intervention for disruptive boys ages 7–9 reduced the gap in the rate of secondary school completion between the disruptive and the nondisruptive boys by more than half.

a. Rate of obtaining a secondary school diploma



b. Levels of trust at ages 10–13



Source: Algan, Beasley, and others 2013.

Note: Trust is the average of the normalized responses to several different questions about trust, setting the control group mean to zero.

body of evidence suggests new policy options. A shift in teaching strategies—incorporating more group work projects, especially in education systems that have traditionally relied heavily on rote learning and memorization—may be a promising avenue for improving social capital (Algan, Cahuc, and Shleifer 2013).

Insight into the long-term effects of interventions that aim to increase trust among children comes from an experiment in Montreal that fostered self-control and social skills in disadvantaged and disruptive schoolchildren through a series of role-playing exercises with more cooperative children (Algan, Beasley, and others 2013). This program was targeted toward the most disruptive boys in kindergarten: those who were the most aggressive and had the most problems with self-control. The disruptive boys were randomly assigned to a treatment group or to a control group whose members received no special help. Data were collected over 20 years on these two groups, as well as on a representative group of boys who were not disruptive as kindergarteners. As adolescents, the boys in the treatment group were found to be more trusting and to have more self-control. They also had substantially improved adult outcomes, including much

Policy interventions may be able to expose people to alternative experiences, ways of thinking, and role models that expand mental models and thereby broaden prototypes (such as a woman leader), improve trust, encourage collective action, and increase investments.

higher rates of completing secondary school, shown in figure 3.4, panel a. Increased trust (not only self-control) seems to have been a factor in the improvements in adult outcomes. Figure 3.4, panel b, shows the level of trust—calculated as an average of many questions that ask about levels of trust—in the control, treatment, and nondisruptive groups at ages 10–13, where the variable is normalized with the control group mean equal to zero. The gap between the nondisruptive group and the disruptive group without the treatment is 0.29 standard deviations. Treatment reduced that gap by about 50 percent. The evidence shows that higher levels of trust explain the narrowing of the achievement gap between the initially disruptive children and those who were nondisruptive.

Conclusion

People use mental models to make sense of the world around them. Most mental models emerge in a society through shared experiences, and they can be passed down across generations. They can persist even if they have negative consequences for individuals and communities. Mental models influence both the legitimacy of predatory governance institutions and the prospects for jointly beneficial collective action. Policy interventions may be able to expose people to experiences that change their mental models.

Much evidence demonstrates the role of mental models in domains important for development. This chapter discussed only a few. Later chapters will discuss others, including mental models of child development (chapter 5), “mental accounting” for money matters (chapter 6), mental models of productivity and technology (chapter 7), mental models of health (chapter 8), and mental models of climate change (chapter 9).

Historians attribute the rise of the modern world to a change in the mental model of how the universe works. Shifting to believing we live under universal physical laws rather than divine caprice made it possible for individuals to move from handicrafts to mass production technologies (see, for instance, Mokyr 2013). The Enlightenment represented a changed mental model that gave rise to sweeping changes in economic structures, which in turn gave rise to massive changes in social patterns that helped create the modern world.

Economic and political forces influence mental models, but mental models can have an independent influence on development by shaping attention, perception, interpretation, and the associations that automatically come to mind. This chapter has illustrated how a focus on mental models both gives policy makers new tools for promoting development and provides new understandings for why policies based on standard economic assumptions can fail.

Notes

1. In using the term *mental models*, the Report follows the usage by Arthur Denzau and Douglass North (1994) and Elinor Ostrom (2005). Psychology, sociology, anthropology, and political science use related concepts, including *schemas* or *cognitive frames* (Markus 1977; DiMaggio 1997).
2. A simple example of a category—a mental model—that has received a great deal of attention in behavioral economics is a *mental account*. Economists use the term to describe how individuals may bracket a decision, using some information and discarding other information that affects the payoffs to the decision (Thaler 1999).
3. This effect of mental models gives rise to the *availability heuristic*. The heuristic entails basing judgments on information and scenarios that immediately come to mind, rather than on using all information appropriately. To take a simple example, most English-speaking people, when asked, will say that seven-letter words ending in *ing* are more common than seven-letter words whose sixth letter is *n*, even though the former category is a subset of the latter. The explanation for this common mistake is that English-speakers have a familiar category for *ing* words.
4. This is called the *prototype heuristic*. It explains why, for example, the median estimate of the annual number of murders in the city of Detroit, Michigan, is twice as high as the estimate of the number of murders in the state of Michigan (Kahneman and Frederick 2002). Detroit has a reputation for violence; Michigan as a whole does not.
5. Over the years, there have been hundreds of definitions of the term “culture.” Many economists use the term to mean individual values that are broadly shared within a group, but many anthropologists and sociologists today do not accept the premise—which underlies that usage—that there are broadly shared, uncontested values within a society. Instead, the prevailing definition of *culture* in anthropology and sociology is the collection of mental models (or “schemas”) that are maintained and nurtured by rules and norms, actions, and rituals (Swidler 1986; DiMaggio 1997). Drawing on work in anthropology, sociology, and cognitive science, many social scientists have gravitated toward a cognitive approach in which culture is composed of mental tools (ways of interpreting the world) instead of, or in addition to, values (ends of action). See, for example, Rao and Walton (2004); North (2005); Greif (2006); Rao (2008); Nunn (2012); Gauri, Woolcock, and Desai (2013); and Mokyr (2013).
6. Nunn and Wantchekon (2011); Fernández and Fogli (2009); Algan and Cahuc (2010).
7. See the vast literature that emerged from the work of Knack and Keefer (1997), reviewed in Algan and Cahuc (2013).
8. See, for example, Douglas (1986) and Fourcade (2011).
9. A feature of the caste system that makes it well suited to identifying the effect of culture and identity on learning is that the meaning of the caste categories is not in doubt. The caste system is a closed order: status is fixed by birth. High-caste individuals are considered socially and intellectually superior in all respects to low-caste individuals. Individuals at the bottom of the caste order were once called “untouchables.” Perhaps the most important fact about caste has been its emphasis on social segregation: “Segregation of individual castes or groups of castes in the village was the most obvious mark of civic privileges and disabilities” (Jodhka 2002, 1815). Today, untouchability is illegal, and evidence of a new social order is visible to every schoolchild in the measures to encourage

school enrollment and in the broad participation of low-caste individuals in the political process. Yet children are still likely to encounter the traditional order of caste, segregation, and untouchability in their own experiences, through the fables they learn and in the continued discrimination, insults, and atrocities against upwardly mobile members of low castes.

10. A seminal work on the ability of cues to an identity stereotyped as intellectually inferior to impair cognitive performance is Steele and Aronson (1995). The argument in this chapter is that identity cues may affect preferences to expend effort, as well as the ability to perform, by triggering a sense of entitlement or a particular social role.

References

- Acemoglu, Daron, Tristan Reed, and James A. Robinson. 2013. "Chiefs: Economic Development and Elite Control of Civil Society in Sierra Leone." Working Paper 18691, National Bureau of Economic Research, Cambridge, MA.
- Acemoglu, Daron, and James A. Robinson. 2012. *Why Nations Fail: The Origins of Power, Prosperity, and Poverty*. New York: Crown.
- Alesina, Alberto, Paola Giuliano, and Nathan Nunn. 2011. "Fertility and the Plough." *American Economic Review* 101 (3): 499–503.
- . 2013. "On the Origins of Gender Roles: Women and the Plough." *Quarterly Journal of Economics* 128 (2): 469–530.
- Algan, Yann, Elizabeth Beasley, Frank Vitaro, and Richard Tremblay. 2013. "The Long-Term Impact of Social Skills Training at School Entry: A Randomized Controlled Trial." Working Paper, Sciences Po, Paris.
- Algan, Yann, and Pierre Cahuc. 2010. "Inherited Trust and Growth." *American Economic Review* 100 (5): 2060–92.
- . 2013. "Trust and Growth." *Annual Review of Economics* 5 (1): 521–49.
- Algan, Yann, Pierre Cahuc, and Andrei Shleifer. 2013. "Teaching Practices and Social Capital." *American Economic Journal: Applied Economics* 5 (3): 189–210.
- Anderson, Siwan, Patrick Francois, and Ashok Kotwal. 2014. "Clientelism in Indian Villages." <http://econ.arts.ubc.ca/fpatrick/documents/clientAERmay1313.pdf>.
- Baldwin, Mark W. 1992. "Relational Schemas and the Processing of Social Information." *Psychological Bulletin* 112 (3): 461–84.
- Beaman, Lori, Raghavendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?" *Quarterly Journal of Economics* 124 (4): 1497–1540.
- Beaman, Lori, Esther Duflo, Rohini Pande, and Petia Topalova. 2012. "Female Leadership Raises Aspirations and Educational Attainment for Girls: A Policy Experiment in India." *Science* 335 (6068): 582–86.
- BenYishay, Ariel, and A. Mushfiq Mobarak. 2014. "Social Learning and Communication." Working Paper 20139, National Bureau of Economic Research, Cambridge, MA.
- Berger, Peter L., and Thomas Luckmann. 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Garden City, NY: Anchor Books.
- Bernard, Tanguy, Stefan Dercon, Kate Orkin, and Alemayehu Seyoum Taffesse. 2014. "The Future in Mind: Aspirations and Forward-Looking Behaviour in Rural Ethiopia." Working Paper WPS/2014–16, Centre for the Study of African Economies, Oxford, U.K.
- Bernard, Tanguy, Stefan Dercon, and Alemayehu Seyoum Taffesse. 2011. "Beyond Fatalism: An Empirical Exploration of Self-Efficacy and Aspirations Failure in Ethiopia." IFPRI Discussion Paper 01101, International Food Policy Research Institute, Washington, DC.
- Bloom, Nicholas, Raffaella Sadun, and John Van Reenen. 2012. "The Organization of Firms across Countries." *Quarterly Journal of Economics* 127 (4): 1663–1705. doi: 10.1093/qje/qje029.
- Borrell, Brendan. 2012. "Magic or Medicine? If You Were a Poor Ugandan Mother with a Desperately Ill Baby, Would You Turn to Western Medicine or the Village Healer?" *Aeon*. <http://aeon.co/magazine/philosophy/african-healers-and-western-medicine/>.
- Bregman, Elsie O. 1934. "An Attempt to Modify the Emotional Attitudes of Infants by the Conditioned Response Technique." *Pedagogical Seminary and Journal of Genetic Psychology* 45 (1): 169–98.
- Brooks, Benjamin, Karla Hoff, and Pryanka Pandey. 2014. "Insult versus Accident: Caste Culture and the Efficiency of Coordination." Paper presented at the Latin American and Caribbean Economic Association Conference.
- Cohen, Dov, Richard E. Nisbett, Brian F. Bowdle, and Norbert Schwarz. 1996. "Insult, Aggression, and the Southern Culture of Honor: An 'Experimental Ethnography'." *Journal of Personality and Social Psychology* 70 (5): 945–60. doi: 10.1037/0022-3514.70.5.
- Cohn, Alain, Michel André Maréchal, and Thomas Noll. 2013. "Bad Boys: The Effect of Criminal Identity on Dishonesty." Working Paper 132, University of Zurich, Zurich.
- Denzau, Arthur T., and Douglass C. North. 1994. "Shared Mental Models: Ideologies and Institutions." *Kyklos* 47 (1): 3–31.
- DiMaggio, Paul. 1997. "Culture and Cognition." *Annual Review of Sociology* 23 (1): 263–87.
- Douglas, Mary. 1986. *How Institutions Think*. Syracuse, NY: Syracuse University Press.
- Fernández, Raquel, and Alessandra Fogli. 2009. "Culture: An Empirical Investigation of Beliefs, Work, and Fertility." *American Economic Journal: Macroeconomics* 1 (1): 146–77.
- Fourcade, Marion. 2011. "Cents and Sensibility: Economic Valuation and the Nature of 'Nature.'" *American Journal of Sociology* 116 (6): 1721–77.
- Frank, Robert H. 1997. "The Frame of Reference as a Public Good." *The Economic Journal* 107 (445): 1832–47.

- Fricker, Miranda. 2007. *Epistemic Injustice: Power and the Ethics of Knowing*. Oxford, U.K.: Oxford University Press.
- Gauri, Varun, Michael Woolcock, and Deval Desai. 2013. "Intersubjective Meaning and Collective Action in Developing Societies: Theory, Evidence, and Policy Implications." *Journal of Development Studies* 49 (1): 160–72.
- Gollaher, David L. 2000. *Circumcision: A History of the World's Most Controversial Surgery*. New York: Basic Books.
- Greif, Avner. 2006. *Institutions and the Path to the Modern Economy: Lessons from Medieval Trade*. New York: Cambridge University Press.
- Guiso, Luigi, Paola Sapienza, and Luigi Zingales. 2013. "Long-Term Persistence." Working Paper 23/13, Einaudi Institute for Economics and Finance, Rome.
- Haidt, Jonathan. 2012. *The Righteous Mind: Why Good People Are Divided by Politics and Religion*. New York: Random House.
- Henrich, Joseph, Robert Boyd, Samuel Bowles, Colin Camerer, Ernst Fehr, Herbert Gintis, and Richard McElreath. 2001. "In Search of *Homo Economicus*: Behavioral Experiments in 15 Small-Scale Societies." *American Economic Review* 91 (2): 73–78.
- Hoff, Karla, and Priyanka Pandey. 2006. "Discrimination, Social Identity, and Durable Inequalities." *American Economic Review* 96 (2): 206–11.
- . 2014. "Making Up People: The Effect of Identity on Performance in a Modernizing Society." *Journal of Development Economics* 106: 118–31.
- Hoff, Karla, Tauhidur Rahman, and Vijayendra Rao. 2014. "Epistemic Discrimination." Unpublished manuscript.
- Hoff, Karla, Rohini Somanathan, and Pontus Strimling. 2014. "Community Contracts: An Experimental Investigation of Rule Formation in Indian Villages." Working Paper, University of Virginia, Charlottesville.
- Hoff, Karla, and Joseph Stiglitz. 2010. "Equilibrium Fictions: A Cognitive Approach to Societal Rigidity." *American Economic Review* 100: 141–46.
- Jensen, Robert, and Emily Oster. 2009. "The Power of TV: Cable Television and Women's Status in India." *Quarterly Journal of Economics* 124 (3): 1057–94.
- Jodhka, Surinder S. 2002. "Caste and Untouchability in Rural Punjab." *Economic and Political Weekly* 37 (19): 1813–23.
- Kahneman, Daniel. 2003. "Maps of Bounded Rationality: Psychology for Behavioral Economics." *American Economic Review* 93 (5): 1449–75.
- Kahneman, D., and S. Frederick. 2002. "Representativeness Revisited: Attribute Substitution in Intuitive Judgment." In *Heuristics and Biases: The Psychology of Intuitive Judgment*, edited by T. Gilovich, D. Griffin, and D. Kahneman, 49–81. New York: Cambridge University Press.
- Knack, Stephen, and Philip Keefer. 1997. "Does Social Capital Have an Economic Payoff? A Cross-Country Investigation." *Quarterly Journal of Economics* 112 (4): 1251–88.
- La Ferrara, Eliana, Alberto Chong, and Suzanne Duryea. 2012. "Soap Operas and Fertility: Evidence from Brazil." *American Economic Journal: Applied Economics* 4 (4): 1–31.
- Mackie, Gerry. 1996. "Ending Footbinding and Infibulation: A Convention Account." *American Sociological Review* 61 (6): 999–1017.
- Mandela, Nelson. 1995. *Long Walk to Freedom: The Autobiography of Nelson Mandela*. New York: Little, Brown.
- Markus, Hazel. 1977. "Self-Schemata and Processing Information about the Self." *Journal of Personality and Social Psychology* 35 (2): 63–78.
- Mokyr, Joel. 2013. "Cultural Entrepreneurs and the Origins of Modern Economic Growth." *Scandinavian Economic History Review* 61 (1): 1–33.
- North, Douglass C. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge, U.K.: Cambridge University Press.
- . 2005. *Understanding the Process of Economic Change*. Princeton, NJ: Princeton University Press.
- Nunn, Nathan. 2008. "The Long-Term Effects of Africa's Slave Trades." *Quarterly Journal of Economics* 123 (1): 139–76.
- . 2012. "Culture and the Historical Process." *Economic History of Developing Regions* 27 (Supplement 1): 108–26.
- Nunn, Nathan, and Leonard Wantchekon. 2011. "The Slave Trade and the Origins of Mistrust in Africa." *American Economic Review* 101 (7): 3221–52.
- Ostrom, Elinor. 2005. *Understanding Institutional Diversity*. Princeton, NJ: Princeton University Press.
- Pandey, Priyanka. 2010. "Service Delivery and Corruption in Public Services: How Does History Matter?" *American Economic Journal: Applied Economics* 2 (3): 190–204.
- Rabin, Matthew, and Joel L. Schrag. 1999. "First Impressions Matter: A Model of Confirmatory Bias." *Quarterly Journal of Economics* 114 (1): 37–82.
- Rao, Vijayendra. 2008. "Symbolic Public Goods and the Coordination of Collective Action: A Comparison of Local Development in India and Indonesia." In *Contested Commons: Conversations between Economists and Anthropologists*, edited by Pranab Bardhan and Isha Ray, chap. 10. Hoboken, NJ: Wiley-Blackwell.
- Rao, Vijayendra, and Michael Walton. 2004. "Conclusion." In *Culture and Public Action: A Cross-Disciplinary Dialogue on Development Policy*, edited by Vijayendra Rao and Michael Walton, chap. 16. Palo Alto, CA: Stanford University Press.
- Ribot, J. C. 2009. "Authority over Forests: Empowerment and Subordination in Senegal's Democratic Decentralization." *Development and Change* 40 (1): 105–29.
- Ross, Lee, and Richard E. Nisbett. 1991. *The Person and the Situation: Perspectives of Social Psychology*. New York: McGraw-Hill.
- Steele, Claude M., and Joshua Aronson. 1995. "Stereotype Threat and the Intellectual Test Performance of African Americans." *Journal of Personality and Social Psychology* 69 (5): 797–811.

- Swidler, Ann. 1986. "Culture in Action: Symbols and Strategies." *American Sociological Review* 51 (2): 273–86.
- Tabellini, Guido. 2008. "The Scope of Cooperation: Values and Incentives." *Quarterly Journal of Economics* 123 (3): 905–50.
- Talhelm, T., X. Zhang, S. Oishi, C. Shimin, D. Duan, X. Lan, and S. Kitayama. 2014. "Large-Scale Psychological Differences within China Explained by Rice versus Wheat Agriculture." *Science* 344 (6184): 603–08.
- Thaler, Richard H. 1999. "Mental Accounting Matters." *Journal of Behavioral Decision Making* 12 (3): 183–206.
- Todd, Peter M., and Gerd Gigerenzer. 2000. "Précis of Simple Heuristics That Make Us Smart." *Behavioral and Brain Sciences* 23 (5): 727–41.
- Turner, John C. 1985. "Social Categorization and the Self-Concept: A Social Cognitive Theory of Group Behavior." In *Advances in Group Process: Theory and Research*, Vol. 2, edited by Edward J. Lawler, 77–122. Greenwich, CT: JAI Press.
- WHO (World Health Organization). 1999. "Female Genital Mutilation Programmes to Date: What Works and What Doesn't." Geneva: WHO.
- Zerubavel, Eviatar. 1999. *Social Mindscales: An Invitation to Cognitive Sociology*. Cambridge, MA: Harvard University Press.

Entertainment education

Can exposure to media provide a source of sustained change and a means of promoting development? The evidence to date is limited but encouraging. The use of mass media for entertainment education creates an opportunity to affect not only the mental models of individual viewers but also the mental models accepted by the wider society that create the context for collective action. The links below provide examples of how entertainment education works:

- *Scandal*, a South African soap opera with financial messages, including ones related to gambling: <https://www.youtube.com/watch?v=ys5eSxTetF4&noredirect=1>
- *16 and Pregnant*, a U.S. reality TV show on teen pregnancy: http://www.mtv.com/shows/16_and_pregnant/
- *Shuga*, an African drama on HIV/AIDS and gender violence: http://www.youtube.com/watch?v=pI8_P_h89R8

The theory behind entertainment education

The term *entertainment education* (EE) refers to entertainment media that incorporate an educational message or information of value to the audience to increase audience members' knowledge about an issue, create favorable attitudes, and change overt behavior (Singhal and Rogers 2002; Moyer-Gusé 2008). The theoretical underpinnings for entertainment education are usually traced to the psychologist Albert Bandura, a pioneer in social cognitive theory (Bandura 1977, 1986). Bandura showed that children who viewed violent images on television demonstrated more aggressive behavior than those who viewed neutral content (Bandura, Ross, and Ross 1963). Observing the performance of others, people acquire not only patterns of behavior but also a cognitive framework about what the behaviors mean, according to Bandura's research.

Most of the research on entertainment education has focused on narratives such as dramas and soap operas. A narrative or story format can help motivate change in the audience by showing positive role models who experience "rewards" and negative role models who are "punished" (Slater and Rouner 2002; Bandura 2004). A third type of role model—the transitional character—who gradually moves from negative to positive behaviors during the story—may also be important (Sabido 2002).¹ Narratives using these constructs from EE can help guide audience members through a change process, including developing confidence in their own abilities (self-efficacy) through association with desirable characters, and can facilitate behavior change.

Entertainment education may be especially effective when people are swept up in a narrative, or experience

the story as though they were one of the characters. There is evidence that when individuals are absorbed in a narrative, they become less critical and defensive and are more open to persuasion (Green and Brock 2000; Slater and Rouner 2002). Identification with a specific character works in a similar way; it involves a temporary loss of self and adoption of the character's perspective. Because identification is not compatible with counter-arguing, persuasive messages are more easily accepted (Cohen 2001; Moyer-Gusé 2008). Evidence also suggests that people find entertainment more enjoyable when they can be transported beyond themselves and identify with the situation of the character (de Wied, Zillmann, and Ordman 1994; Hall and Bracken 2011).

A media program's ability to persuade may also be affected by the social context in which it is consumed. Aspirational videos shown in rural Ethiopia were more effective when more people in the community were exposed to the content (Bernard and others 2014). In the United States, teens who watched, with a parent or other trusted adult, a comedy that included information on contraception reported greater gains in knowledge (Collins and others 2003) because the program stimulated a discussion, which provided further information.

Evidence of impact

While there are many studies of entertainment education, only a relatively small number employ rigorous quantitative methods, such as randomized controlled trials (RCTs).² Among recent studies using RCTs, positive impacts were found from an in-script partnership with a South African soap opera relating to financial attitudes and behaviors, from videos shown in Ethiopia to induce future-oriented investments such as education for children, and from a radio drama in Rwanda that improved perceptions of social norms such as cooperation and willingness to engage in dialogue, even on sensitive topics. Other RCTs, however, have not provided significant evidence of impact, including a film shown in Nigeria and a comic book in Kenya, both featuring financial messages.

Some of the most compelling evidence for EE comes from studies that use quasi-experimental methods to evaluate the impact of entertainment education across a society. For example, in Brazil, access to the TV Globo network—which was dominated by soap operas with independent female characters with few, or even no children—has been linked to the country's rapid drop in fertility. Viewing the soap operas had an effect equal to 1.6 years of additional education (La Ferrara, Chong, and Duryea 2012). In India, access to cable television reduced fertility and son preference and increased women's autonomy (Jensen and Oster 2009). A radio program in Tanzania was linked to a significant increase in condom

use and a reduction in the number of sexual partners (Vaughan and others 2000). And in the United States, a reality TV show was linked to a significant drop in teen pregnancy (Kearney and Levine 2014).

Business models for entertainment education

In Latin America, private television channels have been producing a number of commercially successful *telenovelas* with social content since the 1970s. In most other developing country markets, the main approach to entertainment education has been through the public sector or donor-funded productions. Many successful examples of entertainment education have been produced in this way: *Hum Log*, *Kalyani*, and *Taru* in India; *Meena* in South Asia; and *Twende na Wakati* in Tanzania, to name a few.

However, with many markets now saturated with media, it is more challenging to break through and create impact with a single show. New approaches to entertainment education focus on partnerships between the public and private sectors and civil society to increase audience size, overcome the high cost of media production, and strengthen social impact (Miller 2011). In some cases, this is happening at the firm level in media companies committed to social action, such as *Well Told Story* in Kenya and *Participant Media* in the United States. Organizations that seek to increase the systematic use of EE in the commercial entertainment industry have also been formed in the United States, Europe, and recently in India. These nongovernmental organizations (NGOs) seek to bridge the gap that typically exists between content experts in academia or government and media producers (Bouman 1999) through a variety of methods, from intensive collaboration on scripts to soft-touch approaches such as after-hours “salons.”

Notes

1. Miguel Sabido is a Mexican playwright and television producer who was the first to take Bandura's social learning theory and apply it to mass entertainment media in the 1970s and 1980s in Mexico. The resulting *telenovelas* (*Ven Conmigo*, *Acompañame*, and others) were both extremely popular and credited with having an impact on key social issues such as adult literacy and family planning (Nariman and Rogers 1993).
2. A *World Development Report 2015* background paper, “The Impact of Entertainment Education,” provides more detailed analysis of the entertainment education literature, including evidence of results.

References

Bandura, Albert. 1977. “Self-Efficacy: Toward a Unifying Theory of Behavioral Change.” *Psychological Review* 84 (2): 191.

———. 1986. *Social Foundations of Thought and Action*. Englewood Cliffs, NJ: Prentice Hall.

———. 2004. “Health Promotion by Social Cognitive Means.” *Health Education & Behavior* 31 (2): 143–64.

Bandura, Albert, Dorothea Ross, and Sheila A. Ross. 1963. “Imitation of Film-Mediated Aggressive Models.” *Journal of Abnormal and Social Psychology* 66 (1): 3.

Bernard, Tanguy, Stefan Dercon, Kate Orkin, and Alemayehu Seyoum Taffesse. 2014. “The Future in Mind: Aspirations and Forward-Looking Behaviour in Rural Ethiopia.” Centre for the Study of African Economies, University of Oxford, Oxford.

Bouman, Martine. 1999. “The Turtle and the Peacock: Collaboration for Prosocial Change: The Entertainment-Education Strategy on Television.” PhD dissertation, Landbouw Universiteit.

Cohen, Jonathan. 2001. “Defining Identification: A Theoretical Look at the Identification of Audiences with Media Characters.” *Mass Communication & Society* 4 (3): 245–64.

Collins, Rebecca L., Marc N. Elliott, Sandra H. Berry, David E. Kanouse, and Sarah B. Hunter. 2003. “Entertainment Television as a Healthy Sex Educator: The Impact of Condom-Efficacy Information in an Episode of *Friends*.” *Pediatrics* 112 (5): 1115–21.

de Wied, M., D. Zillmann, and V. Ordman. 1994. “The Role of Empathic Distress in the Enjoyment of Cinematic Tragedy.” *Poetics* 23 (1): 91–106.

Green, Melanie C., and Timothy C. Brock. 2000. “The Role of Transportation in the Persuasiveness of Public Narratives.” *Journal of Personality and Social Psychology* 79 (5): 701.

Hall, Alice E., and Cheryl C. Bracken. 2011. “‘I Really Liked That Movie’: Testing the Relationship between Trait Empathy, Transportation, Perceived Realism, and Movie Enjoyment.” *Journal of Media Psychology: Theories, Methods, and Applications* 23 (2): 90.

Jensen, Robert, and Emily Oster. 2009. “The Power of TV: Cable Television and Women's Status in India.” *Quarterly Journal of Economics* 124 (3): 1057–94.

Kearney, Melissa S., and Phillip B. Levine. 2014. “Media Influences on Social Outcomes: The Impact of MTV's ‘16 and Pregnant’ on Teen Childbearing.” National Bureau of Economic Research, Cambridge, MA.

La Ferrara, Eliana, Alberto Chong, and Suzanne Duryea. 2012. “Soap Operas and Fertility: Evidence from Brazil.” *American Economic Journal: Applied Economics* 4 (4): 1–31.

Miller, Margaret. 2011. “Entertainment Education: A Solution for Cost-Effective High-Impact Development Communication.” World Bank, Washington, DC.

Moyer-Gusé, Emily. 2008. “Toward a Theory of Entertainment Persuasion: Explaining the Persuasive Effects of Entertainment-Education Messages.” *Communication Theory* 18 (3): 407–25.

Nariman, Heidi Noel, and Everett M. Rogers. 1993. *Soap Operas for Social Change: Toward a Methodology for Entertainment-Education Television*. Westport, CT: Praeger.

Sabido, Miguel. 2002. *El tono: Andanzas teóricas, aventuras prácticas, el entretenimiento con beneficio social*. Mexico City: UNAM.

Singhal, Arvind, and Everett M. Rogers. 2002. “A Theoretical Agenda for Entertainment-Education.” *Communication Theory* 12 (2): 117–35.

Slater, Michael D., and Donna Rouner. 2002. “Entertainment-Education and Elaboration Likelihood: Understanding the Processing of Narrative Persuasion.” *Communication Theory* 12 (2): 173–91.

Vaughan, Peter W., Everett M. Rogers, Arvind Singhal, and Ramadhan M. Swalehe. 2000. “Entertainment-Education and HIV/AIDS Prevention: A Field Experiment in Tanzania.” *Journal of Health Communication* 5 (Supplement): 81–100.

PART 2

Psychological and social
perspectives on policy

CHAPTER 4 Poverty

At least once a year, hundreds of millions of parents face a decision about school enrollment. Higher-income parents are probably choosing which school their children will attend or which after-school activities to sign them up for. For many parents in low-income settings, the choice is starker: whether or not to send their child to school at all. Imagine a poor father who chooses not to enroll his son in secondary school. The assumptions policy makers think underlie this decision will likely affect the remedies they design to address low investment in education and other behaviors associated with poverty.

Poverty is not simply a shortfall of money. The constant, day-to-day hard choices associated with poverty in effect “tax” an individual’s psychological and social resources. This type of “tax” can lead to economic decisions that perpetuate poverty.

If policy makers assume that poverty results from poor people’s deviant values or character failings—as did many antipoverty strategies of the United Kingdom or the United States until well into the 19th century (Narayan, Pritchett, and Kapoor 2009; Ravallion, forthcoming)—or that poor people simply do not understand the benefits of important investments like education,

they might pursue a strategy of persuasion to assist someone like this father. Or if they assume that the decision to keep a child out of school results solely from a political and economic system that is inherently stacked against poor people, they might advocate quotas or a large-scale redistribution of resources.

Both these narratives of poverty offer an incomplete picture of decision making and choice. The first places little emphasis on constraints beyond the control of the decision maker—such as the fees associated with attending school or the absence of enforceable compulsory education laws, which could coerce parents to send their child to school. The second narrative does not address the cognitive resources required to make a decision, especially when material resources are in short supply and when people’s willingness to act upon their desires may be constrained (Mullainathan and Shafir 2013; Perova and Vakis 2013).

If this father lives in rural India, for example, he is most likely making his decision in May, nearly five months after the harvest—five months after he has earned most of his income for the year. While the returns to secondary education might be high and he might have been able to save funds for tuition, a number of other, more immediate concerns might be competing for his attention and his resources. He might have run out of kerosene the day before, or he might need to find materials to patch a hole in his roof. It is one month before the monsoon, so finding clean water requires extra effort. His neighbor might be expecting help with some medical bills, which should not be ignored since this neighbor helped him pay for medicine the year before. Even if a more affluent father feels stress about a school enrollment decision, the choice is

unlikely to trigger concerns about these kinds of basic, day-to-day trade-offs.

This chapter offers an alternative set of assumptions for thinking about decision making in contexts of poverty and for analyzing why poor people may engage in behaviors that ostensibly perpetuate poverty, such as borrowing too much and saving too little, underinvesting in health and education, and ignoring programs and policies designed to assist them. Recent empirical evidence suggests that these decisions do not arise from deviant values or a culture of poverty particular to poor people. To the contrary: both poor people and people who are not poor are affected in the same fundamental way by certain cognitive, psychological, and social constraints on decision making. However, it is the *context of poverty* that modifies decision making in important ways.

In particular, poverty is not simply a shortfall of money. The constant, day-to-day hard choices associated with poverty in effect tax an individual's *bandwidth*, or mental resources. This *cognitive tax*, in turn, can lead to economic decisions that perpetuate poverty. First, poverty generates an intense focus on the present to the detriment of the future. When poor people must direct their mental resources toward dealing with the concerns of poverty—for example, paying off debts or keeping their children safe—they have less attention to devote to other important tasks that may be cognitively demanding, such as expending greater and more productive effort at work or making timely investments in education and health (Mullainathan and Shafir 2013).

Second, poverty can also create poor frames through which people see opportunities. Poverty can blunt the capacity to aspire (Appadurai 2004) and to take advantage of the opportunities that do present themselves.

Third, the environments of people living in poverty make additional cognitive demands. The absence of certain physical and social infrastructure that eases cognitive burdens in high-income contexts—like piped water, organized child care, and direct deposit and debit of earnings—encumbers those living in low-income settings with a number of day-to-day decisions that deplete mental resources even further (Banerjee and Mullainathan 2008). In settings like the United States, for instance, parents rarely need to actively weigh the costs and benefits of school attendance for their children. Birth registration systems and the enforcement of truancy laws would counterbalance any internal challenges that might steer parents away from sending their children to school. Moreover,

formal credit and insurance markets enable people to rely less on social networks to weather shocks to their health or income.

While these considerations may paint an even bleaker picture of poverty than is familiar to most people, recent evidence suggests promising interventions for reducing the cognitive, psychological, and social taxes of poverty. Some of these interventions need not entail complex interventions for influencing the psychology or social environments of poor people. Instead, modifications to the process of delivering products and services that take the cognitive taxes of poverty into account could make existing interventions more effective. Recognizing the cognitive and social dimensions of poverty could also alter estimates of cost-benefit ratios of policy instruments, such as cash transfers and the development of the infrastructure, institutions, and markets that could serve to lessen the distractions and cognitive burdens of poverty.

Poverty consumes cognitive resources

“So if you want to understand the poor, imagine yourself with your mind elsewhere. You did not sleep much the night before. You find it hard to think clearly. Self-control feels like a challenge. You are distracted and easily perturbed. And this happens every day. On top of the other material challenges poverty brings, it also brings a mental one. . . . Under these conditions, we all would have (and have!) failed.”

—Mullainathan and Shafir, *Scarcity: Why Having Too Little Means So Much* (2013, 161)

“She is worried about the future of her children and the struggles they have to face once they grow up. Her immediate concern is to which house she should go for a loan of some food grains for their food that day.”

—Narayan and others, description of a woman in Pedda Kothapalli, India, in *Voices of the Poor: Crying Out for Change* (2000, 37)

The material deprivation that accompanies poverty has been well documented. The poor are more likely to find themselves in situations in which they must forgo meals or live in substandard housing. They may have many debts to pay off. Their dwellings can be demolished by rain or expropriated by someone more powerful. They might have to collect potable water many times a day. Recent evidence suggests that these

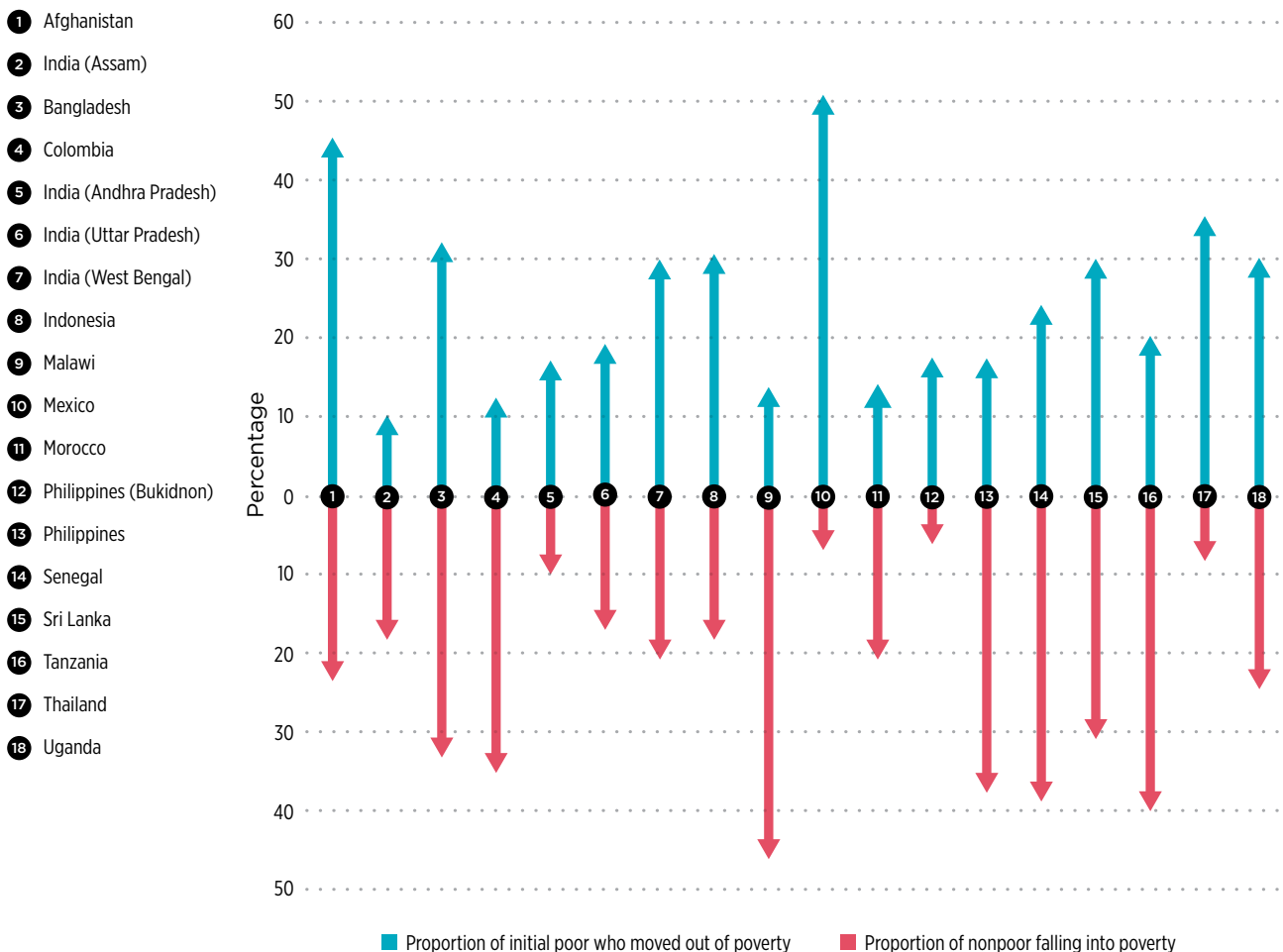
situations of *scarcity*—or a gap between the needs and the resources required to fulfill them—create additional cognitive burdens that interfere with decision making in important ways beyond a person’s monetary constraints. In particular, the pressing financial concerns associated with poverty modify how people allocate their attention and create an intense focus on problems of the present to the neglect of others in the future (Mullainathan and Shafir 2013). To return to the opening example of a father’s decision about investing in his son’s education, the many current claims on the father’s attention and resources make the short-term costs of investment much more pressing than the potentially high long-term returns of a secondary education that are far off in the future.

This situation of scarcity need not apply solely to those currently living below thresholds of \$1.25 or \$2.00 per day. It is one that many people in low-income settings may find themselves in at one point or another, as shown in figure 4.1. Indeed, much of the “middle class” in low-income countries lives on \$2 to \$6 a day and thus is still likely to face a number of trade-offs that can trigger a feeling of scarcity.

A real-world example of how situations of scarcity can deplete mental resources comes from sugar cane farmers in India (figure 4.2). These farmers typically receive their income once a year, at the time of harvest. Thus just before the harvest (panel a), they may feel poor, and just afterward (panel b), they may feel much more comfortable, having received most of the

Figure 4.1 Poverty is a fluid state, not a stable condition

In qualitative interviews around the world, community members were asked to rank everyone in the community on an economic ladder at the moment and 10 years earlier. They were also asked to indicate which rungs of the ladder should be equated with poverty. According to these community rankings, poverty is a fluid state rather than a stable characteristic. This finding is consistent with consumption-based estimates of chronic poverty from longitudinal data (Jalan and Ravallion 2000; Pritchett, Suryahadi, and Sumarto 2000; Dercon and Krishnan 2000).



Source: Narayan, Pritchett, and Kapoor 2009, table 3.2.

earnings for the season. Indeed right before the harvest, they are much more likely to be holding loans (99 versus 13 percent) and to have pawned some of their belongings (78 versus 4 percent) (Mani and others 2013).

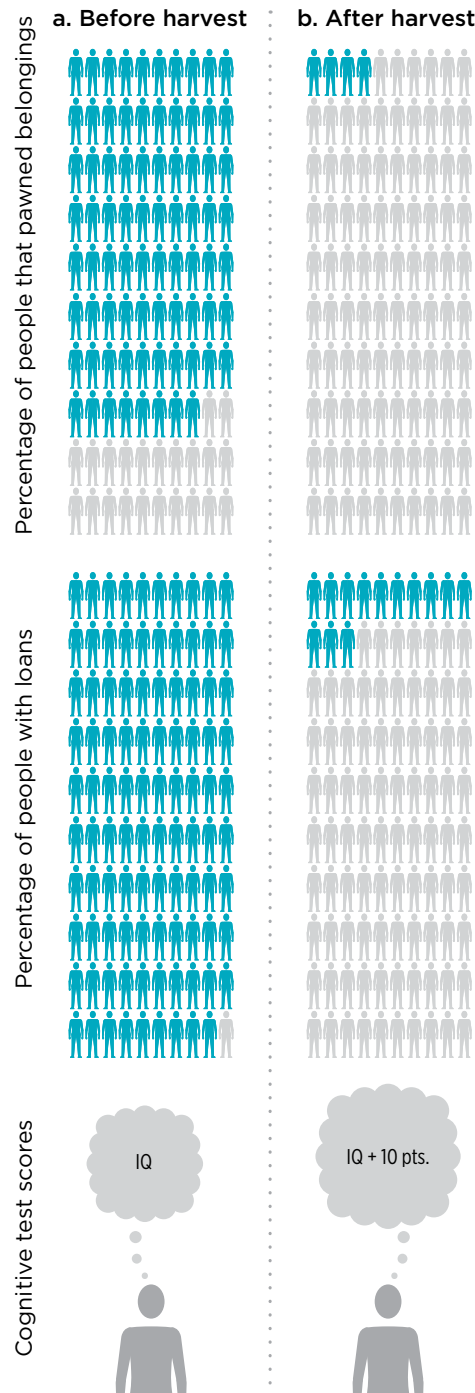
That these farmers are poorer before the harvest than after perhaps should shock no one. What is less obvious, however, is the toll this kind of financial distress takes on their available cognitive resources right before the harvest. Before receiving their harvest income, farmers perform worse on a series of cognitive tests of executive function and fluid intelligence than when they take the same tests after receiving their earnings (for some examples of tasks that test executive function and fluid intelligence, see figure 4.3). This gap cannot be explained by differences in nutrition before or after harvest, physical exhaustion, biological stress, or familiarity with the testing instrument after the harvest. The difference in scores translates to roughly 10 IQ points, which is approximately equal to three-quarters of a standard deviation and three-quarters of the cognitive deficit associated with losing an entire night of sleep (Mani and others 2013).

This cognitive depletion induced by scarcity is not limited to poor farmers in India or to people living under some absolute poverty line. The poverty line of the United States, for example, is nearly seven times the poverty line of low-income countries (\$13 versus \$2 a day), but financial anxiety among low-income individuals in the United States triggers a very similar effect. In an experiment in which people had to answer questions about how they would react to some hypothetical scenarios, such as financing an unforeseen expense or an auto repair, some respondents received financially stressful scenarios (for example, a \$2,000 expense), while others received less stressful variants (a \$200 expense) (Mani and others 2013). As with the farmers, low-income respondents who had to think about a financially stressful situation performed worse on later cognitive tests by an equivalent of 13 IQ points, suggesting that simply thinking about the gap between needs and resources captures the mind.

This diminishment of executive function might account for an intense focus on the present that is beneficial in some ways but detrimental in others. In a laboratory experiment in the United States, researchers induced “poverty” and “affluence” among relatively well-off subjects by endowing them with fewer or more items and paid them to perform certain tasks using those items. The experimentally poor tended to use their items more productively, earning more points for each task they attempted (Shah, Mullainathan, and Shafir 2012). Scarcity focused the mind.

Figure 4.2 Financial scarcity can consume cognitive resources

Sugar cane farmers in Tamil Nadu, India, receive most of their income once a year during the harvest. Immediately before receiving their income (panel a), the same farmers exhibit higher financial stress and lower cognitive scores, relative to the postharvest period (panel b). This cannot be explained by a change in nutrition, physical exhaustion, biological stress, or a practice effect on the cognitive test.



Source: Mani and others 2013.

Figure 4.3 Measuring executive function and fluid intelligence

a. Executive function

State the color of each word.

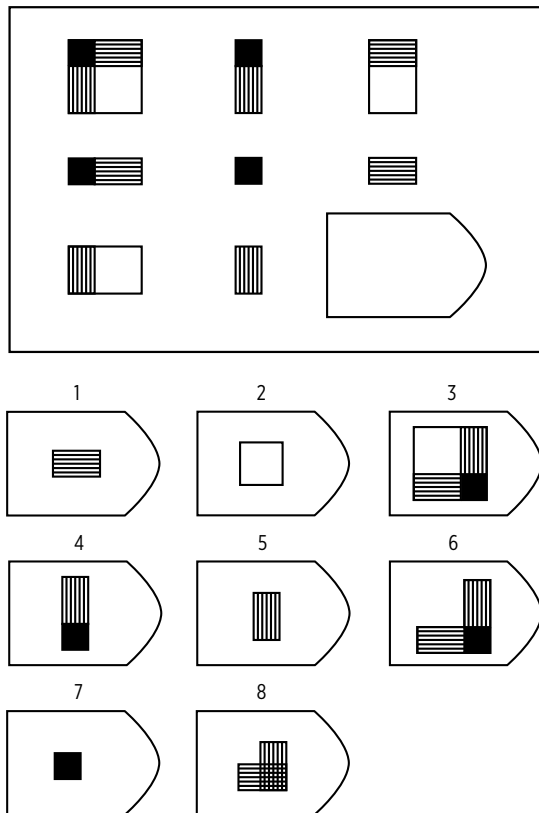
Red Blue Green Purple Blue Red Purple Green

Red Blue Green Purple Blue Red Purple Green

This task is easier to do for the first set of words. More *executive function* is required to maintain accuracy in the second set of words. This is called the *Stroop effect*.

b. Fluid intelligence

Selecting from numbered options 1–8, find the symbol that completes the bottom right section in the box below.



This is an example of a *Raven's matrix*, a set of puzzles commonly used to measure *fluid intelligence*. (The correct answer is option 2.)

Source: Sample item similar to those found in the Raven's Progressive Matrices, Standard Progressive Matrices (Standard, Sets A–E). Copyright © 1998, 1976, 1958, 1938 NCS Pearson, Inc. Reproduced with permission. All rights reserved.

Note: "Raven's Progressive Matrices" is a trademark, in the United States and/or other countries, of Pearson Education, Inc., or its affiliate(s).

Then subjects were offered an option to borrow from future rounds, which forced them to make trade-offs between the present and the future. This is the point at which the experimentally poor began to suffer. They

started to neglect future rounds and overborrow. Their overall performance fell, compared to a situation in which they could not borrow. In contrast, the option to borrow had no impact on the participants assigned to the "affluent" group. Thus, when placed in a context of scarcity, however brief, otherwise well-off subjects exhibited decision-making patterns typically associated with poverty. Together, these natural and laboratory experiments suggest that financial concerns can absorb considerable cognitive bandwidth and that situations of scarcity can alter decision making in important ways for both low- and high-income populations.

Poverty creates poor frames

"When they assist you, they treat you like a beggar."

—Narayan and others, citing a participant in a discussion group of men and women in Vila Junqueira, Brazil, in *Voices of the Poor: Crying Out for Change* (2000, 2)

Poverty may also generate an internal frame, or a way of interpreting the world and poor people's role in it. Poor people may feel incompetent and disrespected, without hope that their lives can improve. If these kinds of frames prevent them from taking advantage of economic opportunities, then the poor could also miss chances to escape poverty because of a deficit of aspirations (Appadurai 2004; Ray 2006; Duflo 2012). Indeed, avoiding the shame that arises from failing to meet social conventions has been described as a core capability (Sen 1983).

Recent empirical evidence suggests an association between poverty and low aspirations. Data from the World Values Surveys, for example, show that lower income—both within and across countries—is associated with a higher tendency to report that life is meaningless, to agree that it is better to live day-to-day because of the uncertainty of the future, and to reject adventure and risk (Haushofer and Fehr 2014). Data from low-income populations in France suggest that poor students have lower academic and employment aspirations than wealthier students who display the same degree of academic achievement (Guyon and Huillery 2014).

This kind of empirical pattern, however, could suffer from problems of reverse causation. Perhaps these character traits are the root cause rather than a function of poverty. This sort of explanation would be inconsistent with the movements in and out of poverty illustrated in figure 4.1. It is also the case that other studies making use of external economic shocks (which cannot be driven by an individual's aspiration)

find a similar association between low income and attitudes toward opportunities. A recent study finds that both within the United States and across 37 different countries, experiencing a recession between the ages of 18 and 25—the impressionable years of early adulthood—reduces the likelihood that a person believes that “people get ahead by their own hard work” as opposed to by “lucky breaks or help from other people” (Guiliano and Spilimbergo 2014).

A similar change in attitudes arose in Argentina, only in this instance in the direction of greater self-confidence. A land reform in the 1980s transferred titles to squatter families in the outskirts of Buenos Aires. The original owners of the land parcels legally contested the government’s expropriations, and many of these suits were not resolved as of 2007, when a study of attitudes was conducted among the squatters (Di Tella, Galiani, and Schargrodsky 2007). This situation created a natural experiment in which some squatters acquired formal titles to their land, while others—sometimes right next door—did not. People with titles were 31 percent more likely to believe that it is possible to be successful alone, without a large group in which everyone supports one another, and they were 34 percent more likely to believe that money is indispensable for happiness. They were also 17 percent more likely to report that other people in their country could be trusted.

The effects of poor frames are not confined simply to attitudes. Recent experimental evidence suggests that changing the frame through which poor people see themselves can alter school achievement among poor children and improve interest in antipoverty programs among poor people. An intervention in the United States, for example, directed seventh graders (12- to 13-year-olds) to use techniques of self-affirmation, which serve as reminders of sources of self-worth and pride. Throughout the school year, students completed three to five structured writing assignments that lasted 15 minutes each, writing about values important to them, such as relationships with their family or their competence in art. This intervention helped narrow the achievement gap between at-risk minority students and other students. At the end of eighth grade, more than a year after their last self-affirming writing assignment, African-American students sustained improvements in their grades and decreases in grade repetition, particularly those who were initially performing less well in school (Cohen and others 2006, 2009).

These results mirror the impact of a self-affirmation experiment among people who received lunch services in an inner-city soup kitchen in the United States. Some participants were asked to take three to five

minutes to describe a personal experience that made them feel successful and proud. Compared to other groups that described only their daily meal routines or watched a funny video, the affirmed group performed significantly better on cognitive tests of their executive control and fluid intelligence (Hall, Zhao, and Shafir 2013). In contrast, self-affirmation did not increase the cognitive function of more affluent users of a public library. These results suggest that the intervention helped alleviate the distracting stigma of poverty (after all, the poor were being tested in a soup kitchen), rather than simply improving general feelings of confidence.

Poverty can blunt the capacity to aspire and to take advantage of the opportunities that do present themselves.

The impact of this simple five-minute intervention extended beyond an increase in abstract cognitive ability. The researchers had also set up information booths near the door of the soup kitchen that would have appeared unrelated to the experiment. The affirmed group was 31 percentage points, or 300 percent, more likely to pick up flyers about antipoverty programs for which they were eligible.

Social contexts of poverty can generate their own taxes

In low-income settings, which often lack formal institutions, informal institutions or social norms may fill the gap. For example, poor households often benefit from a form of social insurance, tapping resources from friends, neighbors, family, and social groups, such as burial societies or rotating pools of credit, when their access to formal credit is limited and coverage by formal insurance is negligible. When they encounter adverse shocks to their income, they can turn to such social insurance to cushion their consumption, which tends not to plummet to the same extent as the shock to income (Townsend 1995; Jalan and Ravallion 1999). This means, however, that someone else in their social network is giving up resources to help.

While this situation may very well be welfare enhancing (especially if the development of formal insurance and credit markets is a long way in the future), investments in social capital carry their own set of costs, amounting to another kind of “tax.” According to recent evidence, people in such situations want to insulate some of their income from these types of social obligations. Nearly 20 percent of members in a micro-

finance network in Cameroon, for example, appear to take loans simply to signal that they have no cash to give to relatives and friends (Baland, Guirking, and Mali 2011). These results were mirrored in a laboratory experiment in Kenya, in which women were willing to pay a price to keep their earnings from a game hidden. This tendency was more pronounced among women whose relatives were also participating in the experiment (Jakiela and Ozier 2012).

People in this situation may benefit from financial products that allow them to insulate their income from social demands. A field experiment in Kenya demonstrates that using a simple metal box with a padlock and designating savings for a particular purpose can help increase savings for people who must assist others in their social network. People were offered four

There are three promising ways to ensure that poor people have adequate cognitive space to make the best decisions: simplify procedures; target assistance on the basis of bandwidth; and continue existing antipoverty strategies that aim to reduce income volatility and improve infrastructure.

types of savings products meant to increase spending on preventive health care and savings for health emergencies: a metal box with a padlock and a key; a locked box without a key whose contents could be spent only on a preventive health care product; a health savings account meant only for health emergencies; and membership in a rotating savings and credit association, in which a group of individuals together make regular contributions and take turns receiving the funds. Sign-up for all these kinds of commitment devices was high: 66 percent 12 months after the program began, and 39–53 percent three years later. Most notably, the people in the community who gave out assistance to others but received nothing in return benefited the most from these products (Dupas and Robinson 2013). Their savings for preventive health care increased more than did the savings of those who did not have to provide as much to their network.

Sometimes, however, escaping these social obligations comes with a cost. In rural Paraguay, for example, farmers who do not provide gifts to some people in their community risk theft of their crops (Schechter 2007). The diversion of assets to cover social obligations like these may come at the expense of investment in private opportunities.

Implications for the design of antipoverty policies and programs

A number of constraints associated with poverty may be difficult to observe and could extend beyond material deprivation: a preoccupation with daily hassles and their associated depletion of cognitive resources required for important decisions; low self-image and its blunting of aspirations; and norms that may require investments in social capital to the detriment of private opportunities. Do these new insights into the decision-making contexts of poverty have any implications for the design of policies and programs that target poor people? Much of the evidence is still new, and some of the most intriguing results come from laboratory experiments that only simulate decision making in the real world. Nevertheless, some general lessons are emerging, along with some promising areas for improvement.

Minimizing cognitive taxes for poor people

Previous chapters have demonstrated that everyone has limited “cognitive budgets,” which can make decision making rather costly. This chapter makes clear that poverty often makes these budgets even tighter. While programs and policies rarely intend to make people poorer in a monetary sense, they sometimes impose *cognitive* taxes on poor people (Shah, Mullainathan, and Shafir 2012). There are three potentially promising ways to ensure that people living in poverty have adequate cognitive space to make the best decisions for themselves. The first is to simplify procedures for accessing services and benefits. The second is to expand the criteria used for targeting assistance—in particular, to target on the basis of bandwidth rather than wealth and expenditures alone. Finally, existing antipoverty policy instruments, such as cash transfers or the provision of infrastructure, may also generate positive impacts in the cognitive and psychological domains.

Simplifying procedures

For many programs around the world, in both low-income and high-income settings, the procedures for accessing benefits—from filling out application

forms to deciphering the rules of a program—can be daunting. While these might seem like minor transaction costs compared to the potentially large and often long-term benefits of some programs, application forms have affected the take-up of many programs targeting low-income populations. In Morocco in 2007, for example, a program was introduced that allowed low-income households without piped water to buy on credit a connection to the water and sanitation network in Tangier. To apply, these households had to obtain authorization from their local authorities, provide photocopies of identification documents, and make a down payment at a local office. These procedures were sufficient to suppress participation; six months after the program was introduced, only 10 percent of households had signed up (Devoto and others 2012). In an experiment, some households received information about the program and assistance with the application procedures delivered right to their door, including a visit by the local branch officer to collect the down payment. Participation for this group reached 69 percent.

In California, providing assistance to complete applications for health insurance for poor people (Medicaid) improved enrollment among the Hispanic population by 7 percent and among the Asian population by 27 percent. These impacts exceeded the results from advertising campaigns offered in Spanish and Asian languages to reach those populations (Aizer 2007). Similarly, in the U.S. states of Ohio and North Carolina, the application rates of low-income students for financial aid or their eventual attendance in college was not affected by efforts to provide information alone about eligibility and nearby colleges. In contrast, when low-income parents who sought assistance in filing their federal taxes were asked if they wanted to spend an additional 10 minutes to use the tax information they had just finished providing to complete the federal form for financial aid for college, the college attendance of their children increased by nearly 24 percent (Bettinger and others 2012). The extra 10 minutes of personal assistance in filling out the financial aid form made a big difference. It spurred beneficiaries to fill out the main application forms of colleges and universities on their own and gain admission to these institutions.

This is not to suggest that information is unimportant or that poor people should be automatically signed up for antipoverty programs. Indeed, the problem might just be that the information intended for them is too complex and too cognitively taxing to act upon. In North Carolina, for example, parents could choose a new school for their children when their current school performed poorly on standardized tests and

was declared an underperforming school. Before 2004, to find information about options, parents had to sift through a booklet that was more than 100 pages long and search a website for schools' test scores to make school-by-school comparisons. After 2004, national regulations required that information about the test scores of every school in the district be distributed in a three-page spreadsheet. After the reform, parents in these situations chose higher-performing schools (Hastings and Weinstein 2008).

In many contexts, however, governments and other agencies may want to limit participation in programs, especially if there is substantial leakage of benefits to ineligible populations. A large cash transfer program in Indonesia (in which each household receives \$130 per year for six years) experimented with setting up small hurdles to see if the number of ineligible households benefiting from the program would decrease. Requiring the poor to come to a centralized location in the village to be assessed for eligibility did improve the efficiency of targeting, compared to a scheme in which government workers used the recommendations of village leaders and assessed the eligibility of families in their homes (Alatas and others 2013). These barriers, however, also prevented eligible households from benefiting from the program. Among these households, average program take-up still reached only 15 percent, and close to 40 percent of the poorest households did not even attempt to sign up.

How can development professionals be sure that program designs do indeed minimize, or at least avoid maximizing, cognitive taxes on poor people? It should be fairly easy and quick to experiment with different access procedures. What would be even easier, and perhaps more illuminating, would be for the designers of programs to undergo the sign-up process themselves before the program is launched (see the discussion in chapter 10 on “dogfooding,” the process by which product designers must try things out for themselves before releasing their products to the market).

Targeting on the basis of bandwidth

While the poorest households—those falling below the threshold of \$1.25 a day—are highly likely to incur the cognitive and social taxes described earlier, there may be other easily identifiable populations that could benefit from assistance that helps them avoid errors in decision making when their bandwidth is low or when the bandwidth required to make a decision is fairly high (figure 4.4).

One such group includes people who work in occupations where they receive earnings only once or twice a year, such as cultivators or agricultural laborers.

Programs to assist those living in poverty would ideally pay more attention to the timing of decisions and prevent them from coinciding with times when beneficiaries' cognitive resources may be heavily taxed. The Indian sugar cane farmers described earlier, for example, should best avoid making time-sensitive decisions about enrolling their children in school right before harvest.

Similarly, these kinds of investment decisions may be compromised if they happen to fall during months when people may be particularly cash strapped because of social obligations, as in the months coinciding with a festival or holiday, or because of a shock related to health or income. Indeed, farmers in Kenya whose crops are dependent on rainfall exhibit higher stress (as measured by the hormone cortisol) when it does not rain and their crops are therefore more likely to fail (Chemin, De Laat, and Haushofer 2013). This kind of stress has been associated with a bias toward the present in laboratory environments. For example, when subjects were asked to perform tasks that involved deciding between smaller rewards sooner and larger rewards later, those who had been first administered hydrocortisone (which artificially elevated their cortisol levels) showed a stronger tendency to opt for the earlier rewards (Cornelisse and others 2013).

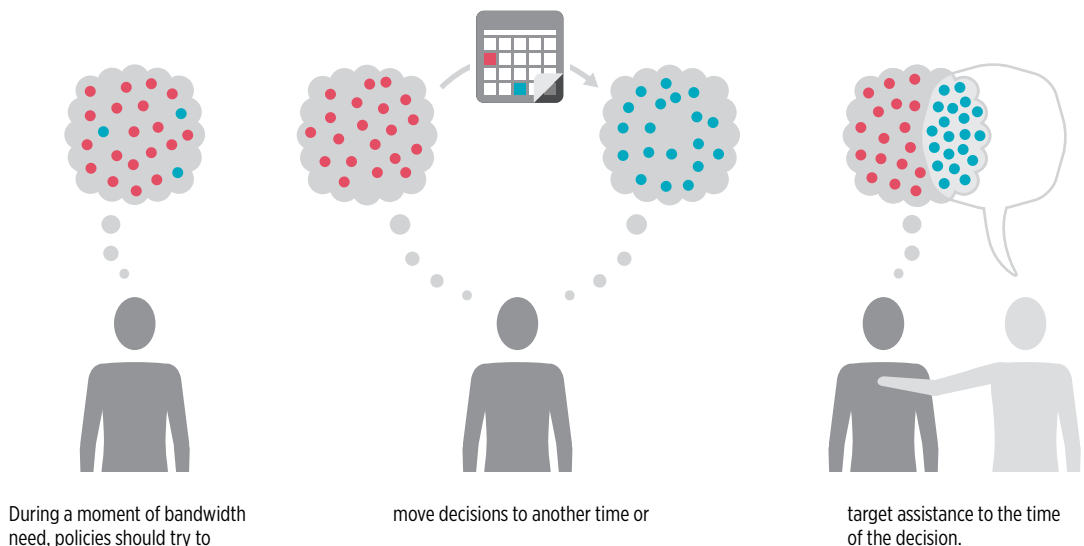
To see the benefits of altering the timing of an intervention, consider some experiments in the city of

Bogotá that varied the structure of payments in a conditional cash transfer program that targeted families with children in secondary school. Some households received transfers every two months after meeting conditions related to the health and schooling of their children. Others received only two-thirds of the benefit every two months, while the remaining third was saved in a bank account. These households were then given the savings in one lump sum in December, when students are supposed to enroll for the next school year. While both types of transfers were equally effective in improving school attendance during the year, the savings variant was more successful in increasing rates of reenrollment for the next year (Barrera-Orsorio and others 2011). Similarly, as discussed in chapter 7, farmers in Kenya increased their rates of adopting fertilizer if they were given the opportunity to prepurchase it at the time of harvest, when they would have more funds, rather than months later when they would be applying the fertilizer.

There are also important decisions that occur relatively infrequently and that inherently require considerable bandwidth. These might include applying to a university or choosing a health insurance plan. In the United States, for example, high school students taking a popular college entrance exam can choose to have their scores sent directly to the universities to which they plan to apply. Before the fall of 1997,

Figure 4.4 Targeting on the basis of bandwidth may help people make better decisions

Bandwidth may be especially low at certain times, such as periods of higher expenditures during festivals, or when a mother is about to give birth. Key decisions, such as whether to enroll a child in school or whether to go to the hospital for a baby's birth, would ideally be moved out of these periods. Some decisions, such as choosing a health insurance plan or applying to a university, may require high levels of bandwidth no matter when they fall. Policies that make these decisions easier could be targeted at the time of decision making.



Source: WDR 2015 team.

students could send three reports for free, and each additional score report would have cost \$6 to send. When the number of reports they could send for free increased to four later that year, the number of test takers sending exactly four reports jumped from 3 percent to 74 percent (Pallais, forthcoming). More important, this increase in score reports induced low-income students to apply to and eventually attend more selective universities. Because attending a more selective university is associated with higher expected future earnings, an effective subsidy of \$6 improved the expected earnings for low-income students by an estimated \$10,000.

In Tanzania, promoters of community health insurance took advantage of the disbursements of a conditional cash transfer program to enroll more households in the community health fund. They deliberately went to the distribution points of the cash transfer program to sign people up for the health insurance when they had greater liquidity. This perhaps contributed to the nearly 20 percentage point (700 percent) increase in the use of health insurance to finance medical treatment among beneficiaries of the cash transfer program (Evans and others 2014).

Policy makers, however, cannot blindly target all situations in which income fluctuates, believing that they have pinpointed contexts in which cognitive bandwidth is likely to be low. It is important that these fluctuations trigger financial stress. In the United States, for example, cash-at-hand is typically higher immediately after payday for low-income households (it can be more than 20 percent lower immediately before payday). This predictable variation before and after payday each month, however, is not associated with differences in cognitive function or risk taking (Carvalho, Meier, and Wang 2014). While this finding may seem to conflict with the results from the sugar cane farmers discussed earlier, people reported similar levels of financial stress before and after payday, suggesting that temporary shortfalls, in this context, may not further tax mental resources.

Reducing economic volatility and improving infrastructure

The natural and laboratory experiments discussed earlier suggest that monetary concerns absorb considerable cognitive capacity and blunt aspirations. Does this mean that interventions that try to reduce economic volatility or directly decrease the cognitive demands of environments could also free up cognitive resources or generate the confidence required to take advantage of economic opportunities?

While few programs currently monitor these kinds of impacts, some evidence from field experi-

ments suggests that these types of interventions at least improve self-reported mental well-being. The program in Morocco, discussed earlier, made it easier for households to obtain a connection for piped water; this improvement reduced the time residents spent fetching water by more than 80 percent (Devoto and others 2012). Beneficiaries were more likely to perceive that their life had improved in the previous year and reported higher life satisfaction—despite a 500 percent increase in their water expenditures and an absence of any improvements to their health. Similarly, a large, one-time cash transfer to rural Kenyan households reduced symptoms of depression and stress approximately four months later (Haushofer and Shapiro 2013). And a program in India that targeted the poorest of the poor suggests that antipoverty assistance can have positive spillover effects beyond narrow program objectives (Banerjee and others 2011). The program provided a livestock asset and a time-limited stipend for beneficiaries. Food consumption and nonlivestock income increased beyond the monetary value of anything provided. Program participants worked more and reported improvements along many measures of mental well-being.

Avoiding poor frames

Poverty can contribute to a mindset that can make it difficult for people to realize their own potential to take advantage of existing opportunities. It is important to consider how the process of delivering services or targeting poor people could be creating poor frames that further demotivate potential beneficiaries. A good place to start would be the names of programs and identification cards associated with them. “Needy families,” for example, could be replaced with “families in action,” or “poor cards” with “opportunity cards.”

The distribution of productive assets and cash transfers may help shift frames from despair to opportunity, as discussed. It may also be worth tackling aspirations more directly by paying attention to how poor people regard themselves when deciding whether or not to apply for benefits. People working in social welfare offices or unemployment agencies, for example, can be trained to avoid language and attitudes that could be considered demeaning. In Peru, for example, focus group discussions revealed that beneficiaries often felt stigmatized when they went to health centers to fulfill the requirements for a cash transfer program (Perova and Vakis 2013). Service providers would make them wait longer than other patients and stigmatize them by overtly referring to the fact that they were receiving money from the government.

Given all the design features of programs that can be tweaked in this way, it might be difficult to predict how

poor people will react and how transitory the effects of such manipulations might be. Experimentation can be helpful, though, even on a small scale. Members of the Behavioural Insights Team of the U.K. government, for example (see chapter 11), first worked in a single job center to test whether interventions such as expressive writing or self-affirmation of strengths could move job seekers off unemployment benefits and into a job more quickly. Based on their initial success, they have set up a larger experiment in an entire region.

Incorporating social contexts into the design of programs

Designing programs that incorporate social contexts, however, poses a challenge. One extreme intervention is to remove poor people from their current neighborhoods—although this is very expensive and not easily scalable. For example, a large-scale experiment in the United States, the Moving to Opportunity program, offered poor families a housing rental voucher that could be redeemed only in neighborhoods with low poverty. While adults reported better physical and mental health and higher subjective well-being 10–15 years later, earnings, employment, and reliance on welfare payments did not change (Ludwig and others 2012). Moreover, the effects of the program on children were mixed. The physical and mental health of female youth improved and their engagement in risky behavior declined, but the mental health of male youth declined, while their risky behaviors increased (Kling, Liebman, and Katz 2007; Kessler and others 2014).

An alternative approach to moving people out of their social environments would be to provide safeguards that help mitigate the effects of demands from others—for example, offering options that could help make savings harder to share. Savings accounts explicitly earmarked for certain purposes, for example, could help stave off requests from friends and relatives, as they did in Kenya (Dupas and Robinson 2013). Chapter 7 discusses a case in which illiquid transfers—such as an in-kind grant of equipment—can also insulate precious funds from others. Whether or not these options can ultimately improve welfare, however, is an empirical question—especially in cases in which social networks often substitute for more formal markets, such as the markets for credit and insurance, whose development may be far off in the future.

On the more positive side, as seen in chapters 6 and 7, social networks can also speed up the adoption of certain financial products, such as crop insurance or microcredit, and foster social interactions and social learning that can improve earnings. Similarly, recent evidence from Nicaragua suggests that antipoverty

programs can be more effective when the community leaders of beneficiaries also participate in the program. When several leaders in a community also received conditional cash transfers, beneficiaries' educational investment and nutrition improved, as did the heights and weights of their children (Macours and Vakis, forthcoming). Social interactions between community leaders and the main beneficiaries amplified the effects of the transfer program alone. Predicting exactly when these social relationships can help or hinder progress is still an open question and thus requires careful testing of program design (see chapter 11).

Looking ahead

More generally, this chapter has provided a new set of diagnoses to explain decision making in contexts of poverty and thus a new set of hypotheses to be tested before designing a program or policy to assist poor people. To return to the opening example of a father's decision about whether to enroll his son in secondary school, it might be worth considering the cognitive, psychological, and social barriers that might also interfere with this particular investment decision, in addition to testing the effectiveness of a scholarship, information campaign, or cash transfer program. For example, if the decision falls during a period of particularly low income or high expenditure, a policy maker could experiment with moving the decision to a less financially stressful period or with offering pre-purchase opportunities when income is expected to be high. Enrollment could also be made the default option so that parents would have to actively unenroll their child, as is now the case in Mexico's main conditional cash transfer program, which signs up beneficiaries for automatic school enrollment.

If the father's reluctance to enroll his son stemmed from a deficit of aspirations, then programs that directly tackle this lack of hope might also help. In Peru, for example, a financial literacy program first conducted a series of "self-esteem talks" among beneficiaries so that they understood that financial products like savings accounts were real options for them (Perova and Vakis 2013).

If social demands left very few resources for the father to use for education, then financial products that credibly earmarked savings for educational purposes might also help, just as they helped promote health savings in Kenya in the experiment described earlier (Dupas and Robinson 2013).

Which one of these factors is the binding constraint in a particular context is very much an empirical question that requires both good diagnosis and active experimentation. While a great deal of empirical data

exists describing the material deprivations that poor people experience, identifying metrics of the cognitive, psychological, and social dimensions of poverty is still a new area of research (see spotlight 3). Similarly, the evidence base is still thin as to which program designs can directly open up the cognitive space required to make complex decisions and increase the motivation and aspiration required to take advantage of the opportunities that do arise. The potential for complementarities between programs that target income poverty and those that address cognitive bandwidth—such as access to finance or the development of infrastructure that helps reduce the stresses of daily life—may be high but as yet has been largely undocumented. Ideally, more evidence will emerge as researchers and policy makers experiment with programs that try to better align anti-poverty interventions with the decision-making needs of those who find themselves in contexts of poverty.

References

- Aizer, Anna. 2007. "Public Health Insurance, Program Take-Up, and Child Health." *Review of Economics and Statistics* 89 (3): 400–415.
- Alatas, Vivi, Abhijit Banerjee, Reema Hana, Benjamin J. Olken, Ririn Purnamasari, and Matthew Wai-Poi. 2013. "Self-Targeting: Evidence from a Field Experiment in Indonesia." Unpublished.
- Appadurai, Arjun. 2004. "The Capacity to Aspire: Culture and the Terms of Recognition." In *Culture and Public Action*, edited by Vijayendra Rao and Michael Walton. Washington, DC: World Bank; Palo Alto, CA: Stanford University Press.
- Baland, Jean-Marie, Catherine Guirking, and Charlotte Mali. 2011. "Pretending to Be Poor: Borrowing to Escape Forced Solidarity in Cameroon." *Economic Development and Cultural Change* 60 (1): 1–16.
- Banerjee, Abhijit, Esther Duflo, Raghavendra Chattopadhyay, and Jeremy Shapiro. 2011. "Targeting the Hard-Core Poor: An Impact Assessment." Unpublished.
- Banerjee, Abhijit, and Sendhil Mullainathan. 2008. "Limited Attention and Income Distribution." *American Economic Review* 98 (2): 489–93.
- Barrera-Osorio, Felipe, Marianne Bertrand, Leigh Linden, and Francisco Perez. 2011. "Improving the Design of Conditional Cash Transfer Programs: Evidence from a Randomized Education Experiment in Colombia." *American Economic Journal: Applied Economics* 3 (2): 167–95.
- Bettinger, Eric P., Bridget Terry Long, Philip Oreopoulos, and Lisa Sanbonmatsu. 2012. "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment." *Quarterly Journal of Economics* 127 (3): 1205–42.
- Carvalho, Leandro, Stephan Meier, and Stephanie W. Wang. 2014. "Poverty and Economic Decision-Making: Evidence from Changes in Financial Resources at Payday." Unpublished.
- Chemin, Matthieu, Joost De Laat, and Johannes Haushofer. 2013. "Negative Rainfall Shocks Increase Levels of the Stress Hormone Cortisol among Poor Farmers in Kenya." Unpublished.
- Cohen, Geoffrey L., Julio Garcia, Nancy Apfel, and Allison Master. 2006. "Reducing the Racial Achievement Gap: A Social-Psychological Intervention." *Science* 313: 1307–10.
- Cohen, Geoffrey L., Julio Garcia, Valerie Purdie-Vaughns, Nancy Apfel, and Patricia Brzustoski. 2009. "Recursive Processes in Self-Affirmation: Intervening to Close the Minority Achievement Gap." *Science* 324: 400–03.
- Cornelisse, S., V. A. van Ast, J. Haushofer, M. S. Seinstra, M. Kindt, and M. Joëls. 2013. "Time-Dependent Effect of Hydrocortisone Administration on Intertemporal Choice." Unpublished.
- Dercon, Stefan, and Pramila Krishnan. 2000. "Vulnerability, Seasonality, and Poverty in Ethiopia." *Journal of Development Studies* 36 (6): 25–53.
- Devoto, Florencia, Esther Dulfo, Pascaline Dupas, William Parienté, and Vincent Pons. 2012. "Happiness on Tap: Piped Water Adoption in Urban Morocco." *American Economic Journal: Economic Policy* 4 (4): 68–99.
- Di Tella, Rafael, Sebastian Galiani, and Ernesto Scharrotsky. 2007. "The Formation of Beliefs: Evidence from the Allocation of Land Titles to Squatters." *Quarterly Journal of Economics* 121 (1): 209–41.
- Duflo, Esther. 2012. "Human Values and the Design of the Fight against Poverty." Lecture given at Harvard University as part of the Tanner Lectures on Human Values. May.
- Dupas, Pascaline, and Jonathan Robinson. 2013. "Why Don't the Poor Save More? Evidence from Health Savings Experiments." *American Economic Review* 103 (4): 1138–71.
- Evans, David K., Stephanie Hausladen, Katrina Kosec, and Natasha Reese. 2014. *Community-Based Conditional Cash Transfers in Tanzania: Results from a Randomized Trial*. Washington, DC: World Bank.
- Guiliano, Paola, and Antonio Spilimbergo. 2014. "Growing Up in a Recession." *Review of Economic Studies* 81: 787–817.
- Guyon, Nina, and Elise Huillery. 2014. "The Aspiration-Poverty Trap: Why Do Students from Low Social Background Limit Their Ambition? Evidence from France." Unpublished.
- Hall, Crystal, Jiaying Zhao, and Eldar Shafir. 2013. "Self-Affirmation among the Poor: Cognitive and Behavioral Implications." *Psychological Science* 25 (2): 619–25.
- Hastings, Justine S., and Jeffrey M. Weinstein. 2008. "Information, School Choice, and Academic Achievement: Evidence from Two Experiments." *Quarterly Journal of Economics* 123 (4): 1373–1414.
- Haushofer, Johannes, and Ernst Fehr. 2014. "On the Psychology of Poverty." *Science* 344 (6186): 862–67.

- Haushofer, Johannes, and Jeremy Shapiro. 2013. "Household Response to Income Changes: Evidence from an Unconditional Cash Transfer Program in Kenya." Unpublished.
- Jakiela, Pamela, and Owen Ozier. 2012. "Does Africa Need a Rotten Kin Theorem? Experimental Evidence from Village Economies." Policy Research Working Paper 6805, World Bank, Washington, DC.
- Jalan, Jyotsna, and Martin Ravallion. 1999. "Are the Poor Less Well Insured? Evidence on Vulnerability to Income Risk in Rural China." *Journal of Development Economics* 58 (1): 61–81.
- . 2000. "Is Transient Poverty Different? Evidence for Rural China." *Journal of Development Studies* 36 (6): 82–99.
- Kessler, Ronald C., Greg J. Duncan, Lisa A. Gennetian, Lawrence F. Katz, Jeffrey R. Kling, Nancy A. Sampson, Lisa Sanbonmatsu, Alan M. Zaslavsky, and Jens Ludwig. 2014. "Associations of Housing Mobility Interventions for Children in High-Poverty Neighborhoods with Subsequent Mental Disorders during Adolescence." *Journal of the American Medical Association* 311 (9): 937–48.
- Kling, Jeffrey R., Jeffrey B. Liebman, and Lawrence Katz. 2007. "Experimental Analysis of Neighborhood Effects." *Econometrica* 75 (1): 83–119.
- Ludwig, Jens, Greg J. Duncan, Lisa A. Gennetian, Lawrence F. Katz, Ronald C. Kessler, Jeffrey R. Kling, and Lisa Sanbonmatsu. 2012. "Neighborhood Effects on the Long-Term Well-Being of Low-Income Adults." *Science* 337: 1505–10.
- Macours, Karen, and Renos Vakis. Forthcoming. "Changing Households' Investment Behavior through Social Interactions with Local Leaders: Evidence from a Randomized Transfer Program." *Economic Journal*.
- Mani, Anandi, Sendhil Mullainathan, Eldar Shafir, and Jiaying Zhao. 2013. "Poverty Impedes Cognitive Function." *Science* 341: 976–80.
- Mullainathan, Sendhil, and Eldar Shafir. 2013. *Scarcity: Why Having Too Little Means So Much*. New York: Times Books.
- Narayan, Deepa, Robert Chambers, Meera K. Shah, and Patt Petesch. 2000. *Voices of the Poor: Crying Out for Change*. Washington, DC: World Bank.
- Narayan, Deepa, Lant Pritchett, and Soumya Kapoor. 2009. *Moving Out of Poverty: Success from the Bottom Up*. Washington, DC: World Bank and Palgrave Macmillan.
- Pallais, Amanda. Forthcoming. "Small Differences That Matter: Mistakes in Applying to College." *Journal of Labor Economics*.
- Perova, Elizaveta, and Renos Vakis. 2013. "Improving Gender and Development Outcomes through Agency: Policy Lessons from Three Peruvian Experiences." Report 79713. Washington, DC: World Bank.
- Pritchett, Lant, Asep Suryahadi, and Sudarno Sumarto. 2000. "Quantifying Vulnerability to Poverty: A Proposed Measure, Applied to Indonesia." Policy Research Working Paper 2437, World Bank, Washington, DC.
- Ravallion, Martin. Forthcoming. *The Economics of Poverty*. New York: Oxford University Press.
- Ray, Debraj. 2006. "Aspirations, Poverty, and Economic Change." In *Understanding Poverty*, edited by A. Banerjee, R. Bénabou, and D. Mookherjee. Oxford, U.K.: Oxford University Press.
- Schechter, Laura. 2007. "Theft, Gift-Giving, and Trustworthiness: Honesty Is Its Own Reward in Rural Paraguay." *American Economic Review* 97 (5): 1560–82.
- Sen, Amartya. 1983. "Poor, Relatively Speaking." *Oxford Economic Papers* 35 (2): 153–69.
- Shah, Anuj, Sendhil Mullainathan, and Eldar Shafir. 2012. "Some Consequences of Having Too Little." *Science* 338 (6107): 682–85.
- Townsend, Robert M. 1995. "Consumption Insurance: An Evaluation of Risk-Bearing Systems in Low-Income Economies." *Journal of Economic Perspectives* 9 (3): 83–102.

Spotlight 3

How well do we understand the contexts of poverty?

Behavioral economics has uncovered a number of surprising instances in which choices are influenced by factors that should seemingly be irrelevant, as chapters 1–3 have discussed (see also Kahneman and Tversky 1984; Kahneman 2010; Ariely 2008, 2010).

These small inconsistencies have often been revealed through people's responses to vignettes or hypothetical situations. These vignettes have been implemented mostly among samples of university students attending elite universities. Do these patterns reveal something universal about human decision making, or could these choices perhaps be a function of wealth, just as susceptibility to some visual illusions and preferences for fairness appear to be unique to certain societies (Henrich, Heine, and Norenzayan 2010)?

To find out, the *World Development Report 2015* team implemented a classic vignette from behav-

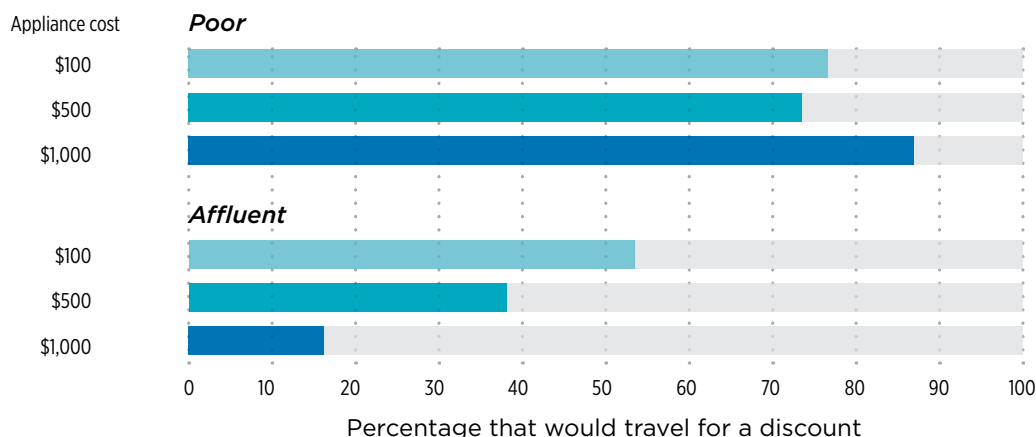
ioral economics among representative samples in three capital cities around the world (Jakarta, Indonesia; Nairobi, Kenya; and Lima, Peru) and among a sample of staff working at the World Bank.

The results suggest that the choices made by World Bank staff tend to replicate the choices made by university and affluent samples. The choices of people living in poor countries do not; their choices tend to mirror the choices of a sample of poor people in the United States.

Responses of poor and affluent people in New Jersey (United States)

In the United States, there is evidence that poor and affluent respondents do not use the same mental shortcuts (heuristics) when evaluating the benefit of a discount and that poorer respondents can

Figure S3.1 How poor and affluent people in New Jersey view traveling for a discount on an appliance



Source: Hall 2008.

Note: The discount was \$50.

make more consistent choices about the trade-off between money (or the discount) and time. In a study in New Jersey, for example, three groups of respondents were randomly assigned to read one of three variants of the following vignette, which differed solely in the total cost of an appliance that could be purchased:

Imagine that a friend goes to buy an appliance priced at \$100 (\$500, \$1,000). Although the store's prices are good, the clerk informs your friend that a store 45 minutes away offers the same item on sale for \$50 less. Would you advise your friend to travel to the other store to save \$50 on the \$100 (\$500, \$1,000) item?

The total cost of the appliance was irrelevant for poor respondents in a New Jersey soup kitchen when deciding whether they would advise traveling for a discount (Hall 2008). Each group made the same choice as other groups that had randomly received a different price. A sample of more affluent commuters at a train station, however, was significantly less likely to favor travel as the price of the appliance rose, consistent with findings from university students in the United States and Canada (Tversky and Kahneman 1981). This suggests that they focused on relative savings, instead of absolute savings. In every scenario, all respondents were contemplating the same trade-off: spending 45 minutes to save \$50. For the affluent sample, saving \$50 seemed like a better deal when the appliance was less expensive (see figure S3.1).

Responses of World Bank staff

For World Bank staff, the vignette was posed in terms of deciding whether to travel for a \$50 discount on a watch. Staff exhibited a pattern similar to the affluent samples of commuters and university students. Groups randomly receiving the more expensive variant were significantly less likely to say they would travel for a discount (see figure S3.2).

Responses of residents in Jakarta, Nairobi, and Lima

In Jakarta, Nairobi, and Lima, residents from various wealth groups answered a similar question about a cell phone. The choices of respondents in these cities much more closely resembled respondents' choices in the New Jersey soup kitchen.

In each city, respondents were stratified across three wealth groups—lower, middle, and upper—which corresponded to terciles defined by community averages for the poverty rate (Jakarta), assets (Nairobi), or consumption (Lima). Since these wealth groups were defined within each country, it is possible that even respondents from the upper groups correspond more closely to poorer populations in more affluent countries.

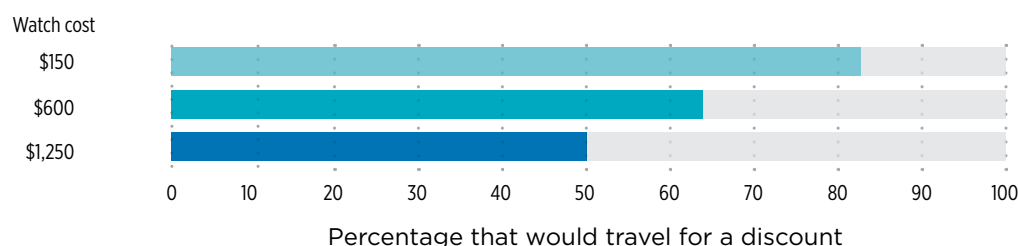
Across all these wealth categories in Jakarta, Nairobi, and Lima, the total price of the cell phone rarely had a statistically significant bearing on whether a respondent would travel for a discount. This finding contrasted with the more affluent respondents in the United States and the World Bank, where each increase in the total price of the product significantly diminished the attractiveness of traveling for a discount.¹ (See figures S3.3, S3.4, and S3.5.)

Implications

Some have argued that differences like these between poor and wealthy respondents relate to differences in the degree to which monetary concerns are salient (Hall 2008; Mullainathan and Shafir 2013). Because even modest sums matter a great deal for poor people, they might focus on absolute savings. For more affluent people, these amounts do not trigger much concern; they may not immediately think of alternative uses for the savings and thus must focus on relative savings to gauge whether or not the discount would be a good deal.

Regardless of the reasons, these results suggest a divergence in preferences between people living in poor contexts and World Bank staff working to

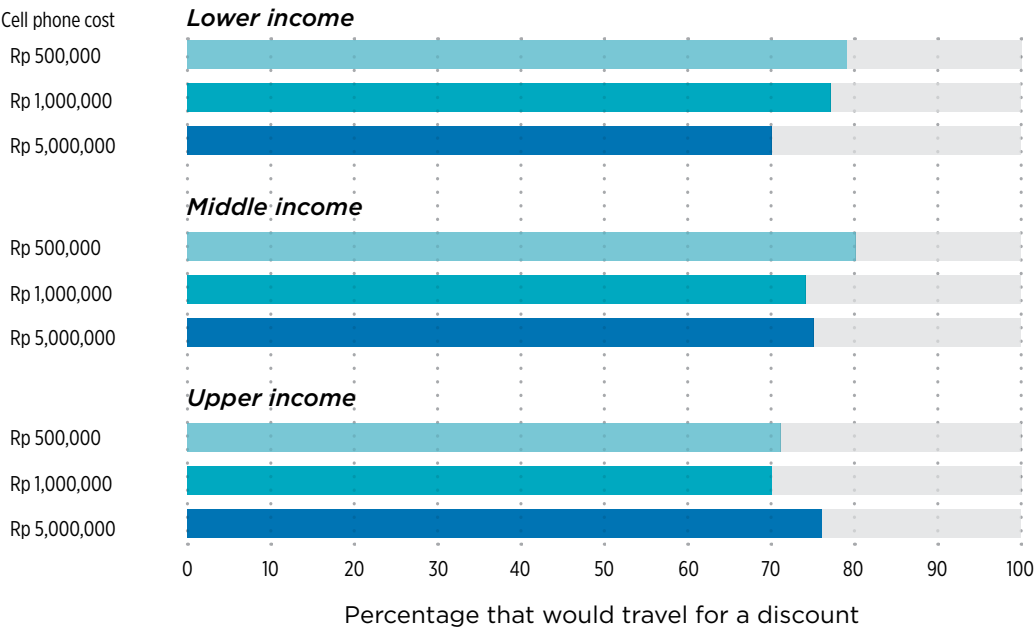
Figure S3.2 How World Bank staff view traveling for a discount on a watch



Source: WDR 2015 team.

Note: The discount was \$50.

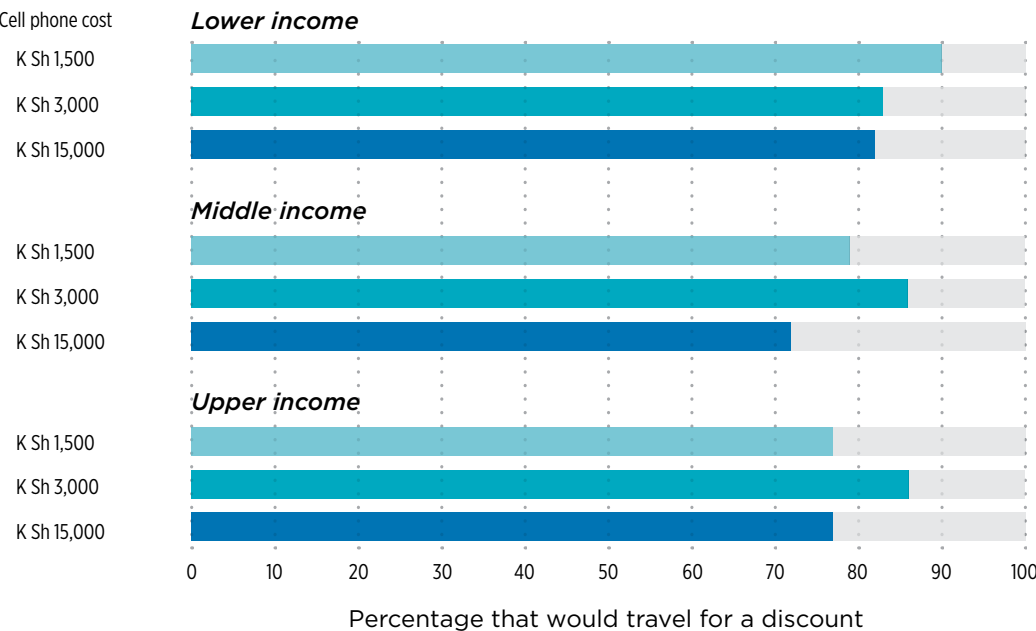
Figure S3.3 How people in Jakarta, Indonesia, view traveling for a discount on a cell phone



Source: WDR 2015 team.

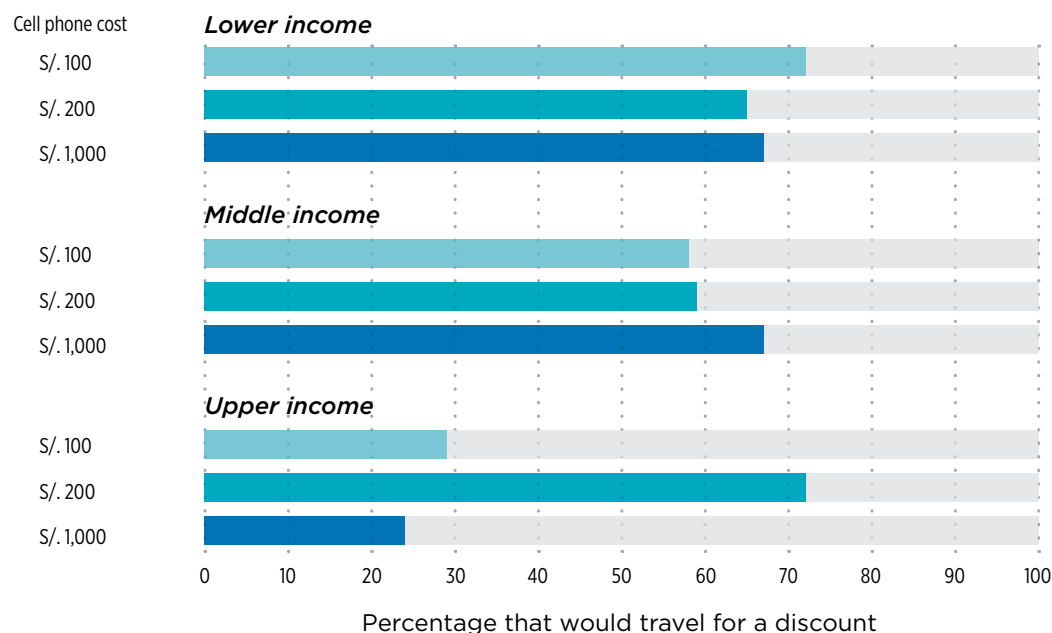
Note: Rp = Indonesian rupiah. The discount was Rp 250,000.

Figure S3.4 How people in Nairobi, Kenya, view traveling for a discount on a cell phone



Source: WDR 2015 team.

Note: K Sh = Kenyan shilling. The discount was K Sh 750.

Figure S3.5 How people in Lima, Peru, view traveling for a discount on a cell phone

Source: WDR 2015 team.

Note: S/. = Peruvian nuevo sol. The discount was S/. 50.

design strategies to assist poor people. While there is no evidence that indicates these differences translate into ineffective antipoverty strategies, they should at least suggest caution when making assumptions about what motivates decision making in contexts of poverty.

Note

1. One exception is the case of respondents from the upper-wealth group in Lima, where limited willingness to participate in the survey severely restricted the sample size of this population to 109 respondents across all question variants and possibly introduced considerable noise in the data.

References

Ariely, Daniel. 2008. *Predictably Irrational: The Hidden Forces that Shape Our Decisions*. New York: Harper Perennial.

———. 2010. *The Upside of Irrationality: The Unexpected Benefits of Defying Logic at Work and at Home*. New York: Harper.

Hall, Christel. 2008. "Decisions under Poverty: A Behavioral Perspective on the Decision Making of the Poor." PhD diss., Princeton University.

Henrich, Joseph, Steve J. Heine, and Ara Norenzayan. 2010. "The Weirdest People in the World?" *Behavioral and Brain Sciences* 33: 61–135.

Kahneman, Daniel. 2010. *Thinking, Fast and Slow*. New York: Farrar, Straus and Giroux.

Kahneman, Daniel, and Amos Tversky. 1984. "Choices, Values, and Frames." *American Psychologist* 39 (4): 341–50.

Mullainathan, Sendhil, and Eldar Shafir. 2013. *Scarcity: Why Having Too Little Means So Much*. New York: Times Books.

Tversky, Amos, and Daniel Kahneman. 1981. "The Framing of Decisions and the Psychology of Choice." *Science* 211 (4481): 453–58.

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

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

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

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

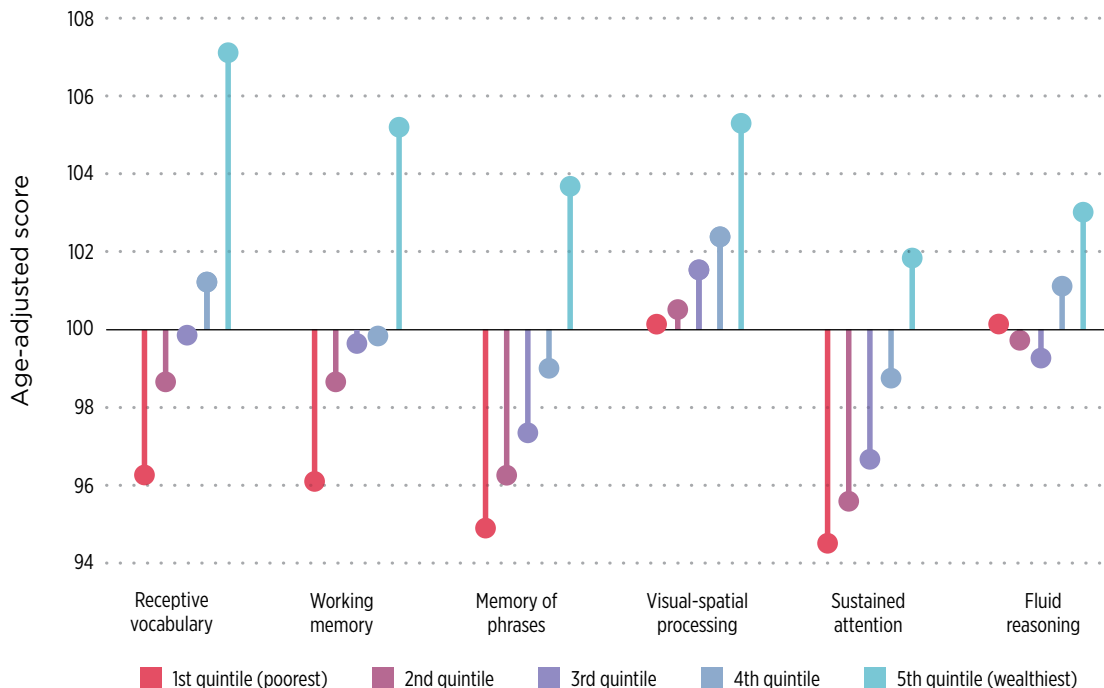
more complex reading and mathematical tasks at older ages. The ability to recognize words was approximately three-quarters of a standard deviation lower for children in the bottom wealth quintile than for children in the top wealth quintile. None of this difference can be explained by variation in maternal 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.

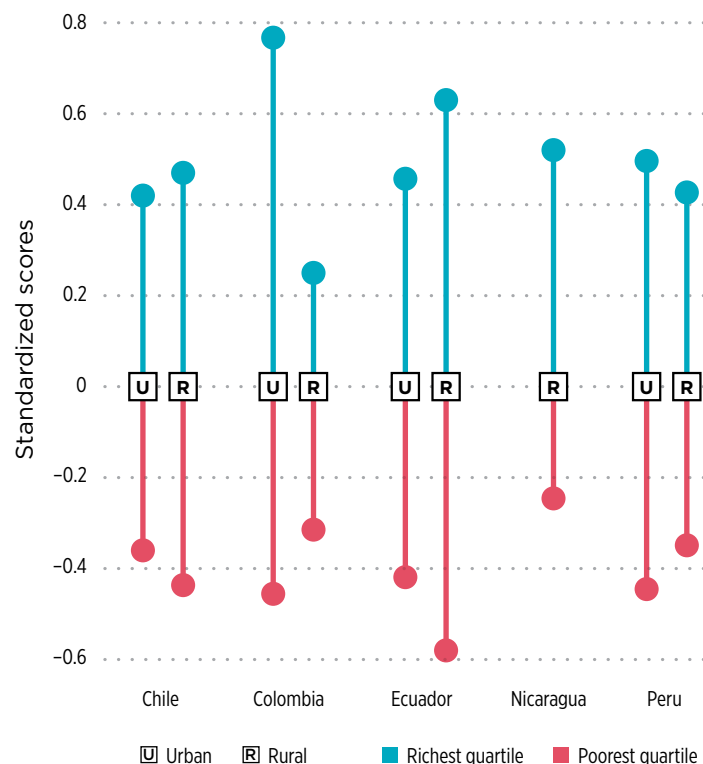


Source: Fernald and others 2011.

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).¹ 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.

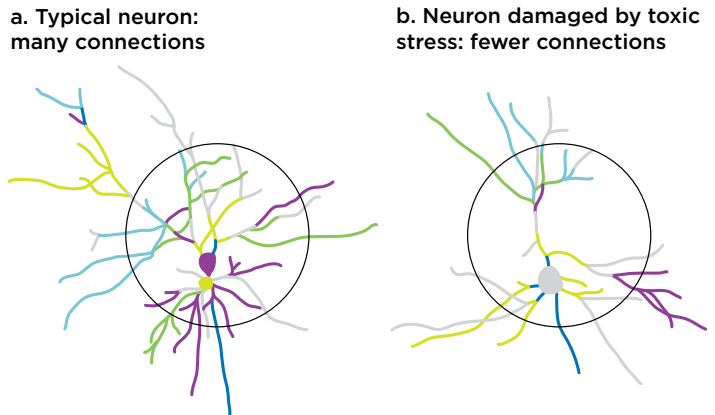
An infant frequently exposed to stressful events experiences persistent activation of a major part of the neuroendocrine system that controls reactions to stress, the hypothalamic-pituitary-adrenal (HPA) axis. While responses to acute stress by the HPA axis can focus the body's energy on the immediate 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).² 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.

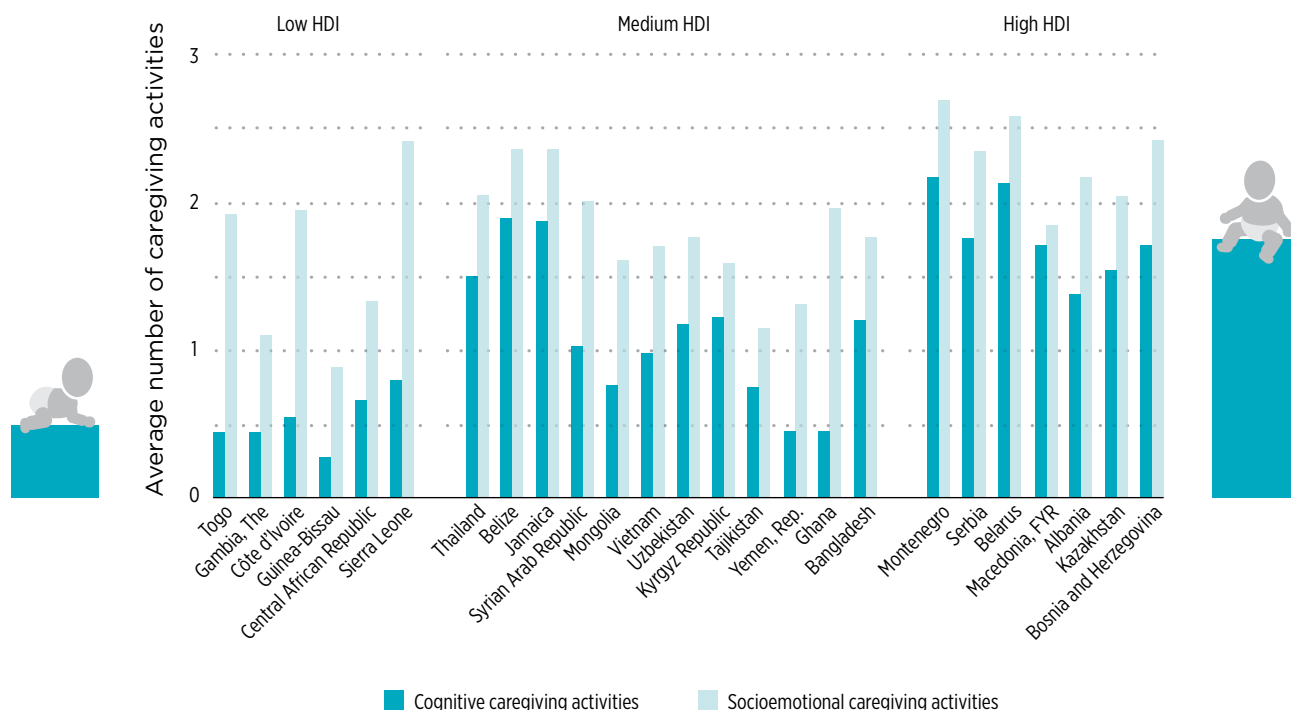
Designing interventions that focus on and improve parental competence

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

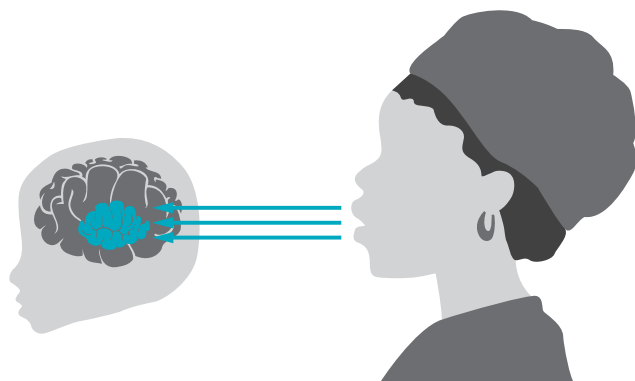
Can mental models and beliefs be altered by framing the desired behavioral change and practices in terms of future benefits for the child? A program in Senegal, *Renforcement des Pratiques Parentales*, aims to help parents understand their crucial role in providing their infants with early verbal engagement. 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 measureable 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

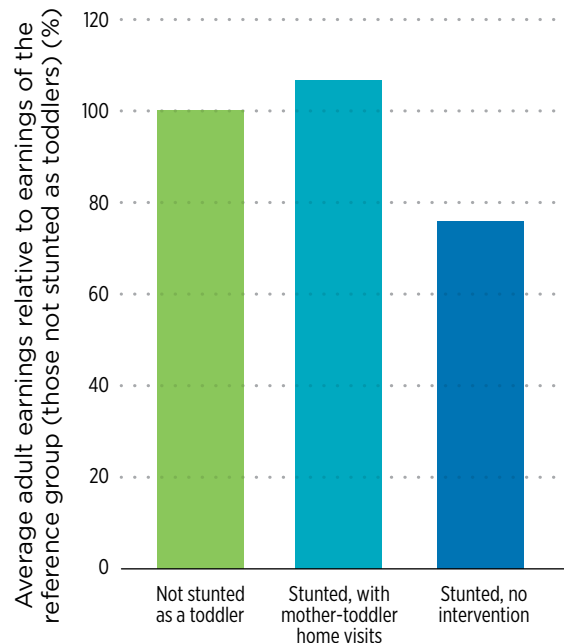
"The acquisition of skills requires a regular environment, an adequate opportunity to practice, and rapid and unequivocal feedback about the correctness of thoughts and actions" (Kahneman 2011, 416). Home visiting programs do this by helping mothers build these skills incrementally, providing a structured 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.

References

- Algan, Yann, Elisabeth Beasley, Frank Vitaro, and Richard E. Tremblay. 2013. "The Long-Term Impact of Social Skills Training at School Entry: A Randomized Controlled Trial." Working Paper, Sciences Po, Paris.
- Araujo, Maria Caridad, Ricardo Carneiro, Yyannu Cruz-Aguayo, and Norbert Schady. 2014. "A Helping Hand? Teacher Quality and Learning Outcomes in Kindergarten." Unpublished paper, Inter-American Development Bank, Washington, DC.
- Bierman, Karen L., Robert L. Nix, Mark T. Greenberg, Clancy Blair, and Celene E. Domitrovich. 2008. "Executive Functions and School Readiness Intervention: Impact, Moderation, and Mediation in the Head Start REDI Program." *Development and Psychopathology* 20 (3): 821–43.
- Blair, Clancy. 2010. "Stress and the Development of Self-Regulation in Context." *Child Development Perspectives* 4 (3): 181–88.
- Blair, Clancy, and Adele Diamond. 2008. "Biological Processes in Prevention and Intervention: The Promotion of Self-Regulation as a Means of Preventing School Failure." *Development and Psychopathology* 20 (3): 899–911.
- Blair, C., D. A. Granger, M. Willoughby, W. R. Mills-Koonce, M. J. Cox, M. T. Greenberg, K. Kivlighan, C. Fortunato, and the Family Life Project Investigators. 2011. "Salivary Cortisol Mediates Effects of Poverty and Parenting on Executive Functions in Early Childhood." *Child Development* 82 (6): 1970–84.
- Blair, Clancy, and C. Cybele Raver. 2012. "Child Development in the Context of Adversity: Experiential Canalization of Brain and Behavior." *American Psychologist* 67 (4): 309–18.
- Bodrova, Elena, and Deborah J. Leong. 2007. *Tools of the Mind*. 2nd ed. Upper Saddle River, NJ: Pearson.
- Bornstein, Marc H., and Diane L. Putnick. 2012. "Cognitive and Socioemotional Caregiving in Developing Countries." *Child Development* 83 (1): 46–61.
- Crockett, Molly J., and Johannes Haushofer. 2014. "How Poverty Gets under the Skull." Background paper prepared for the *World Development Report 2015*, World Bank, Washington, DC.
- Cunha, Flavio, and James Heckman. 2007. "The Technology of Skill Formation." *American Economic Review* 97 (2): 31–47.
- . 2009. "The Economics and Psychology of Inequality and Human Development." *Journal of the European Economic Association* 7 (2/3): 320–64.
- Cunha, Flavio, James J. Heckman, Lance Lochner, and Dimitriy V. Masterov. 2006. "Interpreting the Evidence on Life Cycle Skill Formation." In *Handbook of the Economics of Education*, Vol. 1, edited by Eric A. Hanushek and Finis Welch, 697–812. Amsterdam: Elsevier.
- Dixon, Suzanne, Edward Tronick, Constance Keefer, and T. Berry Brazelton. 1981. "Mother-Infant Interaction among the Gusii of Kenya." In *Culture and Early Interactions*, edited by Tiffany M. Field. Florence, KY: Psychology Press.
- Farkas, George, and Kurt Beron. 2004. "The Detailed Age Trajectory of Oral Vocabulary Knowledge: Differences by Class and Race." *Social Science Research* 33 (3): 464–97.
- Fernald, A., V. A. Marchman, and A. Weisleder. 2013. "SES Differences in Language Processing Skill and Vocabulary Are Evident at 18 Months." *Developmental Science* 16: 234–48.
- Fernald, Lia C. H., Heather M. Burke, and Megan R. Gunnar. 2008. "Salivary Cortisol Levels in Children of Low-Income Women with High Depressive Symptomatology." *Development and Psychopathology* 20 (2): 423–36.
- Fernald, Lia C. H., Paul J. Gertler, and Lynnette M. Neufeld. 2008. "Role of Cash in Conditional Cash Transfer Programmes for Child Health, Growth, and Development: An Analysis of Mexico's Oportunidades." *Lancet* 371 (9615): 828–37.
- . 2009. "10-Year Effect of Oportunidades, Mexico's Conditional Cash Transfer Programme, on Child Growth, Cognition, Language, and Behaviour: A Longitudinal Follow-up Study." *Lancet* 374 (9706): 1997–2005.
- Fernald, Lia C. H., and Megan R. Gunnar. 2009. "Poverty-Alleviation Program Participation and Salivary Cortisol in Very Low-Income Children." *Social Science and Medicine* 68 (12): 2180–89.
- Fernald, Lia C. H., Ann Weber, Emanuela Galasso, and Lisy Ratsifandrihamanana. 2011. "Socioeconomic Gradients and Child Development in a Very Low-Income Population: Evidence from Madagascar." *Developmental Science* 14 (4): 832–47.
- Fryer, Roland, Steven Levitt, John List, and Anya Savikhin Samek. 2014. "Chicago Heights Early Childhood Center: Early Results from a Field Experiment on Temporal Allocation of Schooling." Presentation by Anya Samek to the Institute for Research on Poverty, University of Wisconsin–Madison.
- Gertler, Paul, Susan M. Chang, James Heckman, Rodrigo Pinto, Sally Grantham-McGregor, Arianna Zanolini, Christel Vermeersch, and Susan Walker. 2014. "Labor Market Returns to an Early Childhood Stimulation Intervention in Jamaica." *Science* 344 (6187): 998–1001.
- Grantham-McGregor, Sally M., Charles A. Powell, Susan P. Walker, and John H. Himes. 1991. "Nutritional Supplementation, Psychosocial Stimulation, and Mental Development of Stunted Children: The Jamaican Study." *Lancet* 338 (8758): 1–5.
- Hackman, D. A., & M. J. Farah. 2009. "Socioeconomic Status and the Developing Brain." *Trends in Cognitive Sciences* 13 (2): 65–73.

- Hart, Betty, and Todd R. Risley. 1995. *Meaningful Differences in the Everyday Experience of Young American Children*. Baltimore: Paul H. Brookes Publishing.
- Heckman, James J. 2008. "Schools, Skills, and Synapses." *Economic Inquiry* 46 (3): 289–324.
- Hoff, Erika. 2003. "The Specificity of Environmental Influence: Socioeconomic Status Affects Early Vocabulary Development via Maternal Speech." *Child Development* 74 (5): 1368–78.
- Hughes, Claire. 2011. "Changes and Challenges in 20 Years of Research into the Development of Executive Functions." *Infant and Child Development* 20 (3): 251–71.
- Kağıtçıbaşı, Cigdem. 2007. *Family, Self and Human Development across Cultures: Theory and Applications*. New York: Psychology Press.
- Kahneman, Daniel. 2011. *Thinking, Fast and Slow*. New York: Farrar Straus & Giroux.
- Kalil, Ariel. 2014. "Proposal 2: Addressing the Parenting Divide to Promote Early Childhood Development for Disadvantaged Children." Hamilton Project. Washington, DC: Brookings Institution.
- Lansford, Jennifer E., and Kirby Deater-Deckard. 2012. "Childrearing Discipline and Violence in Developing Countries." *Child Development* 83 (1): 62–75.
- Luby, Joan L., Deanna M. Barch, Andy Belden, Michael S. Gaffrey, Rebecca Tillman, Casey Babb, Tomoyuki Nishino, Hideo Suzuki, and Kelly N. Botteron. 2012. "Maternal Support in Early Childhood Predicts Larger Hippocampal Volumes at School Age." *Proceedings of the National Academy of Sciences* 109 (8): 2854–59.
- Macours, Karen, Norbert Schady, and Renos Vakis. 2012. "Cash Transfers, Behavioral Changes, and Cognitive Development in Early Childhood: Evidence from a Randomized Experiment." *American Economic Journal: Applied Economics* 4 (2): 247–73.
- Morris, Pamela, Shira K. Mattera, Nina Castells, Michael Bangser, Karen Bierman, and Cybele Raver. 2014. *Impact Findings from the Head Start CARES Demonstration: National Evaluation of Three Approaches to Improving Preschoolers' Social and Emotional Competence*. OPRE Report 2014–44. Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
- Mullainathan, Sendhil, and Eldar Shafir. 2013. *Scarcity: Why Having Too Little Means So Much*. New York: Times Books.
- Noble, Kimberly G., Bruce D. McCandliss, and Martha J. Farah. 2007. "Socioeconomic Gradients Predict Individual Differences in Neurocognitive Abilities." *Developmental Science* 10 (4): 464–80.
- Olson, Sheryl L., John E. Bates, and Kathryn Bayles. 1990. "Early Antecedents of Childhood Impulsivity: The Role of Parent-Child Interaction, Cognitive Competence, and Temperament." *Journal of Abnormal Child Psychology* 18 (3): 317–34.
- Ozer, Emily J., Lia C. H. Fernald, Ann Weber, Emily P. Flynn, and Tyler J. VanderWeele. 2011. "Does Alleviating Poverty Affect Mothers' Depressive Symptoms? A Quasi-Experimental Investigation of Mexico's Oportunidades Programme." *International Journal of Epidemiology* 40 (6): 1565–76.
- Paxson, Christina, and Norbert Schady. 2010. "Does Money Matter? The Effects of Cash Transfers on Child Health and Development in Rural Ecuador." *Economic Development and Cultural Change* 50 (1): 147–81.
- Schady, Norbert, Jere R. Behrman, Maria Caridad Araujo, Rodrigo Azuero, Raquel Bernal, David Bravo, Florencia Lopez-Boo, Karen Macours, Daniela Marshall, and Christina Paxson. Forthcoming. "Wealth Gradients in Early Childhood Cognitive Development in Five Latin American Countries." *Journal of Human Resources*.
- Shonkoff, Jack P., Andrew S. Garner, Benjamin S. Siegel, Mary I. Dobbins, Marian F. Earls, Laura McGuinn, John Pascoe, and David L. Wood. 2012. "The Lifelong Effects of Early Childhood Adversity and Toxic Stress." *Pediatrics* 129 (1): e232–e46.
- UNICEF (United Nations Children's Fund). 2006. *The State of the World's Children 2007: Women and Children: The Double Dividend of Gender Equality*, Vol. 7. New York: UNICEF.
- Ursache, Alexandra, Clancy Blair, and C. Cybele Raver. 2012. "The Promotion of Self-Regulation as a Means of Enhancing School Readiness and Early Achievement in Children at Risk for School Failure." *Child Development Perspectives* 6 (2): 122–28.
- Webster-Stratton, Carolyn. 1998. "Preventing Conduct Problems in Head Start Children: Strengthening Parenting Competencies." *Journal of Consulting and Clinical Psychology* 66 (5): 715.
- Weisleder, Adriana, and Anne Fernald. 2013. "Talking to Children Matters: Early Language Experience Strengthens Processing and Builds Vocabulary." *Psychological Science* 24 (11): 2143–52.
- Yeager, David S., Dave Paunesku, Gregory M. Walton, and Carol S. Dweck. 2013. "How Can We Instill Productive Mindsets at Scale? A Review of the Evidence and an Initial R&D Agenda." White Paper prepared for the White House meeting "Excellence in Education: The Importance of Academic Mindsets," Washington, DC, May 10.

CHAPTER 6 Household finance

Financial decisions are difficult. They typically involve great uncertainty about the future, whether about future income, cash (liquidity) needs, or interest rates. Much has been learned in recent years about how individuals actually make these decisions. More often than not, financial decision making is influenced by impulsive judgments, emotions, temptation, loss aversion, and procrastination.

The research discussed in chapter 1 revealed systematic biases in decision making: that is, systematic departures from what individuals intend to do and say that they want to do and what they actually do. All these biases apply particularly to financial decision

The consequences of biases in financial decision making can be profound for people in poverty, or on the edge of poverty, because they lack a margin for error.

making, the topic of this chapter. Many factors drive these biases. People strive for simplification when confronted with difficult decisions (they tend to use shortcuts, or heuristics). The way financial products and tools are presented can shape their decisions (framing effects). Their preferences can be affected by acute aversion to uncertainty (loss aversion) and ambiguity. Emotions and the desire for immediate gratification (present bias) often win out against foresight. Even when people try to make careful financial decisions, the complexity of the decision environment often leads them astray.

The market can provide commitment devices and other mechanisms to help people overcome these biases, but it can also exacerbate them. In general, the market will have weak or missing incentives for resolving these problems when borrowers are naïve about their biases or underestimate their lack of understanding. Moreover, organizations may deliberately misinform or underinform their customers about the terms of the contracts they are signing.

The consequences of these biases can be profound for people in poverty, or on the edge of poverty, because they lack a margin for error. And because countries may not have the institutional capacity and the safety nets to safeguard individuals against financial losses, poor people need to be even more attentive to financial decisions (Mullainathan and Shafir 2009). Poverty also heightens uncertainty about future costs and benefits of different actions, magnifying the individual's focus on the pressing and current scarcity of resources—and further complicating decision making for individuals who are often overwhelmed with numerous important day-to-day decisions (see chapter 4).

Given these considerations, providing an appropriate institutional setting—that is, access to well-functioning financial markets and a sound regulatory environment—may not be enough to improve people's decisions. In developing countries, more proactive policies may be necessary to address the behavioral constraints on financial decision making. For example, providing access to a new insurance instrument may not be sufficient to induce people to use it if they perceive the product as ambiguous or do not trust the institution issuing it.

This chapter suggests ways that policy makers can make institutions more responsive to the behavioral factors driving people's financial decisions. This

chapter also discusses better ways to design and implement policy goals, such as increasing savings or access to and reliance on formal sources of credit. The chapter presents examples of interventions that have been shown to help address behavioral constraints on financial decisions.

The human decision maker in finance

Are people rational in their financial decision making? This question divides economists, as shown by the different views laid out in the 2013 Nobel acceptance lectures by Eugene Fama and Robert Shiller.¹ This section presents examples of financial conduct that is typical all over the world but that cannot easily be explained under the assumption that people carefully consider all costs and benefits before making a decision. These patterns of financial conduct, however, can be explained by findings from psychology about how people make decisions.

The discussion that follows presents a series of insights using stylized examples of individuals in developing countries, followed by supporting empirical evidence for each phenomenon, and the policy implications implied.

Losses loom larger than gains

Suresh is a farmer in rural India who grows cash crops. The land he farms has been handed down from generation to generation, and his family has an established history of growing and selling a well-known crop that yields a modest and low-risk return. In the past few years, Suresh has noticed other farmers selling a different crop that is much more profitable. However, the new crop is critically dependent on rainfall and thus carries greater risk. Suresh's cousin, an accountant in the nearby city, confirms that it would be more profitable in the long run for Suresh to invest in the new crop, so Suresh devotes a small part of his land to the new crop as a trial. Unfortunately, drought hits the region the next year, and the new crop does not do so well. Suresh takes this loss to heart and abandons the new variety. He forgoes the potential for more learning and higher growth.

Novi lives in urban Jakarta, Indonesia, and decides to invest in the stock market. She closely follows the value of her investments on a financial website and worries as the value of her investments fluctuates. Although her gains outweigh her losses, she feels much more concerned about the losses, and after some time she withdraws most of her funds from the stock market. She keeps a few stocks that have fallen significantly in value, hoping to sell them when prices recover.

For both Suresh and Novi, the negative experience of their immediate losses has more impact on their decisions than the positive effects of potential long-term gains. As a result, they make choices that can be described as economically suboptimal.

A large number of experimental studies on human decision making have demonstrated that people interpret the outcomes of financial prospects in terms of gains and losses in comparison to a reference point, such as the status quo, and subsequently put more weight on potential losses than on gains in their decisions (Kahneman and Tversky 1979; Wakker 2010).² This leads people to shy away from investment opportunities that are profitable over time, on average, but that might expose them to a loss at any given time. The importance of losses in financial decisions can be finely observed in data on portfolio holdings showing that people invest too little in risky assets relative to the level dictated by traditional views on risk and return. Many people hold no risky investments at all (see the review chapter by Guiso and Sodini 2013). This pattern can be explained by loss aversion and a myopic short-term focus on fluctuations (Benartzi and Thaler 1995; Gneezy and Potters 1997). In volatile equity markets, even a one-year investment horizon (rather than observing daily ups and downs as in Novi's example) might lead to significant losses, thus inducing investors to favor portfolios with minimal risk.

Moreover, people are unwilling to sell investments that turned out poorly (see the review by Barber and Odean 2013). By holding on to these investments, they avoid actually realizing losses, hoping to break even after future price increases. In comparison, people are often too eager to realize gains. The pattern of holding on to "losers" and selling "winners" violates basic principles of learning about the quality of the investments: while gains signal potentially good investments, losses signal poor ones. Returns would be higher in the long run by disposing of poor investments and keeping the good ones, but many people do not follow this precept because they are so averse to realizing losses.

Evidence from six Latin American countries suggests that the tendency to overvalue losses and undervalue gains can lead to economically significant welfare losses: in an experimental survey with real monetary payments, the more strongly an investor was affected by superficial (economically irrelevant) gain-loss framing, the worse the investor scored on a broad index of economic well-being (Cardenas and Carpenter 2013).

Policies that increase risk tolerance in the presence of losses and reduce investment short-sightedness may be beneficial. They should provide a frame in which losses become less salient, and information on

long-term benefits becomes more salient (Keys and Schwartz 2007). For example, people making financial decisions could be provided with aggregate information on volatile outcomes over time or over a cross-section of risks, which makes the short-term losses less “visible” than the long-term benefits (Gneezy and Potters 1997; Thaler and others 1997).

Present bias: Overweighting the present

Sonja is a school teacher in Kampala, Uganda, and has participated in a savings scheme in her neighborhood that specified monthly contributions. She accepted these contribution amounts without further thought. The school in which she works is now offering a subsidized savings account at the local bank for all its employees. Sonja must decide how much to save and put in the bank account. When the accounts were offered, Sonja resolved to make her savings decisions in the next few weeks. After a year and a half, she has still not invested the time to decide.

People have a tendency to frame financial decisions in a narrow way, rather than considering their overall financial situation.

Linda faces a similar problem. She recently bought a house in Johannesburg, South Africa, and is considering insuring her property; she would feel better if her property and valuables were covered. When she finds time to delve into the details of the insurance, she discovers that there are many different contracts. Comprehensive insurance also involves significant monthly costs, biting into her budget. For some insurance, she would have to provide documentation on her valuables, which will require more time. She decides to wait a bit and spend more time thinking about what she should do.

Financial decisions require difficult trade-offs. Although people like Sonja would like to save and provide for their future, current consumption needs loom large. They may procrastinate and postpone decisions, losing time in which they could be accumulating savings. Similarly, people like Linda value the benefits of security and the long-term benefits of financial prudence, but when they begin the process of obtaining insurance, they lose sight of these general benefits and get discouraged by the costs, the large number of choices, and the unattractive details they must comb through. Hence, they may remain uninsured.

Savings, investment, and insurance are important development goals, yet people often face daunting obstacles in pursuing them even when suitable financial products are available and individuals have disposable income: that is, even when the basic supply and demand conditions are met. A major tendency identified by the behavioral finance literature that accounts for the underutilization of financial products is *present bias*. This leads decision makers to shift good experiences (consumption) toward the present and bad experiences (making difficult decisions about how much to save) toward the future, leading to overconsumption and procrastination. It also implies that people might be patient when weighing one future payoff against another but become very impatient when making similar choices involving the present. This pattern can lead them to reverse their preferences—even if they have planned them carefully—and prevent them from successfully implementing their financial plans (Laibson 1997; O'Donoghue and Rabin 1999). *Temptation* is an extreme form of time inconsistency: people may value some goods or payoffs only at the moment of consumption, or on impulse, but not in the context of the past or the future (Banerjee and Mullainathan 2010).

The empirical evidence suggests that behavior and decisions driven by impatience, procrastination, and temptation are economically relevant. A striking empirical example of the coexistence of strong impatience and procrastination comes from a study of University of Chicago business students (Reuben, Sapienza, and Zingales 2007). Students received payment for participating in a survey and could choose between receiving the payment immediately after the survey or receiving a much larger payment two weeks later. Many students chose the immediate payment, indicating strong impatience. However, many did not cash their checks until four weeks after the experiment. Some procrastinators waited as long as 30 weeks to cash their checks. Those who initially indicated a strong preference for immediate payment were also more likely to delay cashing their checks. The finding can be interpreted as an intention-action divide.

Impatience is strongly correlated at the individual level with low saving and imprudent financial planning (Moffitt and others 2011; Sutter and others 2013). The flip side of saving is borrowing. A particularly expensive way to borrow is maintaining revolving balances on credit cards.³ Costly credit card borrowing has been shown to be related to time-inconsistent, present-biased preferences (Meier and Sprenger 2010), suggesting that people do not plan to incur costly fees but are stuck in a vicious behavioral cycle.

Time in psychological terms also has a dimension of “distance.” Psychology research has shown that people construe decisions differently when considering them in general terms for the long run (“high distance”) from when they are delving into the details to implement them now or shortly (“low distance”) (Trope and Liberman 2003; Trope, Liberman, and Wakslak 2007; Fiedler 2007; Liberman and Trope 2008). Low distance implies a focus on concrete and subordinate features (the details), feasibility, and cost, while high distance implies a focus on abstract and superordinate features (general aspects), desirability, and benefits. Because insurance and saving are beneficial in the long term (that is, under high distance) but require immediate decisions and immediate monetary costs (that is, under low distance), differences between planning and actually doing are exacerbated for these important financial decisions.

The traditional tool of providing information may not help overcome these problems. People may simply avoid information that makes them anxious or uncomfortable. Policy measures that neglect these effects may backfire. For example, without complementary support or individualized counseling, informing people that their savings balances may be too low may not be effective or might even be discouraging (Caplin and Leahy 2003; Carpena and others 2013).

The behavioral obstacles to financial decisions discussed here are likely to have much larger detrimental effects in low-income countries than in higher-income countries. Behavior and choices from one time period to another are influenced by the psychological resource of *willpower*, which has been likened to a muscle: it can be depleted by the exertion of free will and requires time and resources to replenish (Baumeister and others 1998; Baumeister, Vohs, and Tice 2007). Significantly, from the perspective of development policy, the pressing demands of poverty can make it more difficult for the poor to exert and replenish willpower (Spears 2011),⁴ worsening the effects of time inconsistency and self-control.

While sophisticated financial products such as automatic deposits to savings, mandatory retirement contributions, or default insurance programs are commonplace in advanced economies, the poor in developing countries do not typically have access to such instruments (Collins and others 2009). The resulting cash-based economy is highly susceptible to temptation, procrastination, and other behavioral diversions to saving. This latter aspect provides a strong rationale for policy interventions, especially in developing countries, to provide specific institutions that help people overcome willpower deficits and impose their current

preferences for saving on their future selves (Ashraf, Karlan, and Yin 2006; Bauer, Chytilová, and Morduch 2012; Gal and McShane 2012).

Cognitive overload and narrow framing

Ikram is a small business owner in Tangier, Morocco, and has a long-standing relationship with a local microfinance provider, having borrowed and repaid funds many times. He does not earn very much, and a recent unexpected illness has left him with health fees that he cannot pay out of pocket. He approaches his trusted microfinance provider for funds, who agrees to provide him a loan based on his clean credit record. However, during this very stressful period, Ikram unintentionally neglects some of his other financial responsibilities. He does not pay his rent on time and forgets to pay the electricity bill. His landlord, who cannot reach him because Ikram is getting treatment in the hospital, initiates an eviction order. His electricity is cut off for nonpayment of the bill. Unintended negligence worsens the monetary burdens and anxiety of Ikram's already tenuous situation.

People have limited attentional and mental resources. Poverty leads to situations that impose a high cognitive tax so that these resources are used up quickly; the resulting behavior leads to financial costs that add even more strain, possibly initiating a vicious cycle of poverty (see chapter 4).

Willpower and attention are limited cognitive resources. In times of acute scarcity, financial decisions place strong demands on these resources, using them up quickly. When cognitive resources are overtaxed, decision quality typically suffers, as decisions are driven by emotional impulses and a narrow short-term focus (Baumeister, Vohs, and Tice 2007; Shah, Mullainathan, and Shafir 2012). Moreover, in such settings, small situational factors such as an exasperating bus ride to a bank are often a compelling hindrance to implementing prudent financial choices (Bertrand, Mullainathan, and Shafir 2004; Mullainathan and Shafir 2009).

People also have a tendency to frame financial decisions in a narrow way, rather than considering their overall financial situation (Thaler 1990; Choi, Laibson, and Madrian 2009; Rabin and Weizsäcker 2009; Soman and Ahn 2010; Hastings and Shapiro 2012). Narrow framing can lead individuals to compartmentalize funds into mental categories. They may treat funds for food purchases as distinct from funds for school fees, for instance, and neglect the overall financial situation. In Ikram's example, it is conceivable that he has put some funds aside for family events like a wedding; but because he mentally tagged these funds for a “wedding,” during his recent period of strain, he might

not have considered using them to pay his health bill, housing, or similar expenses unrelated to the tag. According to a well-documented example in which money is not treated as fully fungible, people often have some low-interest savings, while at the same time they are borrowing at much higher rates (Gross and Souleles 2000, 2002; Stango and Zinman 2009). A holistic view of their finances, though, would allow them to avoid high credit costs by using their savings to repay their expensive loans.

How people categorize funds depends on how and why they received them, on the social rules and rituals directing their circulation, and on socially and culturally supported mental models. For instance, life insurance in the United States was once considered a gross breach of mental categories—human life was incommensurable and sacred, and the monetary world was profane. Over the course of the 19th century, life insurance became acceptable, but only because life insurance itself was changed into a kind of sacred ritual, when prudential planning became part of a “good death” and the social basis for a new mental account was established. The same was true of life insurance for children, which was once viewed with great suspicion, but eventually came to be a way to value the love and affection children provided to families. More generally, Zelizer (2010, 100) notes that “mental accounting cannot be fully understood without a model of ‘sociological accounting.’”

Providing individuals with a holistic view of their finances would be a useful policy goal in developing countries. In addition, timely reminders about upcoming payments or savings can have substantial influence on improving financial outcomes, as discussed later in the policy solutions section of this chapter.

The social psychology of the advice relationship

Victor is the sole provider for his family members in Buenos Aires. He worries about what would happen to them if he was injured and could not work. He also wants to save and invest for the future. He goes to a branch of the local bank to meet an adviser, who offers him a range of life insurance and investment products. Victor does not have much understanding of or interest in financial issues, but he follows the advice of the bank’s agent and buys a broad insurance product with a conservative savings component.

Financial advice is offered by multiple people who often have diverging incentives and differing information. Structuring policy for financial advice therefore requires taking account of the possible self-interests of the agents who give advice, the content and quality of the information that is collected from—and given

to—the person being advised (the advisee), and how the nonexpert advisee uses this information and the advice to come to a decision.

Disclosure requirements can have perverse effects on the products agents recommend, since agents could shift their recommendations from those products for which disclosure has been made more stringent to other products for which commissions remain opaque (Anagol, Cole, and Sarkar 2013). In particular, even if firms are required to offer basic, affordable, and transparent products, they may not provide sufficient information about them. Instead, they may offer more opaque alternatives with hidden and complex fees and costs (Giné, Martinez Cuellar, and Mazer 2014).

Psychological research into advisers’ reactions to disclosure requirements shows that when conflicts of interest cannot be avoided (for example, because agents are paid based on commissions), then advisers often give even more biased advice (Sah and Loewenstein 2013). This finding supports the importance of having an institutional framework that allows for independent, unbiased intermediaries in markets where financial advice is essential.

Even when the agent aims to provide the best advice possible for the customer, agents may misjudge the risk tolerance of their clients and recommend inappropriate products as a result. Judgments about other people’s attitudes toward risk are central to virtually all financial products and decisions. However, there is a well-documented tendency to judge people who are risk averse as less risk averse than they truly are and people who are risk loving as less risk loving than they are (Hsee and Weber 1997; Faro and Rottenstreich 2006).

The agent’s problem in assessing the risk preferences of his or her client is compounded by framing effects. Different formats for presenting risk typically lead clients to reveal different attitudes toward risk. Which of these formats leads to the best decision, in the sense that it maximizes returns over time? Some studies have developed computerized simulation techniques that allow decision makers to “experience” the risk and volatility of different investments before deciding which to choose (Goldstein, Johnson, and Sharpe 2008; Donkers and others 2013; Kaufmann, Weber, and Haisley 2013). The evidence suggests that these techniques lead to decisions that are most stable over time (and therefore to “buy and hold” strategies, increasing returns) (Kaufmann, Weber, and Haisley 2013). Even after experiencing a bad outcome, decision makers more often stick with their investment strategies following a decision aided by a simulation technique than when they made a decision based on other presentation formats.

These insights and the evidence suggest that the measurement and communication of the clients' risk tolerance, and the presentation of the financial product, are important considerations for financial agencies in designing, implementing, and enforcing regulations.

While these findings point in clear directions for the regulation of financial advice, at a deeper level it can be asked whether research provides a genuine rationale for consumer protection in the advice relationship. One might predict that clients anticipate the motives of self-interested agents and thus interpret the advice given by agents in light of their incentives. Empirical research has shown, however, that clients often follow advice blindly, literally shutting down their own thinking about the decision problem (Engelmann and others 2009). Clients may not understand, or perhaps even perceive, the strategic aspects in the advice relationship. Changes in disclosure rules on conflicts of interest do not change investors' behavior in an experimental agency setting (Ismayilov and Potters 2013; see converging evidence in Sah and Loewenstein 2013). Careful regulation of financial advice therefore seems warranted.

Policies to improve the quality of household financial decisions

This section presents examples of several policies shown to improve financial decisions. It begins with how choices are presented (framing) and then describes several policies that actually change the choices that people are offered.

Framing choices effectively

Decisions and financial outcomes often can be improved at virtually zero cost by choosing the description carefully (in the case of an institution that aims to help people make good financial decisions) or by stipulating requirements for how information

should be provided (in the case of a regulator). There are two important insights on framing interventions. First, alternatives can be presented to financial decision makers in various ways that address the biases described earlier, without affecting the economic essence of the information. Second, financial products can be described either in simple and clear ways or in complex and opaque ways, with direct impacts on how decisions are made.

Many studies have demonstrated the power of framing effects. A study on payday borrowers in the United States, for example, illustrates the effectiveness of framing in an experiment where repayments were presented either in dollar amounts or as interest rates (figure 6.1) (Bertrand and Morse 2011). This very simple reframing of information significantly discouraged costly repeat borrowing. The study makes an important point: an information format that seems most informative and thus most useful from the perspective of a financial professional or an economist is not necessarily suited to help nonexperts make good decisions. Interest rates can be confusing to decision makers and may mask the magnitude and frequency of repayment obligations. Similar effects have also been observed for percentages versus frequencies, especially when relating to conditional probabilities (Gigerenzer and others 2007). For example, the claim that “the number of successful investments increased by 150 percent” conveys very different information from the claim that “the number of successful investments increased from two in a thousand to five in a thousand.”

Products or investments are typically presented to consumers in groups or categories. The categorization can be arbitrary and can have strong effects on choices. For example, when offered different investment categories, people sometimes tend to split investment amounts roughly equally across categories, irrespective

Figure 6.1 Simplifying information can help reduce take-up of payday loans

Simple changes in how repayment information is presented can have meaningful impacts on financial behavior. In this study, payday borrowers were provided with repayment in APR terms and in terms of dollar amounts. Presenting information in dollar amounts led to significant reductions in repeat borrowing from payday lenders.

Repayments presented as:



Source: Bertrand and Morse 2011.

Note: APR = annual percentage rate.

of the nature of the categories. Thus when presented with the two categories of stocks from North America (Canada and the United States) and South America (including Argentina, Brazil, Chile, Uruguay, and República Bolivariana de Venezuela), individuals are likely to invest more in U.S. stocks than when presented with the five categories of stocks from Argentina, Brazil, Canada, Chile, the United States, Uruguay, and República Bolivariana de Venezuela. These effects have been demonstrated in various studies, including those with experienced managers and those with significant stakes in market environments (Bardolet, Fox, and Lovallo 2011; Sonnemann and others 2013).

Another example of effective framing is choice simplification, particularly with respect to the number of alternatives presented. For most products, an agent, adviser, or bank can present the decision maker with only a limited set of alternatives. If people had unlimited bandwidth, more information would always be better for decision makers, assuming that they could freely choose the number of alternatives they want to consider, given some search cost. In practice, however, people are often overwhelmed by a large number of alternatives and end up postponing decisions or using simple heuristics or rules of thumb (Johnson and others 2012; Drexler, Fischer, and Schoar 2014). Reducing the number of alternatives can therefore be an effective intervention. It has been shown that procrastination is less severe as the choice set becomes smaller (Tversky and Shafir 1992). A study of consumer credit in South Africa finds that more loans were made when a smaller number of combinations of interest rates and loan amounts were suggested to customers (Bertrand and others 2010). The effect of this simple framing manipulation was equivalent to a 2.3 percent reduction in the loan interest rate. Similarly, in their current work, Giné, Martínez Cuellar, and Mazer (in progress) are finding a significant improvement in the ability of respondents in Mexico to identify the optimal loan and savings products when they were presented with succinct summary information about savings rates and loan costs, as compared to a finer breakdown of commissions, fees, and returns.

From the perspective of regulation, it is important to keep in mind that individuals are very sensitive to the framing of alternatives and that there is typically no “neutral” or “natural” frame: should eight different insurance products be offered or nine? Should they be presented in two categories or three? To this end, policy makers need to take into account the behavioral consequences of different presentation formats and choose the format that maximizes consumer welfare. The evidence discussed here shows that the optimal format will often deviate from the

classical view that more information is always better than less information.

Changing the default

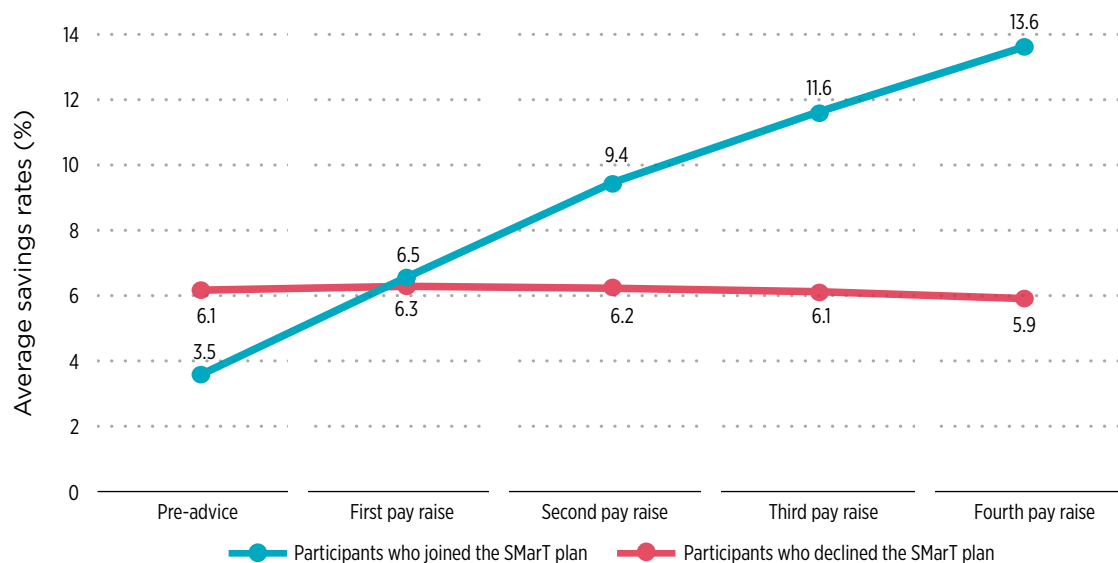
One of the best-established findings in the behavioral finance literature concerns the power of defaults (Madrian and Shea 2001). Defaults are ubiquitous in the administration of financial choices: newcomers to a job, for instance, are presented with a multitude of forms requesting their choices on pension contributions, health insurance plans, tax-favored savings opportunities, and much more. Except in cases in which legal restrictions make participation in certain schemes mandatory, the natural default has long been perceived to be no participation and no contribution; yet in some circumstances this default assumption may not be the best policy. In many situations, positive contributions imply a higher net income discounted at all reasonable market discount rates. This is particularly true for all schemes in which employers match contributions or the government provides favorable tax treatment. A positive contribution default therefore often means higher income; for those who have strong reasons for significantly smaller, but immediate payouts, it is typically sufficient to tick a box.

Various studies have demonstrated that nonparticipation in highly profitable schemes is driven to a large extent by procrastination and passivity. For example, studies that examine the effects of a switch to automatic enrollment in 401(k) pension plans for employees of large U.S. firms find that both enrollment and contribution amounts are strongly driven by the defaults provided by employers (Madrian and Shea 2001; Beshears and others 2008). The effects of defaults can often be amplified when combined with the framing interventions discussed above: reducing a complex choice of a retirement savings plan into a simple binary choice between the status quo and a preselected default alternative dramatically increases participation in the plan (Beshears and others 2013).

People often find it easier to make decisions that require trade-offs between only future outcomes, as discussed. Choosing between different savings rates in the future does not involve the short-term focus and immediate financial consequences of decisions for today. A clever intervention uses these insights to have people choose their own defaults for the future. In this method, known as SMaRT (Save More Tomorrow), employees stipulate increases in savings out of future pay raises (Thaler and Benartzi 2004; Benartzi and Thaler 2013). No current payoffs need to be considered; no reductions in disposable income are experienced, which could be perceived as losses and therefore weigh heavily in the decision; future increases occur

Figure 6.2 Changing default choices can improve savings rates

The Save More Tomorrow (SMarT) plan allows employees to allocate a percentage of future pay raises toward retirement savings. By committing to save more in the future through automatic payroll deductions, participants increased savings without sacrificing current disposable income.



Source: Thaler and Benartzi 2004.

automatically, by default, allowing savings to accumulate as long as the person remains passive (figure 6.2).

One possible explanation for the effectiveness of the changes in default is that it is easier to choose the default. To make a choice not to comply with the option provided entails a cognitive cost: people must stop and reflect and may need to determine their preferences for options they had never considered before (Stutzer, Goette, and Zehnder 2011). There may also be an endorsement effect, where individuals interpret the default as a form of advice coming from a knowledgeable party (Madrian and Shea 2001; Atkinson and others 2013). In both cases, a policy that is aimed at setting defaults in a psychologically informed way will exert little influence on people with strong preferences. However, these same defaults will have considerable influence on those people who would otherwise not ponder the decision carefully.

Making microfinance more effective

Abundant evidence indicates that access to financial services for households with limited income is an important factor in reducing poverty and inequality (Karlán and Morduch 2010; World Bank 2008; Imai and Azam 2012; Mullainathan and Shafir 2013). Furthermore, a large body of evidence shows that by extending beyond conventional reaches of markets, microfinance institutions (MFIs) enable the poor to smooth income shocks (see the review in Armendáriz and Morduch 2010).

Serving clients who have few assets, MFIs extend noncollateralized loans to the poor. MFIs rely on screening, monitoring, and contract enforcement within borrower groups and generally have high repayment rates (Giné, Krishnaswamy, and Ponce 2011). However, recent work draws attention to the influence of social factors on the high repayment rates. Ties of loyalty among group members due to social norms, as well as the fear of the stigma of default, deter high risk taking and encourage repayment of group-based loans (Bauer, Chytilová, and Morduch 2012; Cassar, Crowley, and Wydick 2007). In contrast, exposure to information on defaults by unrelated people can reduce individuals' propensity to repay (Guiso, Sapienza, and Zingales 2013), and solvent borrowers may have a higher inclination to adopt adverse behavior if they perceive that the lender is not financially strong (Trautmann and Vlahu 2013). These findings suggest that trust and confidence among group members, as well as views of the lender, serve as an important foundation for successful microcredit lending and that the design of information-sharing mechanisms may be guided with this insight in mind.

Using nudges and reminders

A recurring insight from research on behavioral finance is that simple interventions that account for or remove psychological constraints, such as social nudges and reminders, can go a long way toward

improving financial behavior. One aspect of human behavior where reminders can be particularly effective is overcoming lack of attention.

A series of experimental studies in Bolivia, Peru, and the Philippines show that simple, timely text messages reminding people to save improve savings rates in line with earlier established goals (Karlan, Morten, and Zinman 2012). The studies find that reminders that emphasize a specific goal, such as saving for a purchase of a consumer durable like a television, are twice as effective as generic reminders; this finding suggests that individuals treat money differently depending on the intended purpose and are more likely to be willing to save for a specified purchase than more generally. Likewise, reminders about late fees on loans have been shown to significantly improve timely repayment behaviors up to two years after the reminder (Stango and Zinman 2011).

People's tendency to mentally structure income and spending in different accounts can be turned into a tool for policy. In a recent study of employees in India, a simple nudge was used to establish different

here highlight the potential role of simple and often inexpensive nudges that can help improve financial behaviors. These nudges may even play on the behavioral patterns and use them in smart ways.

Fighting temptation through commitment

Lack of self-control is a leading explanation for lack of savings, and the absence of default savings plans for most people in developing countries makes the problem worse. While individuals tend to put off important financial decisions to the future, often the same individual recognizes the importance of difficult financial choices—as long as the decision point occurs in the future. Perhaps policy makers can design and offer products that allow individuals to commit to certain savings goals but do not allow them to renege without significant penalty.

The most basic form of such commitment comes from the experience of rotating savings and credit associations (ROSCAs). Such neighborhood savings schemes are very popular in developing countries and allow people to invest in goods that require large up-front payments. The mechanism of ROSCAs centers on the illiquid nature of contributions and funds. Each ROSCA member contributes a fixed monthly amount to the central pot, and a randomly chosen individual gets the entire pot each month. By making saving a public act, these schemes exploit the value of social pressure from other ROSCA members to commit them to their desired level of savings (Ardener and Burman 1996). This arrangement is similar to the group lending model in microfinance. Traditional savings arrangements like ROSCAs may provide not only savings opportunities where access to financial markets is missing but also a commitment device in circumstances in which the cultural or social environment makes individual implementation of a strict savings schedule difficult or impossible.

Evidence from developing countries shows that substantial demand for savings exists and that commitment devices are likely to have strong and positive impacts on behavior. When savings accounts were offered in the Philippines without the option of withdrawal for six months, there was a large demand for such accounts and a take-up rate of nearly 30 percent (Ashraf, Karlan, and Yin 2006). After one year, individuals who had been offered and had used the accounts increased savings by 82 percent more than a control group that was not offered such accounts. A recent study in Kenya finds that providing people with a lockable metal box, padlock, and passbook increased investment in health products by 66–75 percent (Dupas and Robinson 2013).

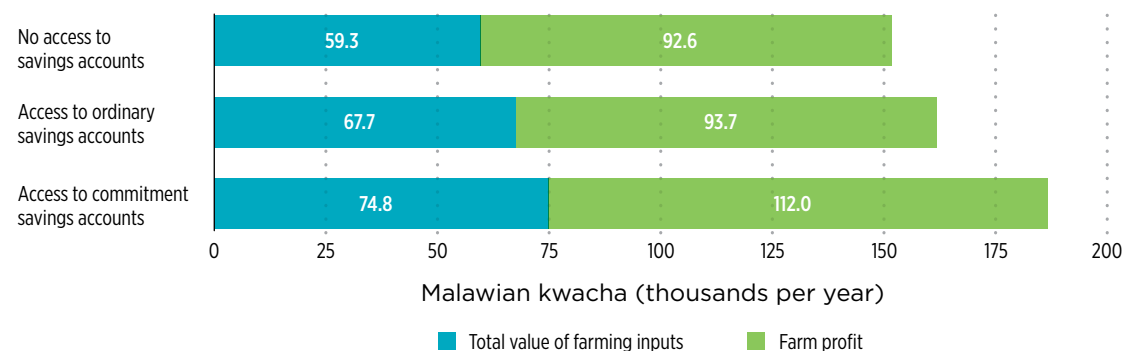
There is typically no “neutral” or “natural” frame. Policy makers need to take into account the behavioral consequences of different presentation formats and choose the format that maximizes consumer welfare.

accounts for spending and savings among workers with very low savings rates (Soman and Cheema 2011). Weekly salaries were artificially partitioned into two separate envelopes: one labeled “for consumption” and another labeled “for saving.” Although there was no binding restriction on spending from the “for saving” envelope, this simple manipulation led to an improvement in saving over the usual method of single lump-sum remuneration.

The policy lesson from these examples is clear: while policy makers may not be able to solve individuals' behavioral constraints, they can certainly recognize those constraints and design policy to account for them. The silver lining is that this need not involve monumental changes in policy making or even increases in budgets. Rather, the examples discussed

Figure 6.3 Commitment savings accounts can improve agricultural investment and profit

Smallholder cash crop farmers in Malawi were provided formal savings accounts. A randomly selected number were also offered commitment accounts. Those with access to commitment accounts were able to save more for the planting season and generated larger farm profits from the next harvest.



Source: Brune and others 2013.

A study among farmers in Malawi randomized access to ordinary savings accounts and commitment savings accounts. The results show higher demand for commitment accounts and find suggestive evidence of relatively larger welfare gains from such accounts in the form of crop output and other farming outcomes, as well as household expenditures (Brune and others 2013). Figure 6.3 shows the expansion in the size of smallholder cash crop farms as farmers gain access to commitment savings devices in a randomized evaluation. Although the experiment did not identify the precise channel of productivity improvements (resisting borrowing from social networks, enabling higher risk taking with savings buffers, or committing against pure self-control problems), given the high take-up rate and usage among local farmers, commitment mechanisms have the potential for increasing farm profits as financial access is broadened. One concern, however, about binding commitment devices is that they may, at least initially, crowd out existing social or cultural mechanisms for the accumulation of resources.

Simplifying and targeting financial education

Increasingly financial education programs are becoming an integral part of development reform. Whereas earlier programs focused on providing basic knowledge, more recent research also tries to remove psychological barriers to changing financial behavior.

One of the most compelling findings in the realm of financial education is to *keep it simple*. Limited cognitive and computational ability leads people to economize on cognition while making decisions (Datta and Mullainathan 2012). In a study of business owners in the Dominican Republic, researchers tested the ben-

efits of simplicity by comparing the benefits of a full-fledged financial education module to those of a module based on simple rules of thumb (Drexler, Fischer, and Schoar 2014). The simpler training yielded significant effects on knowledge and behavior, while the traditional financial education had only limited impact. These results suggest that financial education policy can be designed to highlight key heuristics, especially in poor populations that may have no prior financial training.

Another important psychological aspect of making financial decisions is *salience*, or relevance. People are more likely to pay attention to financial education if it is specifically targeted to their needs, rather than provided in general terms. In a study of microfinance clients in India, when researchers offered assistance in setting financial goals and individualized financial counseling, they found that both interventions led to significant improvements in savings and budgeting behavior (Carpena and others 2013). In contrast, the study found that financial education without the addition of either goal setting or counseling had no impact on informal or formal savings, opening bank accounts, or purchasing financial products such as insurance.

Utilizing emotional persuasion

People often make important choices based on emotions rather than on careful thought. Economists and psychologists have long studied dual-process decision models in which decision making is essentially a process of negotiation between a “hot” and fast emotional system and a more deliberative and “cool” cognitive system (Metcalfe and Mischel 1999), or an interaction between two systems of intuitive and deliberative responses (fast and slow thinking) (Kahneman 2003).

Previous studies clearly show that the internal negotiation process can be influenced by external appeals. The most obvious example comes from the field of advertising, which often relies on emotional appeals to attract customers. Such appeals often resonate more deeply than logical messages. If advertising can be persuasive for commercial reasons, perhaps the power of media can be used to influence welfare-enhancing choices as well. One of the most widespread and influential media for conveying such messages is television.

A psychologically informed understanding of decision making can help policy makers improve the match between intended and actual effects of a financial policy and can help individuals achieve their financial goals.

As discussed in spotlight 2, entertainment programming on television that presents characters with whom the audience can identify has been shown to influence important social outcomes such as fertility and demand for health screenings. A recent study in

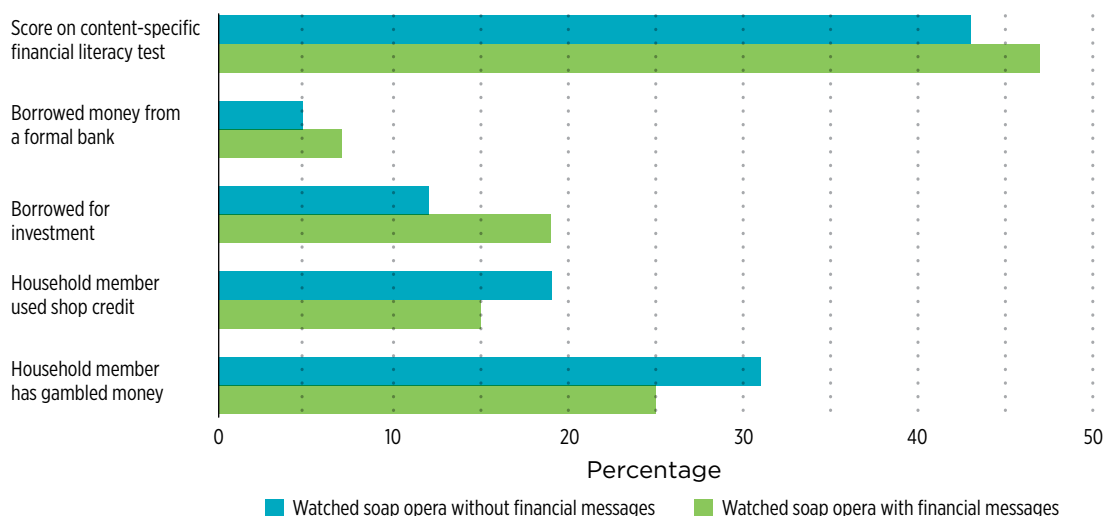
South Africa shows that television programming can be harnessed to improve financial decisions, as well (Berg and Zia 2013). The authors studied the effects of incorporating messages on debt management into a nationally televised and popular soap opera in South Africa and found significant improvements in content-specific financial knowledge, greater likelihood of borrowing formally and for productive purposes, reduction in borrowing through expensive shop credit, and lower propensity to gamble—all messages that were conveyed in the soap opera story line (figure 6.4). The study employed a mixture of quantitative and qualitative analytical tools to identify conformity to the messages delivered by the leading character. The study found that financial messages delivered by a peripheral character were largely ignored. This disparity in results suggests that emotional connections are an important pathway for retention of educational messages and that these connections can be built even in entertainment media aimed at large groups of consumers.

Shaping intertemporal preferences at an early age

Habits and preferences formed in early life tend to stay with people into adulthood and can have profound effects on how they make socioeconomic decisions. A compelling example is a long-term longitudinal experiment conducted in the United States. Young children were invited into a room and offered a marshmallow to

Figure 6.4 Popular media can improve financial decisions

Financial education messages on debt management and gambling were incorporated into the story line of a two-month-long popular soap opera in South Africa. Providing messages in this way led to higher financial literacy and better financial decision making.



Source: Berg and Zia 2013.

eat, but with one catch: if they resisted the temptation to eat the marshmallow right away and instead waited for a few minutes, they would be rewarded with two marshmallows! Some kids resisted and some did not. (One little girl licked the marshmallow and then quickly put it back—literally having her sweet and eating it, too.) The researchers tracked these children into adulthood and found that the children who exhibited more patience and self-control achieved better educational and socioeconomic outcomes (Mischel, Shoda, and Rodriguez 1989). Other research has verified that the ability to control temptation and delay gratification among youth is an important determinant of lifetime academic, economic, and social outcomes (Duckworth and Seligman 2005; Moffitt and others 2011; Golsteyn, Grönqvist, and Lindahl, forthcoming; Sutter and others 2013).⁵

While financial policy and products can be shaped to account for behavioral constraints among adults, a complementary policy goal may be to try to improve such preferences in early life. A number of studies have argued that willpower and self-control resemble a muscle that requires time and resources to replenish and that becomes stronger with repeated practice (Baumeister and Heatherton 1996; Baumeister and others 1998; Muraven and Baumeister 2000; Baumeister, Vohs, and Tice 2007). Indeed, research into developmental psychology and education has shown that cognitive control can be exercised and improved in children through early life interventions in preschool (see chapter 5). Training can improve their learning capacity through such skills as absorbing, recalling, and applying concepts learned in class.

A recent study among high school students in Brazil shows that financial education that offers repeated instruction and opportunities to practice responsible intertemporal choices (such as saving for purchases rather than buying on credit, comparison shopping, negotiating prices, and keeping track of expenses) can have important influences on student financial preferences and outcomes (Bruhn and others 2013). The study, which involved nearly 900 schools and 20,000 high school students, finds significant improvements in student financial knowledge and attitudes, savings rates, and spending behavior and important improvements in intertemporal financial preferences, as measured by indexes of financial autonomy and intention to save.

Conclusion

This chapter presents key insights into the social and behavioral influences on financial decision making. It shows that loss aversion, present bias, cognitive overload, and the social psychology of advice make

financial decision making hard. Policy interventions to address these tendencies include changing default options, using social networks in microfinance, employing nudges and reminders, offering commitment devices, simplifying financial education, and using emotional persuasion. The evidence shows that a psychologically informed understanding of decision making can help financial policy makers improve the match between intended and actual effects of a policy and can help individuals achieve their financial goals.

Notes

1. See http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/2013/.
2. For empirical estimates, see Abdellaoui, Bleichrodt, and Paraschiv (2007, table 1).
3. For evidence for the United States, see Ausubel (1991) and Stango and Zinman (2009).
4. See also Shah, Mullainathan, and Shafir (2012).
5. See also the discussion in the section on overweighting the present.

References

- Abdellaoui, Mohammed, Han Bleichrodt, and Corina Paraschiv. 2007. "Loss Aversion under Prospect Theory: A Parameter-Free Measurement." *Management Science* 53 (10): 1659–74.
- Anagol, Santosh, Shawn Cole, and Shayak Sarkar. 2013. "Understanding the Advice of Commissions-Motivated Agents: Evidence from the Indian Life Insurance Market." Working Paper, Wharton School of Business, University of Pennsylvania, Philadelphia.
- Ardener, Shirley, and Sandra Burman. 1996. *Money-Gorounds: The Importance of ROSCAs for Women*. New York: Bloombury.
- Armendáriz, Beatriz, and Jonathan Morduch. 2010. *The Economics of Microfinance*. Cambridge, MA: MIT Press.
- Ashraf, Nava, Dean Karlan, and Wesley Yin. 2006. "Tying Odysseus to the Mast: Evidence from a Commitment Savings Product in the Philippines." *Quarterly Journal of Economics* 121 (2): 635–72.
- Atkinson, Jesse, Alain de Janvry, Craig McIntosh, and Elisabeth Sadoulet. 2013. "Prompting Microfinance Borrowers to Save: A Field Experiment from Guatemala." *Economic Development and Cultural Change* 62 (1): 21–64.
- Ausubel, Lawrence M. 1991. "The Failure of Competition in the Credit Card Market." *American Economic Review* 81 (1): 50–81.
- Banerjee, Abhijit V., Esther Duflo, Rachel Glennerster, and Cynthia Kinnan. 2013. "The Miracle of Microfinance? Evidence from a Randomized Evaluation." Working Paper 1309, Massachusetts Institute of Technology, Cambridge, MA.
- Banerjee, Abhijit, and Sendhil Mullainathan. 2010. "The Shape of Temptation: Implications for the Economic

- Lives of the Poor." Working Paper 15973, National Bureau of Economic Research, Cambridge, MA.
- Barber, Brad, and Terrance Odean. 2013. "The Behavior of Individual Investors." In *Handbook of the Economics of Finance*, edited by Milton Harris, George M. Constantinides, and Rene M. Stulz, vol. 2, part B, 1533–70. Amsterdam: Elsevier.
- Bardolet, David, Craig R. Fox, and Dan Lovallo. 2011. "Corporate Capital Allocation: A Behavioral Perspective." *Strategic Management Journal* 32 (13): 1465–83.
- Bauer, Michal, Julie Chytilová, and Jonathan Morduch. 2012. "Behavioral Foundations of Microcredit: Experimental and Survey Evidence from Rural India." *American Economic Review* 102 (2): 1118–39.
- Baumeister, Roy F., Ellen Bratslavsky, Mark Muraven, and Dianne M. Tice. 1998. "Ego Depletion: Is the Active Self a Limited Resource?" *Journal of Personality and Social Psychology* 74 (5): 1252–65.
- Baumeister, Roy F., and Todd F. Heatherton. 1996. "Self-Regulation Failure: An Overview." *Psychological Inquiry* 7 (1): 1–15.
- Baumeister, Roy F., Kathleen D. Vohs, and Dianne M. Tice. 2007. "The Strength Model of Self-Control." *Current Directions in Psychological Science* 16 (6): 351–55.
- Benartzi, Shlomo, and Richard Thaler. 1995. "Myopic Loss Aversion and the Equity Premium Puzzle." *Quarterly Journal of Economics* 110 (1): 73–92.
- . 2013. "Behavioral Economics and the Retirement Savings Crisis." *Science* 339 (March 8): 1152–53.
- Berg, Gunhild, and Bilal Zia. 2013. "Harnessing Emotional Connections to Improve Financial Decisions: Evaluating the Impact of Financial Education in Mainstream Media." Policy Research Working Paper 6407, World Bank, Washington, DC.
- Bertrand, Marianne, Dean Karlan, Sendhil Mullainathan, Eldar Shafir, and Jonathan Zinman. 2010. "What's Advertising Content Worth? Evidence from a Consumer Credit Marketing Field Experiment." *Quarterly Journal of Economics* 125 (1): 263–306.
- Bertrand, Marianne, and Adair Morse. 2011. "Information Disclosure, Cognitive Biases, and Payday Borrowing." *Journal of Finance* 66 (6): 1865–93.
- Bertrand, Marianne, Sendhil Mullainathan, and Eldar Shafir. 2004. "A Behavioral-Economics View of Poverty." *American Economic Review* 94 (2): 419–23.
- Beshears, John, James J. Choi, David Laibson, and Brigitte C. Madrian. 2008. "How Are Preferences Revealed?" *Journal of Public Economics* 92 (8): 1787–94.
- . 2013. "Simplification and Saving." *Journal of Economic Behavior and Organization* 95: 130–45.
- Bruhn, Miriam, Luciana de Souza Leao, Arianna Legovini, Rogelio Marchetti, and Bilal Zia. 2013. "The Impact of High School Financial Education: Experimental Evidence from Brazil." Policy Research Working Paper 6723, World Bank, Washington, DC.
- Brune, Lasse, Xavier Giné, Jessica Goldberg, and Dean Yang. 2013. "Commitments to Save: A Field Experiment in Rural Malawi." Working Paper 5748, World Bank, Washington, DC.
- Caplin, Andrew, and John Leahy. 2003. "Behavioral Policy." In *The Psychology of Economic Decisions*. Vol. I of *Rationality and Well-Being*, edited by Isabelle Brocas and Juan D. Carrillo, 73–87. New York: Oxford University Press.
- Cardenas, Juan Camilo, and Jeffrey Carpenter. 2013. "Risk Attitudes and Economic Well-Being in Latin America." *Journal of Development Economics* 103 (July): 52–61.
- Carpene, Frank, Shawn Cole, Jeremy Shapiro, and Bilal Zia. 2013. "The ABC's of Financial Literacy: Experimental Evidence on Attitudes, Behavior and Cognitive Biases." Working Paper.
- Cassar, Alessandra, Luke Crowley, and Bruce Wyck. 2007. "The Effect of Social Capital on Group Loan Repayment: Evidence from Field Experiments." *Economic Journal* 117 (517): F85–F106.
- Choi, James J., David Laibson, and Brigitte C. Madrian. 2009. "Mental Accounting in Portfolio Choice: Evidence from a Flypaper Effect." *American Economic Review* 99 (5): 2085–95. doi: 10.1257/aer.99.5.2085.
- Collins, Daryl, Jonathan Murdoch, Stuart Rutherford, and Orlanda Ruthven. 2009. *Portfolios of the Poor: How the World's Poor Live on \$2 a Day*. Princeton, NJ: Princeton University Press.
- Datta, Saugato, and Sendhil Mullainathan. 2012. "Behavioral Design: A New Approach to Development Policy." Policy Paper 016, Center for Global Development, Washington, DC.
- Donkers, Bas, Carlos Lourenço, Daniel Goldstein, and Benedict Dellaert. 2013. "Building a Distribution Builder: Design Considerations for Financial Investment and Pension Decisions." Netspar Design Paper 20, Network for Studies on Pensions, Aging, and Retirement, Tilburg University, the Netherlands.
- Drexler, Alejandro, Greg Fischer, and Antoinette Schoar. 2014. "Keeping It Simple: Financial Literacy and Rules of Thumb." *American Economic Review* 62 (2): 1–31.
- Duckworth, Angela L., and Martin E. P. Seligman. 2005. "Self-Discipline Outdoes IQ in Predicting Academic Performance of Adolescents." *Psychological Science* 16 (12): 939–44.
- Dupas, Pascaline, and Jonathan Robinson. 2013. "Why Don't the Poor Save More? Evidence from Health Savings Experiments." *American Economic Review* 103 (4): 1138–71.
- Engelmann, Jan B., C. Monica Capra, Charles Noussair, and Gregory S. Berns. 2009. "Expert Financial Advice Neurobiologically 'Offloads' Financial Decision-Making under Risk." *PLoS ONE* 4 (3): 4957.
- Faro, David, and Yuval Rottenstreich. 2006. "Affect, Empathy, and Regressive Mispredictions of Others' Preferences under Risk." *Management Science* 52 (4): 529–41.
- Fiedler, Klaus. 2007. "Construal Level Theory as an Integrative Framework for Behavioral Decision-Making Research and Consumer Psychology." *Journal of Consumer Psychology* 17 (2): 101–106.
- Gal, David, and Blakeley B. McShane. 2012. "Can Small Victories Help Win the War? Evidence from Consumer

- Debt Management." *Journal of Marketing Research* 49 (4): 487–501.
- Gigerenzer, Gerd, Wolfgang Gaissmaier, Elke Kurz-Milcke, Lisa M. Schwartz, and Steven Woloshin. 2007. "Helping Doctors and Patients Make Sense of Health Statistics." *Psychological Science in the Public Interest* 8 (2): 53–96.
- Giné, Xavier, Cristina Martinez Cuellar, and Rafael Keenan Mazer. 2014. "Financial (Dis-)Information: Evidence from an Audit Study in Mexico." Policy Research Working Paper 6902, World Bank, Washington, DC.
- . In progress. "Disclosure and Demand Elasticity of Financial Products: Evidence from Mexico." World Bank, Washington, DC.
- Giné, Xavier, Karuna Krishnaswamy, and Alejandro Ponce. 2011. "Strategic Default in Joint Liability Groups: Evidence from a Natural Experiment in India." Unpublished manuscript.
- Gneezy, Uri, and Jan Potters. 1997. "An Experiment on Risk Taking and Evaluation Periods." *Quarterly Journal of Economics* 112 (2): 631–45.
- Goldstein, Daniel G., Eric J. Johnson, and William F. Sharpe. 2008. "Choosing Outcomes versus Choosing Products: Consumer-Focused Retirement Investment Advice." *Journal of Consumer Research* 35 (3): 440–56.
- Golsteyn, Bart H. H., Hans Grönqvist, and Lena Lindahl. Forthcoming. "Adolescent Time Preferences Predict Lifetime Outcomes." *Economic Journal*.
- Gross, David B., and Nicholas Souleles. 2000. "Consumer Response to Changes in Credit Supply: Evidence from Credit Card Data." Unpublished manuscript, University of Chicago and University of Pennsylvania.
- . 2002. "Do Liquidity Constraints and Interest Rates Matter for Consumer Behavior? Evidence from Credit Card Data." *Quarterly Journal of Economics* 117 (1): 149–85.
- Guiso, Luigi, Paola Sapienza, and Luigi Zingales. 2013. "The Determinants of Attitudes toward Strategic Default on Mortgages." *Journal of Finance* 68 (4): 1473–1515.
- Guiso, Luigi, and Paolo Sodini. 2013. "Household Finance: An Emerging Field." In *Handbook of the Economics of Finance*, edited by Milton Harris, George M. Constantinides, and Rene M. Stulz, vol. 2, part B, 1349–1532. Amsterdam: Elsevier.
- Hastings, Justine, and Jesse M. Shapiro. 2012. "Mental Accounting and Consumer Choice: Evidence from Commodity Price Shocks." Working Paper 18248, National Bureau of Economic Research, Cambridge, MA.
- Hsee, Christopher K., and Elke U. Weber. 1997. "A Fundamental Prediction Error: Self-Others Discrepancies in Risk Preference." *Journal of Experimental Psychology: General* 126 (1): 45.
- Imai, Katsushi S., and M. D. Shafiul Azam. 2012. "Does Microfinance Reduce Poverty in Bangladesh? New Evidence from Household Panel Data." *Journal of Development Studies* 48 (5): 633–53.
- Ismayilov, Huseyn, and Jan Potters. 2013. "Disclosing Advisor's Interests neither Hurts nor Helps." *Journal of Economic Behavior and Organization* 93 (September): 314–20.
- Johnson, Eric J., Suzanne B. Shu, Benedict G. C. Dellaert, Craig Fox, Daniel G. Goldstein, Gerald Häubl, Richard P. Larrick, John W. Payne, Ellen Peters, and David Schkade. 2012. "Beyond Nudges: Tools of a Choice Architecture." *Marketing Letters* 23 (2): 487–504.
- Kahneman, Daniel. 2003. "A Perspective on Judgment and Choice: Mapping Bounded Rationality." *American Psychologist* 58 (9): 697–720.
- Kahneman, Daniel, and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47 (2): 263–91.
- Karlan, Dean, and Jonathan Morduch. 2010. "Access to Finance." In *Handbook of Development Economics*, edited by Dani Rodrik and Mark Rosenzweig, vol. 5, chap. 71, 4703–84. Amsterdam: Elsevier.
- Karlan, Dean, Melanie Morten, and Jonathan Zinman. 2012. "A Personal Touch: Text Messaging for Loan Repayment." Working Paper 17952, National Bureau of Economic Research, Cambridge, MA.
- Kaufmann, Christine, Martin Weber, and Emily Haisley. 2013. "The Role of Experience Sampling and Graphical Displays on One's Investment Risk Appetite." *Management Science* 59 (2): 323–40.
- Keys, Daniel J., and Barry Schwartz. 2007. "'Leaky' Rationality: How Research on Behavioral Decision Making Challenges Normative Standards of Rationality." *Perspectives on Psychological Science* 2 (2): 162–80.
- Laibson, David. 1997. "Golden Eggs and Hyperbolic Discounting." *Quarterly Journal of Economics* 112 (2): 443–78.
- Liberman, Nira, and Yaacov Trope. 2008. "The Psychology of Transcending the Here and Now." *Science* 322 (5905): 1201–05.
- Madrian, Brigitte C., and Dennis F. Shea. 2001. "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior." *Quarterly Journal of Economics* 116 (4): 1149–87.
- Meier, Stephan, and Charles Sprenger. 2010. "Present-Biased Preferences and Credit Card Borrowing." *American Economic Journal* 2 (1): 193–210.
- Metcalf, Janet, and Walter Mischel. 1999. "A Hot/Cool-System Analysis of Delay of Gratification: Dynamics of Willpower." *Psychological Review* 106 (1): 3.
- Mischel, Walter, Yuichi Shoda, and Monica I. Rodriguez. 1989. "Delay of Gratification in Children." *Science* 244 (4907): 933–38.
- Moffitt, Terrie E., Louise Arseneault, Daniel Belsky, Nigel Dickson, Robert J. Hancox, Hona Lee Harrington, Renate Houts, Richie Poulton, Brent W. Roberts, and Stephen Ross. 2011. "A Gradient of Childhood Self-Control Predicts Health, Wealth, and Public Safety." *Proceedings of the National Academy of Sciences* 108 (7): 2693–98.
- Mullainathan, Sendhil, and Eldar Shafir. 2009. "Savings Policy and Decision-Making in Low-Income Households." In *Insufficient Funds: Savings, Assets, Credit, and Banking among Low-Income Households*, edited by Rebecca Blank and Michael Barr, 121–46. New York: Russell Sage Foundation.

- . 2013. *Scarcity: Why Having Too Little Means So Much*. New York: Times Books.
- Muraven, Mark, and Roy F. Baumeister. 2000. "Self-Regulation and Depletion of Limited Resources: Does Self-Control Resemble a Muscle?" *Psychological Bulletin* 126 (2): 247–59.
- O'Donoghue, Ted, and Matthew Rabin. 1999. "Doing It Now or Later." *American Economic Review* 89 (1): 103–124.
- Rabin, Matthew, and Georg Weizsäcker. 2009. "Narrow Bracketing and Dominated Choices." *American Economic Review* 99 (4): 1508–43. doi: 10.1257/aer.99.4.1508.
- Reuben, Ernesto, Paola Sapienza, and Luigi Zingales. 2007. "Procrastination and Impatience." Working Paper 13713, National Bureau of Economic Research, Cambridge, MA.
- Sah, Sunita, and George Loewenstein. 2013. "Nothing to Declare: Mandatory and Voluntary Disclosure Leads Advisors to Avoid Conflicts of Interest." *Psychological Science* 25 (2): 575–84.
- Shah, Anuj K., Sendhil Mullainathan, and Eldar Shafir. 2012. "Some Consequences of Having Too Little." *Science* 338 (6107): 682–85.
- Soman, Dilip, and Hee-Kyung Ahn. 2010. "Framing, Mental Accounting and Individual Welfare." In *Perspectives on Framing*, edited by Gideon Keren, 65–92. Hove, United Kingdom: Psychology Press.
- Soman, Dilip, and Amar Cheema. 2011. "Earmarking and Partitioning: Increasing Saving by Low-Income Households." *Journal of Marketing Research* 48 (Special Issue): S14–S22.
- Sonnemann, Ulrich, Colin F. Camerer, Craig R. Fox, and Thomas Langer. 2013. "How Psychological Framing Affects Economic Market Prices in the Lab and Field." *Proceedings of the National Academy of Sciences* 110 (29): 11779–84.
- Spears, Dean E. 2011. "Economic Decision-Making in Poverty Depletes Behavioral Control." *B. E. Journal of Economic Analysis and Policy* 11 (1). <http://riceinstitute.org/wordpress/wp-content/uploads/downloads/2011/12/depletion-published.pdf>.
- Stango, Victor, and Jonathan Zinman. 2009. "What Do Consumers Really Pay on Their Checking and Credit Card Accounts? Explicit, Implicit, and Avoidable Costs." *American Economic Review* 99 (2): 424–29.
- . 2011. "Fuzzy Math, Disclosure Regulation, and Market Outcomes: Evidence from Truth-in-Lending Reform." *Review of Financial Studies* 24 (2): 506–34.
- Stutzer, Alois, Lorenz Goette, and Michael Zehnder. 2011. "Active Decisions and Prosocial Behaviour: A Field Experiment on Blood Donation." *Economic Journal* 121 (556): F476–F93.
- Sutter, Matthias, Martin Kocher, Daniela Rützler, and Stefan Trautmann. 2013. "Impatience and Uncertainty: Experimental Decisions Predict Adolescents' Field Behavior." *American Economic Review* 103 (1): 510–31.
- Thaler, Richard H. 1990. "Anomalies: Saving, Fungibility, and Mental Accounts." *Journal of Economic Perspectives* 4 (1): 193–205.
- Thaler, Richard H., and Shlomo Benartzi. 2004. "Save More Tomorrow™: Using Behavioral Economics to Increase Employee Saving." *Journal of Political Economy* 112 (S1): S164–S87.
- Thaler, Richard H., Amos Tversky, Daniel Kahneman, and Alan Schwartz. 1997. "The Effect of Myopia and Loss Aversion on Risk Taking: An Experimental Test." *Quarterly Journal of Economics* 112 (2): 647–61.
- Trautmann, Stefan T., and Razvan Vlahu. 2013. "Strategic Loan Defaults and Coordination: An Experimental Analysis." *Journal of Banking and Finance* 37 (3): 747–60.
- Trope, Yaacov, and Nira Liberman. 2003. "Temporal Construal." *Psychological Review* 110 (3): 403–21.
- Trope, Yaacov, Nira Liberman, and Cheryl Wakslak. 2007. "Construal Levels and Psychological Distance: Effects on Representation, Prediction, Evaluation, and Behavior." *Journal of Consumer Psychology* 17 (2): 83–95.
- Tversky, Amos, and Eldar Shafir. 1992. "Choice under Conflict: The Dynamics of Deferred Decision." *Psychological Science* 3 (6): 358–61.
- Wakker, Peter P. 2010. *Prospect Theory: For Risk and Ambiguity*. Cambridge, U.K.: Cambridge University Press.
- World Bank. 2008. *Finance for All? Policies and Pitfalls in Expanding Access*. Policy Research Report. Washington, DC: World Bank.
- Zelizer, Viviana A. 2010. *Economic Lives: How Culture Shapes the Economy*. Princeton, NJ: Princeton University Press.

CHAPTER 7

Productivity

In 2008, a bank in Colombia realized that it faced a problem: loan officers across its branches were postponing their registration of new clients and collection of credit to the last two weeks of the month, just before their monthly performance bonuses were calculated, even though they had weekly targets and their monthly bonuses were reduced when they failed to meet them. These practices made it harder to manage cash flows and also added to the stress of the loan officers.

Understanding motivation and behavior at work requires us not only to *zoom in* to examine cognitive and psychological barriers that individuals face and the frames that work environments create but also to *zoom out* to examine the social contexts in which work takes place.

The bank experimented with decreasing the time between effort and rewards and with making the rewards more salient. They gave loan officers small weekly prizes like movie tickets or restaurant coupons if they met their goals in the first half of the month and sent weekly reminders about targets. In the branches that implemented these changes, the sourcing of new

loans in the beginning of the month increased by 18 percent, with no changes in the total number of new loans per month or credit quality. Loan officers earned the bonuses they had been missing earlier—increasing their monthly earnings by 25 percent—and at the same time reported less stress (Cadena and others 2011).

Why did these bank officers require weekly reminders to earn more money? This chapter makes the case that a number of the cognitive, psychological, and social barriers described in earlier chapters affect how much effort employees may exert on the job or how much entrepreneurs and farmers may invest in new technologies. Increasing productivity is central to raising living standards, and productivity growth can arise either from augmenting the factors of production—human capital, physical capital, and technology—or from making better use of existing factors. This chapter focuses on the latter. The productivity of labor tends to be low in both the agricultural and the nonagricultural sectors in low-income settings (Caselli 2005), as is the adoption of business and farming practices that have proven effective elsewhere (Bloom and others 2010). Insufficient motivation in those who provide public services is also common in developing countries and has been well documented in the past decade, ranging from absenteeism of school teachers to negligence among doctors.¹

To increase worker motivation, employers in both the private and the public sectors typically turn to monetary incentives: performance pay, bonuses, or the threat of dismissal. Underlying these strategies is an assumption that effort responds primarily to these kinds of incentives. Similarly, to address the lack of productive investment among entrepreneurs and

farmers, a policy maker may rely on subsidies (under the assumption that careful cost-benefit calculations underlie investment decisions) or training services (under the assumption that these workers lack information about the benefits of a technology).

While these assumptions may indeed capture important relationships between monetary incentives and effort and between the distribution of returns and investment, recent evidence suggests additional diagnoses for these problems. As the chapters in this Report have shown, other cognitive, psychological, and social barriers—sometimes more difficult to observe—could also be interfering with the productivity of employees, entrepreneurs, and farmers and could also shape the effectiveness of monetary incentives. Individuals may face challenges in translating their intentions to work harder or to increase their investment into concrete action. Because of the many competing demands on their attention, they may miss opportunities to improve their productivity and earnings. Individuals may seek meaning in their work and may care about how their employers treat them. They may also care about what their peers are doing.

Understanding these aspects of motivation and behavior requires us not only to zoom in to examine the cognitive and psychological barriers that individuals face and the frames that work environments may create but also to zoom out and examine the broader social contexts in which work takes place (see spotlight 4). This chapter reviews evidence on the role that various cognitive, psychological, and social factors may play in the effort employees exert on the job, in recruitment, in the performance of small businesses, and in the adoption of technology in agriculture. It concludes with some general lessons that could be useful in designing interventions to improve productivity.

Improving effort among employees

To maximize incentives for employee effort, an employer may design a contract that ties pay to output: when employees produce more, they earn more. While recent evidence suggests that this is a useful starting point, sometimes these financial incentives are not sufficient. People may want to exert more effort tomorrow than today, and this procrastination can happen even in the presence of performance contracts, as the case of the Colombian bank officers demonstrated. People are also sensitive to how tasks are framed and how they understand their relationship with their employer—whether they are being treated fairly, for example. People may also take cues about

what constitutes adequate effort from those working around them.

Overcoming procrastination

In India, for example, data entry clerks are primarily paid weekly through a piece rate; they earn a small fee for showing up and then an amount for every accurate field (piece) they enter. This kind of contract, however, still failed to motivate some workers in a large data entry firm in the city of Mysore to exert as much effort as they would have liked. They tended to work less hard until rewards or needs became more salient. Their output increased by 8 percent on payday, for example, over that at the start of the week—an increase in productivity equivalent to a 24 percent increase in the piece rate (Kaur, Kremer, and Mullainathan, forthcoming). Output would also spike by 15 percent in the week before major festivals, which typically entail higher expenditures.

While it could be the case that the workers preferred to increase effort only at these times, their responses to survey questions suggested that they struggled to translate their intentions to work harder into action. More than three-quarters agreed with the statement, “Some days I don’t work as hard as I would like to.” Likewise, nearly three-quarters concurred that “it would be good if there were rules against being absent because it would help [me] come to work more often.”

In a field experiment, workers were offered an alternative contract that could help them commit to higher effort; they could set their own target for the number of accurate entries for the week. If they reached the target, they would be paid their usual piece rate; if they did not reach their target, they would be paid a lower rate.

More than one-third chose this kind of commitment contract, even though it increased their risk of being paid less if they did not meet their own goal. Their output increased by 6 percent, an effect equivalent to increasing the usual piece rate by 18 percent. The workers who showed the greatest tendency to increase effort just before payday were 50 percent more likely to opt for the commitment contract, and they also increased their output by much more: 28 percent.

While certainly this was a more cost-effective alternative to a blanket increase in wage rates, one might wonder whether the effects of a commitment contract would persist. For example, did they occur simply because the scheme was novel? Would workers who tended to procrastinate self-diagnose and choose the appropriate kind of contracts? Because these data entry clerks were paid weekly and the experiment took

place over 13 months, they had ample time to learn about the scheme and adjust their behavior. Demand for these contracts persisted over time. Workers who tended to increase productivity closer to payday were more likely to take up the commitment contract over time, suggesting that they could realize that they required the additional motivation and could adopt an option that helped them improve their productivity.

Framing tasks and compensation

Ample evidence also suggests that employees' productivity can depend on how they perceive the value of their work or how they perceive their treatment as an employee, not simply on their financial compensation. That is, their productivity depends on the way their tasks and rewards are framed. Financial incentives may also function differently when the rewards of working are framed as lost opportunities versus potential gains or when work environments are competitive.

The significance of tasks and the value of employees

Most contracts are incomplete. They do not specify every possible task a worker may be assigned, the performance expectations for each task, or the implications of every possible contingency on employment and compensation. The terms of such an explicit contract would be difficult to verify and enforce, and the costs of monitoring worker performance could be prohibitively expensive. Moreover, workers may come to the job with a certain amount of intrinsic motivation or inherent enjoyment or satisfaction from doing a task that is not based on external rewards, which could obviate the need for explicit links between performance and compensation.

When employees first enter an organization, they typically undergo some training or orientation, however brief, to acquaint them with their new position. Some evidence from field experiments suggests that the frames created during this stage of the employment relationship can influence later productivity. Emphasizing the significance of a task, for example, motivated fundraisers for a university in the United States. During their training, some fundraisers first read inspirational stories about how their job could make a difference in the lives of students who received scholarships, while others read stories about how the skills they acquired through fundraising could help their future careers (Grant 2008). The group that had read the inspirational stories collected 69 percent more donations while fundraising.

In India, a division of a large software company experimented with multiple ways of orienting their

new recruits and found that emphasizing their value as individuals substantially decreased turnover and improved satisfaction among company clients using their services (Cable, Gino, and Staats 2013). One group received the standard orientation that focused on skills training and general facts about the firm. Another group received the same training plus an additional one-hour session in which they participated in self-reflection and group exercises that focused on their unique attributes that lead to personal happiness and high performance at work and encouraged them to think of ways that they could replicate such behavior in their current job. During the training, they also wore sweatshirts and badges with their names printed on them. For a third group, the additional one-hour session focused on organizational identity. Senior workers discussed the firm's values and why it was successful. Workers were directed to reflect on and discuss qualities of the firm that made the workers feel proud; their sweatshirts and badges bore only the company's name.

After six months, the employees who had gone through the standard orientation and the variant that stressed the organization's identity had turnover rates that were 216 and 300 percent higher than that of the employees whose individual identities had been emphasized. While it could be the case that the best employees are the most likely to depart the firm (if, for example, they are highly sought after by other firms), this does not appear to explain these large differences in turnover: the clients of employees who had undergone achievement training were more satisfied than clients of employees who had not.

Reciprocity in the workplace

A number of field experiments also demonstrate that rewards and compensation can alter how employees perceive they are being treated, which in turn can affect their productivity. These findings are consistent with models of jobs as a form of gift exchange, in which workers reciprocate perceived acts of employer generosity by increasing effort and punish treatment they consider to be unfair (Akerlof and Yellen 1990; Fehr, Kirchsteiger, and Riedl 1993).

In China, a consumer electronics company offered a one-time bonus equivalent to 20 percent of average weekly pay that was not tied to worker performance. The bonuses improved hourly productivity by 3–5 percent (Hossain and List 2012). The improvement lasted several weeks after the bonus was discontinued and was statistically indistinguishable from another incentive scheme they tried in parallel, in which workers could earn the same bonus only if they met certain production targets for four straight weeks.

Something similar happened in Tanzania. Health care workers who received a gift of a biography of an American doctor working in low-income settings inscribed with a thank-you message from the research team improved their adherence to medical protocols for many weeks afterward (Brock, Lange, and Leonard 2014). The process of providing the gift mattered and generated differential effects over time. When the gift was given immediately and without conditions, it triggered a large response within three weeks of receipt, equivalent to 0.25 standard deviations in protocol adherence. After 10 weeks, on average, however, performance returned to the level of health workers who had received no gift. When the gift was made conditional on observed performance, it triggered a smaller immediate improvement in protocol adherence—equal to about 60 percent of the effect of the unconditional gift—which also disappeared in the long run.

Both these methods were outperformed by one in which the book was promised but delivered later—which triggered both an immediate response at the time of the promise, equivalent to 64 percent of the effect of the unconditional gift—and a larger additional response when the gift was delivered, which persisted even one month later. After 10 weeks, these health care workers demonstrated protocol adherence that was as high as the immediate effect of the unconditional gift.

While these experiences from China and Tanzania demonstrate that improvements in productivity in response to gifts can persist for several weeks, the extent to which such effects persist is an empirical question and is likely to depend on a number of factors, such as the nature of the employment relationship, the type of task, and possibly the wages in the external labor market. Much more transient improvements in productivity in response to monetary gifts have been observed among tree planters in Canada and temporary workers in the United States hired for several days for fundraising and data entry work in a library (Bellemare and Shearer 2009; Gneezy and List 2006).

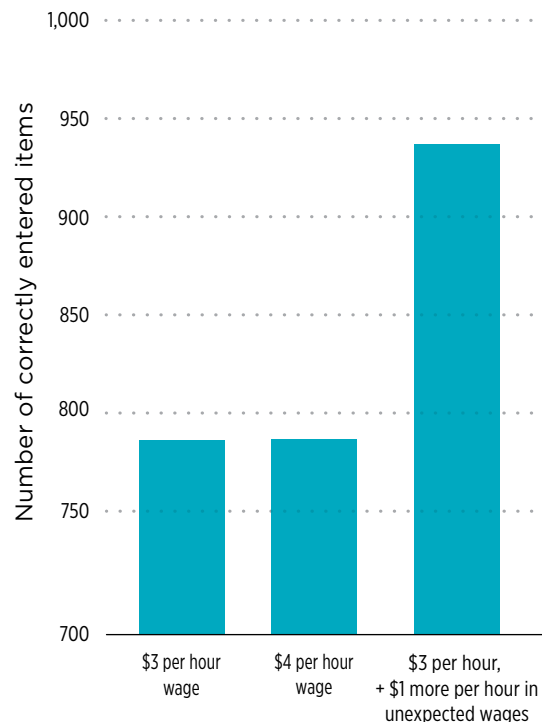
It might be the unexpected nature of a gift that generates reciprocity. In an online experiment hiring freelance data entry workers whose online profiles listed an asking wage below \$3 per hour, workers faced one of three wage structures. One group was simply hired at \$3 per hour, while another was hired at \$4 per hour. A third group was hired at \$3 per hour but right before they started their work, the workers learned that they would earn \$4 per hour due to an unexpected increase in the employer's budget (call this the \$3+1 group). At the end of the task, the \$3 and \$4 groups had performed identically. Paying a higher wage did not generate higher productivity. The \$3+1 group, however,

correctly entered 20 percent more items (Gilchrist, Luca, and Malhotra 2013) (figure 7.1).

Over time, employees may begin to think of an increase in their earnings as a permanent part of their compensation—that is, they may rescale their expectations. Some evidence comes from an evaluation of a pay equalization reform in southern India that affected tea plantations. Employees who pluck tea leaves were typically paid a fixed daily wage and a piece rate after surpassing certain output thresholds (Jayaraman, Ray, and De Vericourt 2014). One month after unions and tea plantations negotiated a contract revision that increased the daily wage by 30 percent to be in line with minimum wages mandated by state legislation, output per worker increased by an average of 34–37 percent over that of the same plantations the year before and of plantations whose contracts had not been revised. By the fourth month, however, this productivity improvement had declined to 10 percent.

Figure 7.1 Unexpected wage increases can trigger a productivity dividend

In an online experiment, data entry workers were offered three different wage rates. Two groups were offered \$3 per hour or \$4 per hour. A third group was offered \$3 per hour, but after accepting the offer, group members were told they would actually be getting \$4 per hour due to an unexpected increase in budget. This last group correctly entered 20 percent more items than the other groups.



Source: Gilchrist, Luca, and Malhotra 2013.

If employees reward employers' generosity with an increase in effort, to what extent is the converse true? Would they reduce effort in response to perceptions of unfair treatment or compensation that deviates from their expectations? Some evidence from high-income settings suggests that this response is possible. For nearly a 20-year period, when police officers in New Jersey did not receive the wage they requested in binding arbitration, crime reports increased in the months following arbitration, and arrest rates declined (Mas 2006). The greater the gap between their requested wage and what they received, the less effort the police officers expended on the job. Similarly, workers in a tire factory in Illinois produced defective tires when they had to make wage concessions and work alongside strikebreakers, and the company's tires were linked to more than 270 fatalities and 800 injuries (Krueger and Mas 2004).

These deviations in expectations can have very adverse effects in a public health system. In the United Kingdom, as in many countries, nurses' wages in the public hospital system are set by centralized pay regulation. There is very limited regional variation. Thus, there are some regions and times when nurses' pay may be close to the wage prevailing in the local private sector market, but sometimes they diverge. According to an analysis of nine years of data from the public hospital system, in regions where the nurses earned much less than the wage that prevailed in the external labor market, a 10 percent increase in the outside wage was associated with a 15 percent increase in the fatality rate for patients admitted for heart attacks (Propper and Van Reenen 2010). In contrast, in regions where there was only a small pay differential between the centralized wage and outside wages, changes in the outside wage did not affect patient survival.

The upshot of all of this is not to institute a policy of gift giving in the workplace or to regulate increasingly higher wages. Rather, this evidence suggests that workers' effort is sensitive to their expectations of how they should be compensated and that it is possible to improve productivity at least temporarily by exceeding these expectations. In some settings, a one-off surge in output may be required—such as one in tandem with a public health campaign or during a particularly busy time due to business cycle effects. Exceeding worker expectations during times like these could have big payoffs in productivity.

Loss versus gain frames

As previous chapters have discussed, people sometimes put more weight on potential losses than on potential gains. This tendency can also affect people's level of effort in response to monetary incentives.

In China, for example, an experiment in a high-tech manufacturing factory explored this tendency. Some workers were informed that they would receive a bonus after their group's output reached a certain target (the bonus was framed in terms of a gain). Others were told that they would be given a bonus but that it would be rescinded if they failed to meet the target (the bonus was framed in terms of a loss). While both types of bonuses increased worker productivity, total productivity was 1 percent higher under the loss framing (Hossain and List 2012). While this may seem like a small difference, it is important to note that it resulted solely from a change in the wording of the contract.

Would similar results occur outside a factory? In particular, in an application very important to low-income countries, could this reframing of awards improve the performance of civil service workers like health care workers or teachers, who in many places are not penalized with lower salaries or the threat of dismissal for underperformance?

A number of studies from low-income settings have revealed substantial increases in students' test scores or the quantity of health services in response to standard performance pay bonuses framed as gains (Glewwe, Ilias, and Kremer 2010; Muralidharan and Sundararaman 2011; Basinga and others 2011). In the United States, in low-income neighborhoods near Chicago, an alternative loss-framed variant generated improvements where the standard gain-framed bonus had proven unsuccessful (Fryer and others 2012). Some teachers in these Chicago schools were offered the standard bonus at the end of the school year; the bonus would be determined by the test score gains their students achieved. Another group of teachers was given the amount that administrators expected to be the average bonus (\$4,000) at the beginning of the school year. If their students' performance turned out to be above average, they would receive an additional payment at the end of the school year. If it was below average, however, they would have to return the difference between what they received in the beginning and the final bonus they should have received.

This loss-frame manipulation really mattered. Math scores of students taught by teachers who faced loss-framed bonuses were 0.2–0.4 standard deviations higher than the scores of students of teachers paid their regular salaries without any kind of bonus.

Competitive work environments

Recent field experiments also suggest that the organization of the workplace—particularly whether it is competitive—may have an independent effect on productivity. People often do not work in isolation and

tend to compare themselves to others doing similar work, which can be a powerful way to motivate or demotivate people. Consider rankings or social comparisons, where employees learn about their relative performance in a firm or organization. If individuals thrive on competition, they may exert more effort. Or, somewhat perversely, they may decrease effort if they believe that they have relatively high ability but do not want to see it tested empirically. Decreasing effort allows them to maintain their self-image and tell themselves that the reason for their relatively poor performance was that they were not really trying. Existing empirical evidence is consistent with both possibilities, which underscores the importance of experimentation and adaptation to local contexts (chapter 11).

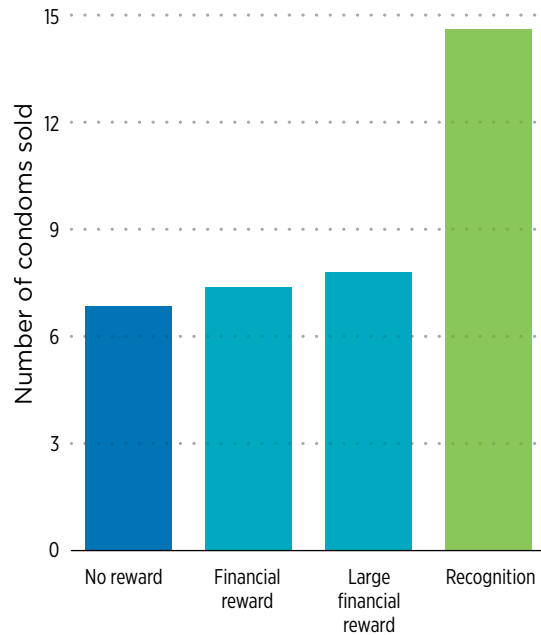
Once a firm in Germany began to include employees' ranks in the distribution of productivity on their paychecks, productivity increased by 7 percent, even though the firm did not use these rankings to adjust wages (Blanes i Vidal and Nossol 2011). Similarly, when a small retail chain in the Netherlands organized tournaments in which groups of stores competed against one another to achieve the highest sales growth, sales growth increased, regardless of whether winners of the tournament earned any monetary rewards (Delfgaauw and others 2013).

In Zambia, recognition proved to be more effective than performance pay among hairdressers tasked by a public health organization with selling female condoms to their clients. Hairdressers who earned a star for every packet of condoms sold, which was stuck on a poster in their salon, sold more than twice as many condoms as hairdressers who received commissions. This impact was strengthened as the number of other salons in the neighborhood also earning stars increased. Meanwhile, hairdressers who received a 90 percent commission on each condom did not sell more condoms, on average, than those who earned nothing and essentially sold the condoms as volunteers (Ashraf, Bandiera, and Jack, forthcoming) (figure 7.2).

In another field experiment in Zambia, however, introducing a competitive element into training backfired among trainees preparing to work as community health workers. When they learned that their relative rankings from exam scores would be revealed, their exam performance dropped by more than a third of a standard deviation (Ashraf, Bandiera, and Lee 2014a)—an effect that was more pronounced among trainees with previously low test scores. Similarly, a firm in the United States found that removing feedback on employee rankings among their furniture sales staff actually increased its sales performance by 11 percent (Barankay 2012).

Figure 7.2 Public recognition can improve performance more than financial incentives can

A public health campaign in Zambia experimented with different ways of motivating hairdressers to distribute female condoms to their clients. Some hairdressers worked as volunteers, while others received either a 10 percent or a 90 percent commission for every packet of condoms sold. A fourth group received a star that was displayed on a poster in their salon for each packet sold. This last group sold twice as many condoms as the other groups.



Source: Ashraf, Bandiera, and Jack, forthcoming.

Considering social relations in the workplace

Peers in the workplace can also exert a strong influence on an individual's effort by enforcing social norms, whether that enforcement is intentional or not. If coworkers see others slacking off, they may do the same, even if this means their earnings may decrease; conversely, people may work harder if others are working harder. This could have implications for how teams should be formed.

The experiment in India with data entry clerks, for example, suggests that peers may help bridge the gap between intentions and actions. Even though their earnings depended solely on their own output, when employees were assigned seats near colleagues who displayed above-average productivity, their own output increased by 5 percent (Kaur, Kremer, and Mullainathan 2010), mainly because they increased their work hours, rather than their efficiency. When seated next to above-average peers, these workers were also less likely to opt for the commitment contract described earlier.

Proximity to more productive workers can also lead to increases in efficiency. Cashiers in a national supermarket chain in the United States, for example, were compensated primarily through a fixed wage that was not sensitive to their productivity (Mas and Moretti 2009). When they worked on a shift with a worker who was more productive, however, their own productivity improved. This improvement in productivity occurred only among cashiers when they could see the more productive worker, and the effect declined with distance. Thus cashiers were truly calibrating their effort to what they could see around them. Less productive workers did not exert a similarly negative effect, so the supermarket could have sold the same number of items in fewer hours if it had rearranged its shifts in a way that maximized skill diversity on a team at any given time.

This might not always be the case, however; sometimes only certain peers matter for these kinds of productivity spillovers. Despite being compensated through individual piece rates, farmworkers on a fruit farm in the United Kingdom picked more or less fruit depending on the productivity of team members who were their friends (Bandiera, Barankay, and Rasul 2010). Compared to when they had no friends on their team, workers who were generally more productive than their friends picked less fruit and sacrificed around 10 percent of their earnings when assigned to teams with their friends; likewise, workers who were less productive than their friends increased their earnings by 10 percent when assigned to teams composed of their friends.

Recruiting high-performance employees

If effort on the job can be influenced by the framing of tasks and compensation and by social relations among employees and if employees themselves demonstrate considerable heterogeneity, could these factors also affect the types of employees that apply for a job at the recruitment stage? For example, could high wages for work that has prosocial benefits, such as jobs in the public sector, attract applicants who care solely about their own career advancement and who exhibit little to no prosocial orientation?

A number of laboratory experiments suggest that financial incentives may crowd out intrinsic motivation, or the inherent enjoyment or satisfaction from doing a task that is not based on external rewards.² Two recent field experiments, however, found that stressing financial incentives during recruitment drives for public sector positions did not attract less

publicly minded job applicants. In 2011, the federal government of Mexico began a program to increase the presence of the state in marginalized and conflict-affected communities through community development agents who could identify the needs of the community and report directly to the federal government. The government experimented with the monthly wage offers used to recruit agents. In some areas, it offered 3,750 pesos, while in others, it offered 5,000 pesos (corresponding to the 65th and 80th percentiles of the wage distributions in program areas, respectively).

The higher wage offer attracted applicants who were more qualified (Dal Bó, Finan, and Rossi 2013). Their previous earnings were 22 percent higher, they were more than 50 percent more likely to be employed at the time of application, and they were nearly 30 percent more likely to have worked in a white-collar position in their previous job. They also scored higher on a cognitive test. This increase in qualifications, however, did not come at the expense of prosocial motivation. The higher wage also attracted applicants with a higher inclination toward public service, as measured by a standard public service motivation index. These applicants, for example, found policy making more attractive and reported a stronger belief in social justice.

In Zambia, researchers collaborated with the government to test two methods of recruiting candidates for a new community health worker position. The sole difference was whether the posters that advertised the positions emphasized career benefits or social benefits. In some districts, the posters called on applicants to “become a highly trained member of Zambia’s health care system, interact with experts in medical fields, and access future career opportunities including: clinical officer, nurse, and environmental health technologist.” In other districts, applicants were called to “learn about the most important health issues in [their] community, gain the skills [they] need to prevent illness and promote health for [their] family and neighbors, work closely with [their] local health post and health center, and become a respected leader in [their] community.”

As was the case in Mexico, emphasizing career-related incentives did not attract applicants with lower measures of social motivation (Ashraf, Bandiera, and Lee 2014b). It did, however, attract more qualified candidates as measured by their past academic achievement, and workers recruited through this method performed better once employed. Workers recruited through career incentives made 29 percent more visits to households (for environmental inspections, health counseling, and referring sick cases to health posts) and organized 100 percent more community meetings.

They were also no more likely to leave their positions than workers who had been recruited through messages that stressed the social benefits of the job.

Improving the performance of small businesses

Many of the barriers that affect job performance among employees also affect decision making by the self-employed. Self-employment accounts for nearly 60 percent of the world's labor force,³ and even in low-income countries, the self-employed account for one-third of the nonagricultural labor force (de Mel, McKenzie, and Woodruff 2010). Divides between intentions and actions and the neglect of potential opportunities may loom even larger for the self-employed because they do not have contracts with an employer interested in their level of effort or explicit work arrangements that dictate what is expected of them. The near absence of certain markets in many low-income settings—in particular the markets for insurance and credit—may also create narrower margins for error for the self-employed.

In Ghana, for example, a test between two different methods of providing support to small-scale entrepreneurs suggests that difficulties in translating intentions into action could prevent them from making profitable investments. Entrepreneurs who received in-kind grants, which came in the form of business equipment, generated 24 percent more profits than those who received no support (Fafchamps and others 2014). Entrepreneurs who received support in the form of cash grants, however, did not increase their profits; the grants ended up partially financing household needs and requests from relatives. The difference was especially large for entrepreneurs who also had difficulties in other areas, such as saving, that require translating intention into actions.

If losses also loom larger than gains for the self-employed, then individuals might be expected not only to avoid losses but also to neglect potential gains—and thus miss opportunities to increase earnings. There is evidence that taxi drivers and bike messengers in high-income settings like the United States and Switzerland work with target earnings or target hours in mind. They do not take advantage of temporary increases in their compensation per ride or per message they could receive by working more. Instead, they either reduce their hours or reduce their effort per hour (Camerer and others 1997; Fehr and Goette 2007).

This phenomenon occurs in low-income settings, as well. Bicycle taxi drivers in Kenya appear to work just enough to meet their daily cash needs, which

fluctuate due to both shocks such as illnesses and predictable expenses such as school fees (Dupas and Robinson 2014). As a result, they forgo some 5–8 percent of their potential income. Fishermen in India also fish less in response to recent increases in the value of their catches (Giné, Martinez-Bravo, and Vidal-Fernandez 2010).

Owners of small businesses in Kenya also failed to notice an opportunity to increase their business income. These businesses are typically ventures such as fruit and vegetable vending, retail shops, restaurants, tailoring shops, and barbershops, and their transactions take place almost entirely in cash. To complete their transactions, owners must be able to make change. This requires that they come to work each day with enough cash in small denominations. The majority of owners,

Divides between intentions and actions and the neglect of potential opportunities may loom even larger for the self-employed because they do not have explicit work arrangements that dictate what is expected of them.

however, report losing a sale in the previous week because they did not have change readily available and spending about an hour and a half searching for change from nearby vendors (Beaman, Magruder, and Robinson 2014).

Pointing out the problem, even indirectly, did improve things. Simply asking the owners about the ways they managed their change once a week for two or three weeks led to a 32 percent reduction in the number of lost sales. Taking a few minutes to go over a calculation of the lost profits attributable to poor change management led to a similar reduction, which translated into an increase in profits of 12 percent.

Even managers of larger firms may fail to notice what seem to be obvious ways of improving productivity. Many large textile plants in India, for example, had piles of garbage, tools, and other obstructions that slowed the flow of workers on production floors and unlabeled and unsorted yarn inventories that increased the probability of defects in quality (Bloom and others 2013). Because their firms were profitable,

many managers believed that they did not need a quality control process.

One might ask why these firms failed to notice these opportunities. Why are they not driven out of the market? While there is little empirical evidence that can address these questions, it is possible to speculate. Many of these businesses may face little competition. Or when choosing a small shop, customers may also put less weight on prices and more on their relationship with the owner. It is also possible that managing a business and making all production and sales decisions alone tax a person's "bandwidth," or cognitive resources, and capture attention that could otherwise be directed toward improving the business.

While these failures to notice opportunities can be addressed directly with information or business training, the ideal programs would take the finite bandwidth of busy entrepreneurs into account. A program in the Dominican Republic, for example, offered an accounting curriculum based on rules of thumb that taught basic heuristics, such as maintaining two different drawers, one for business and one for personal income, and a system of IOU notes for any transfers across the two drawers. This strategy was more successful than a curriculum that taught the fundamentals of accounting. Microentrepreneurs who received rule-of-thumb training improved the way they managed their finances—their sales during bad weeks improved by 30 percent—and they were 6 percent more likely to have any personal savings. In contrast, a standard training package did not achieve any of these benefits (Drexler, Fischer, and Schoar 2014).

Even though entrepreneurs work primarily alone, it may also be possible to take advantage of their relationships within their social networks when designing interventions aimed at increasing their productive potential. In Nicaragua, for example, access to a business grant program was randomly allocated in such a way that community leaders received the same program as beneficiaries in some villages, while in other villages, community leaders did not. The program consisted of a \$200 grant that was conditional on the creation of a business development plan, technical assistance, some follow-up visits by a professional, and an invitation to participate in training workshops on business skills organized within the communities.

The grants did not generate any significant improvements in income for beneficiaries whose village leaders did not also participate in the program. However, beneficiaries experienced substantial increases in income and began to rely much less on agriculture for their livelihoods when three or four of

their village leaders received the program. When the village leaders also participated in the program, beneficiaries' income from nonagricultural self-employment increased by more than 160 percent and the value of animal stock by 94 percent, while agricultural wages went down by 60 percent. Social interactions also increased, consistent with these impacts. Beneficiaries of the business grant were more than four times as likely to report that they had talked to someone in the community about their business (Macours and Vakis 2014).

Increasing technology adoption in agriculture

Macroeconomic and microeconomic data suggest that differences in agricultural labor productivity across countries are much larger than aggregate productivity differences.⁴ One possible reason underlying these differences in agricultural productivity may be the low adoption of simple technologies, such as the use of fertilizer or reduced tillage planting techniques. In 2011, for example, farmers used an average of 13.2 kilograms of fertilizer per hectare of arable land in Sub-Saharan Africa, compared to 118.3 in OECD (Organisation for Economic Co-operation and Development) member states (WDI database).

Much of this underinvestment may be explained by the underdevelopment of certain markets, such as the markets for insurance or credit. In Ghana, for example, an offer of insurance indexed to rainfall led farmers to apply chemicals that were 24 percent more expensive, and they also spent 14 percent more on land preparation (Karlan and others 2014). Nonetheless, just as factors other than financial incentives determine the productivity of employees and the self-employed, the expected distribution of returns to investment may be only one component that a farmer considers in deciding whether to adopt a new technology.

Working around procrastination and scarcity of attention

One potentially important factor for farmers is the need to translate intentions into action, since crop cycles require specific investments at specific times. Missing these timely investments could throw off farm income for an entire season.

Certain fertilizers for maize, for example, need to be applied when the maize is knee-high, at the time of top dressing, which is roughly two months after planting and nearly four months after the harvest. When farmers apply fertilizer at this time, they can increase income by 11–17 percent, according to experimental

evidence from Western Province in Kenya (Duflo, Kremer, and Robinson 2008). However, fewer than 30 percent of farmers sampled in this area reported using fertilizer as of 2009; they attributed their lack of use to a lack of money, even though they could buy fertilizer in small quantities and apply it to only part of their land at a time. If financial resources were indeed a key constraint, then one policy response would be to provide subsidies to lower the cost of fertilizer for farmers.

Lack of money, however, may not be the main barrier to fertilizer use. The problem could be the difference between the timing of income at harvest and the timing of fertilizer needs. Farm household income typically fluctuates, increasing after harvest and tapering off afterward, and that income must compete with many other demands both inside and outside the household. Another obstacle could be the effort—both monetary and cognitive—required to buy fertilizer. Most farmers in the area would have had to walk for 30 minutes to the nearest town center and, once there, decide what type and how much fertilizer to buy.

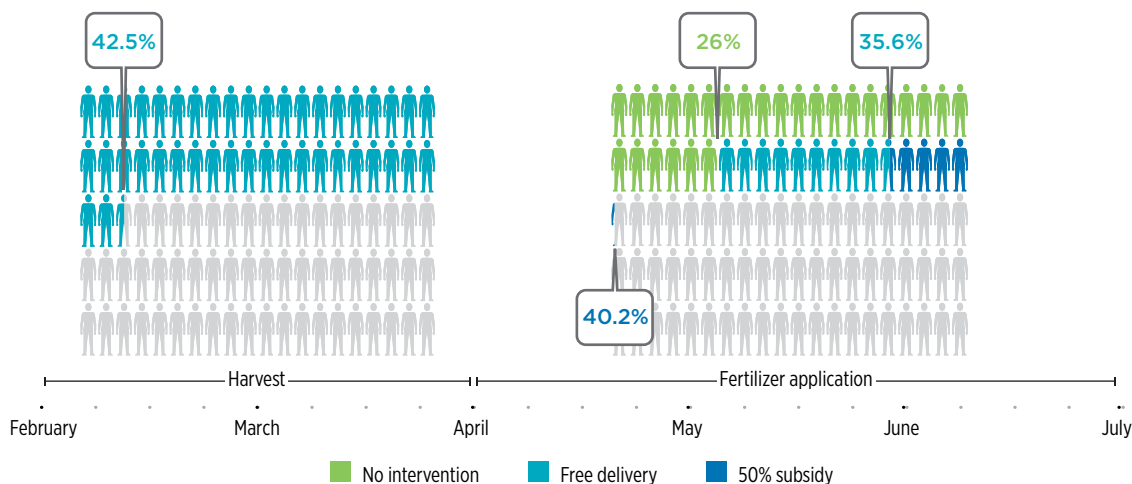
Recent interventions in this area experimented with ways of overcoming these types of obstacles (figure 7.3). When a nongovernmental organization (NGO) offered free delivery and the opportunity to pre-purchase fertilizer at the time of harvest, fertilizer adoption increased by 64 percent—an improvement that

was statistically indistinguishable from a 50 percent subsidy offered later in the season when fertilizer was needed. These results were not driven by free delivery. When the NGO offered some farmers free delivery by itself later in the season, fertilizer use did not improve significantly (Duflo, Kremer, and Robinson 2011). Moreover, the increase in fertilizer use disappeared in subsequent seasons when the NGO stopped offering the intervention, which suggests that farmers found it difficult to commit on their own to purchasing fertilizer early in the season when they had cash.

While these interventions suggest alternatives to subsidies for increasing the adoption of productive technologies, the extent to which fertilizer decisions were suboptimal to begin with is not known. The demonstration trials indicated considerable variation in farmers' profits after they started applying fertilizer. If the farmers who were induced to purchase fertilizer through the prepayment option are also likely to have trouble translating intentions into actions for other parts of the agricultural production cycle, such as for weeding, then the intervention may have served only to increase purchases among a population that stands to gain the least from fertilizer. Nevertheless, these results suggest that increasing take-up need not require subsidies in all cases; paying attention to potential disconnects between the timing of income

Figure 7.3 Altering the timing of purchases can be as effective as a subsidy for improving investment

Farmers in a region in rural Kenya typically purchase fertilizer just before they apply it, not right after the harvest when they have the most cash in hand. Without any intervention, 26 percent of farmers purchase fertilizer. Providing free home delivery right after the harvest increases the amount of fertilizer purchased much more than free delivery provided just before fertilizer is to be applied. Its impact is equivalent to offering a 50 percent subsidy at the time of fertilizer application.



Source: Duflo, Kremer, and Robinson 2011.

and the timing of uptake decisions could yield clues for designing strategies that help make these decisions easier.

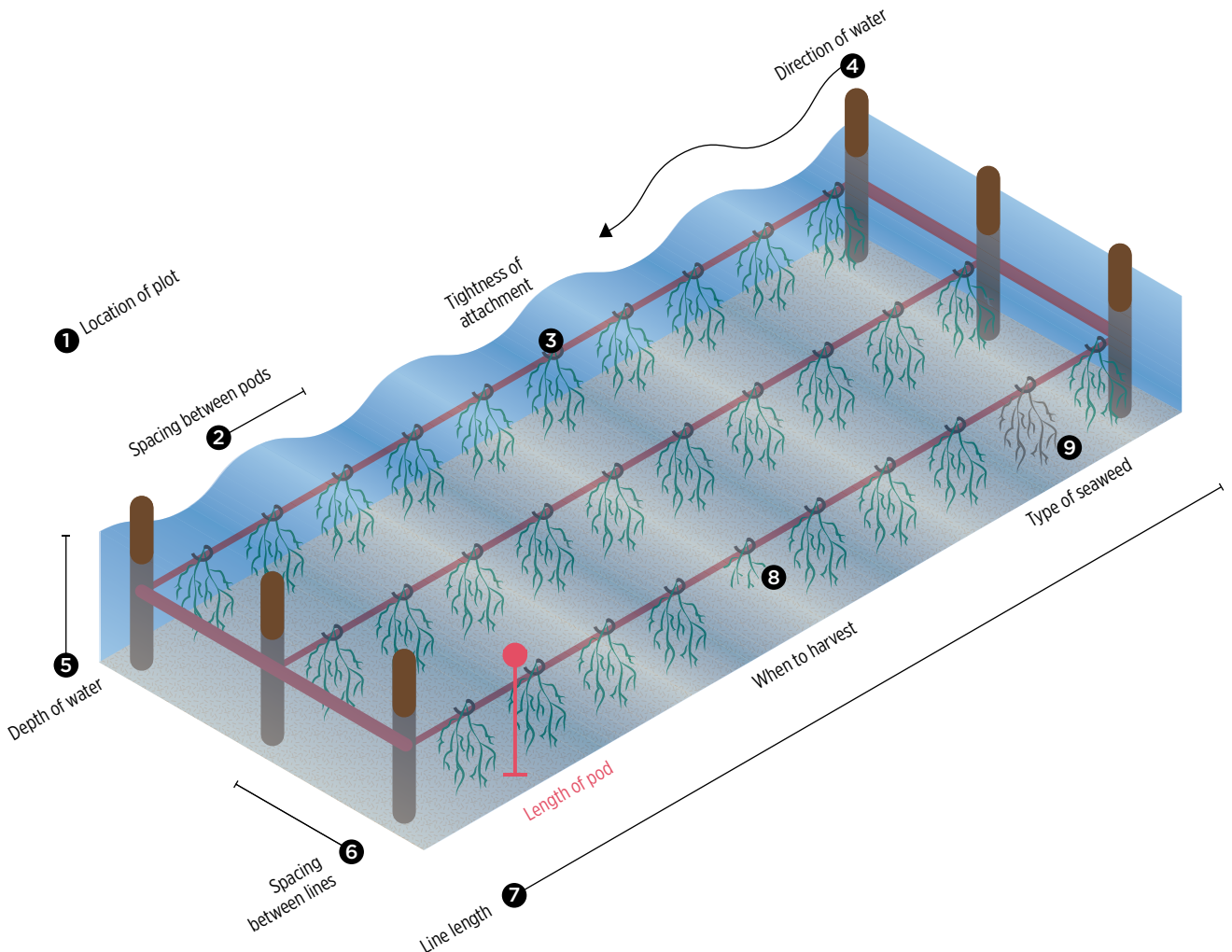
The neglect of potential gains can also be especially serious for farmers, who must always juggle multiple tasks at any given time. Consider seaweed farming. While seaweed may be one of the simplest life forms—an algae—farming it is quite complex. Farmers attach strands (or pods) of seaweed to lines submerged in the ocean. They must decide where to locate their plots, how long the lines should be, how far to space the lines, what kind of seaweed to use, the spacing between pods, the length of pods, how tightly to attach their pods to the lines, and when to harvest the seaweed

(figure 7.4). Even though farmers can experiment and test their assumptions about the importance of certain aspects of production, they must first notice that they are indeed making a decision.

Seaweed farmers in Indonesia, for example, had no problem noticing that the spacing between pods determined the amount of seaweed they could grow, and they could accurately report the spacing on their own lines. They failed to notice, however, that the length of the pod also mattered; they did not even know the lengths of the pods that they used, even though farmers had an average of 18 years of experience and harvested multiple crop cycles per year and thus had plenty of opportunities for learning by doing

Figure 7.4 Not noticing a decision can hurt productivity

Seaweed farming entails many decisions (examples are presented in 1 through 9). Even experienced seaweed farmers in Indonesia overlooked a crucial factor in the growth of their crop—the length of the pods—until researchers presented the missing information in a highly salient and individualized way.



(Hanna, Mullainathan, and Schwartzstein 2014). Even when randomized controlled trials on their own plots demonstrated the importance of both length and spacing—at least for researchers analyzing the data—the farmers did not notice the relationship between length and yields simply from looking at their yields in the experimental plots. Only after researchers presented them with data from the trials on their own plots that explicitly pointed out the relationship between pod size and revenues did farmers begin to change their production method and vary the length of the pods.

Harnessing the power of social networks

While one way of overcoming farmers' failure to notice would be to provide individual farmers with personalized data that make it difficult to ignore whichever aspect of production they are neglecting, this may be an expensive service to deliver. An alternative would be to exploit the fact that farmers may look to their peers for information about what they should be doing. Evidence from the adoption of high-yield varieties of seeds during the Green Revolution in India suggests that friends and neighbors played a role in their adoption (Foster and Rosenzweig 1995; Munshi 2004). Similarly, pineapple growers in Ghana calibrate their fertilizer use to what others in their network are doing (Conley and Udry 2010).

In Uganda, these types of links played a role in diffusing information about growing cotton. A field experiment tested two different methods for teaching female cotton farmers proper growing techniques. In some villages, both male and female cotton farmers attended a standard training program. In other villages, the training program targeted women and focused on social networking. Each woman was randomly assigned a partner whom she did not know before. They played games that gave rewards for remembering cotton farming facts, and they received pictures of their partners and a reminder to talk to them throughout the season. Thus each female farmer gained at least one new link in her social network.

This additional link proved to be more valuable than what was offered during the standard training (Vasilaky and Leonard 2013). For farmers who were not among the highest producers, yields increased by 98 kilograms per acre, an increase of over 60 percent, while the standard training increased it by 67 kilograms per acre (42 percent). The networking intervention also seems to have generated higher impacts for the woman in the pair that had lower yields at the start.

Findings from a field experiment in Malawi mirrored these results. Agricultural extension activities implemented through incentivized peer farmers

improved awareness and adoption of new technologies much more than similar activities implemented solely through the government's extension agents (BenYishay and Mobarak 2014).

Using these insights in policy design

The evidence reviewed in this chapter suggests some general lessons for diagnosing problems of productivity and designing effective solutions. First, there are many nonremunerative aspects of work that influence the effort that employees exert on the job. The time lag between effort and rewards, for example, may induce employees to procrastinate and concentrate their effort only at certain times. Perceptions of generous or unfair treatment can lead employees to increase or decrease their performance, as can ideas about the value of a person's work or the competitive nature of the work environment. Even when production does not directly depend on teamwork, peers can serve as an important reference group and can have an impact on an employee's productivity.

Changing many of these nonremunerative attributes could be relatively inexpensive because they do not affect employees' financial compensation or require any new technologies. Simply recognizing good performance, for example, would be virtually costless, as would emphasizing the meaning of a task or the importance of an employee in an organization.

Not only the content of the interventions, but also the process of delivering them, is important. Design matters greatly.

Similarly, for the self-employed and those working in agriculture, factors beyond the returns to investment can affect the adoption of productivity-enhancing practices and technologies. Competing demands may make it difficult to save enough to make timely investments, and the absence of institutions that could compensate for such tendencies, such as markets for credit or insurance, could worsen the impacts of these tendencies in low-income settings. The sheer number of decisions that the self-employed must make may increase the likelihood that they fail to notice opportunities.

A second lesson that emerges from field experiments around the world is that not only the content of the interventions, but also the process of delivering them, is

important. While pay-for-performance contracts, subsidies, and training are promising instruments for tackling low productivity among employees, entrepreneurs, and farmers, the design of these approaches matters greatly. Discounts for fertilizer in Kenya, for example, were more effective in improving farmers' purchases when they were delivered right after harvest, when farmers had more cash on hand, than months later at the time when the fertilizer was needed. In Malawi and Uganda, information about new farming technologies had greater impact when it came from peers than through standard channels, such as extension agents. In the Dominican Republic, financial training was more effective when converted into simple rules of thumb.

Third, people are heterogeneous. Different groups may be more or less affected by intention-action divides and what their peers are doing, and the interpretation of tasks and rewards is likely to vary substantially from person to person, and even from task to task. Close to one-third of data entry clerks in India and maize farmers in Kenya responded to the commitment devices that were offered to them. The others perhaps required a different intervention.

This importance of both process—the small details of implementing an intervention—and heterogeneity suggests that finding the most effective interventions for a population will require an inherently experimental approach, including testing multiple approaches at the same time or in sequence (chapter 11). The low costs of some of these new designs and the potential for high payoffs to otherwise difficult or intractable problems, however, should justify the experimentation required to find out.

Notes

1. For teacher absenteeism, see Chaudhury and others 2006. For doctors' negligence, see Leonard and Masatu 2005; Das and Hammer 2007; Das and others 2012.
2. See, for example, Gneezy and Rustichini 2000; Heyman and Ariely 2004.
3. WDR 2015 team estimate based on the International Income Distribution Database (I2D2).
4. The labor productivity of agriculture in the 90th and 10th percentiles of countries, for example, differs by a factor of 45–50, compared to a factor of 22 for total labor productivity (Caselli 2005; Gollin, Lagakos, and Waugh 2014).

References

- Akerlof, George A., and Janet L. Yellen. 1990. "The Fair Wage-Effort Hypothesis and Unemployment." *Quarterly Journal of Economics* 105 (2): 255–83.
- Ashraf, Nava, Oriana Bandiera, and B. Kelsey Jack. Forthcoming. "No Margin, No Mission? A Field Experiment

- on Incentives for Public Service Delivery." *Journal of Public Economics*.
- Ashraf, Nava, Oriana Bandiera, and Scott Lee. 2014a. "Awards Unbundled: Evidence from a Natural Field Experiment." *Journal of Economic Behavior and Organization* 100 (April): 44–63.
- . 2014b. "Do-Gooders and Go-Getters: Career Incentives, Selection, and Performance in Public Service Delivery." 2014. Working Paper, Harvard Business School, Cambridge, MA.
- Bandiera, Oriana, Iwan Barankay, and Imran Rasul. 2010. "Social Incentives in the Workplace." *Review of Economic Studies* 77 (2): 417–58.
- Barankay, Iwan. 2012. "Rank Incentives: Evidence from a Randomized Workplace Experiment." Working Paper, Wharton School, University of Pennsylvania, Philadelphia.
- Basinga, Paulin, Paul J. Gertler, Agnes Soucat, and Jennifer Sturdy. 2011. "Effect on Maternal and Child Health Services in Rwanda of Payment to Primary Health-Care Providers for Performance: An Impact Evaluation." *Lancet* 377 (9775): 1421–28.
- Beaman, Lori, Jeremy Magruder, and Jonathan Robinson. 2014. "Minding Small Change among Small Firms in Kenya." *Journal of Development Economics* 108: 69–86.
- Bellemare, Charles, and Bruce Shearer. 2009. "Gift Giving and Worker Productivity: Evidence from a Firm-Level Experiment." *Games and Economic Behavior* 67 (1): 233–44.
- BenYishay, Ariel, and A. Mushfiq Mobarak. 2014. "Social Learning and Communication." Working Paper 20139, National Bureau of Economic Research, Cambridge, MA.
- Blanes i Vidal, Jordi, and Mareike Nossol. 2011. "Tournaments without Prizes: Evidence from Personnel Records." *Management Science* 57 (10): 1721–36.
- Bloom, Nicholas, Benn Eifert, Aprajit Mahajan, David McKenzie, and John Roberts. 2013. "Does Management Matter? Evidence from India." *Quarterly Journal of Economics* 128 (1): 1–51.
- Bloom, Nicholas, Aprajit Mahajan, David McKenzie, and John Roberts. 2010. "Why Do Firms in Developing Countries Have Low Productivity?" *American Economic Review: Papers and Proceedings* 100 (2): 619–23.
- Brock, J. Michelle, Andreas Lange, and Kenneth L. Leonard. 2014. "Giving and Promising Gifts: Experimental Evidence on Reciprocity from the Field." Working Paper 165, European Bank for Reconstruction and Development, London.
- Cable, Daniel M., Francesca Gino, and Bradley R. Staats. 2013. "Breaking Them In or Eliciting Their Best? Reframing Socialization around Newcomers' Authentic Self-Expression." *Administrative Science Quarterly* 58 (1): 1–36.
- Cadena, Ximena, Antoinette Schoar, Alexandra Cristea, and Héber M. Delgado-Medrano. 2011. "Fighting Procrastination in the Workplace: An Experiment." Working Paper 16944, National Bureau of Economic Research, Cambridge, MA.

- Camerer, Colin, Linda Babcock, George Loewenstein, and Richard Thaler. 1997. "Labor Supply of New York City Cabdrivers: One Day at a Time." *Quarterly Journal of Economics* 112 (2): 407–41.
- Caselli, Francesco. 2005. "Chapter 9, Accounting for Cross-Country Income Differences." In *Handbook of Economic Growth*, Vol. 1, Part A, edited by Aghion Philippe and N. Durlauf Steven, 679–741. Amsterdam: Elsevier.
- Chaudhury, Nazmul, Jeffrey Hammer, Michael Kremer, Karthik Muralidharan, and F. Halsey Rogers. 2006. "Missing in Action: Teacher and Health Worker Absence in Developing Countries." *Journal of Economic Perspectives* 20 (1): 91–116.
- Conley, Timothy G., and Christopher R. Udry. 2010. "Learning about a New Technology: Pineapple in Ghana." *American Economic Review* 100 (1): 35–69.
- Dal Bó, Ernesto, Frederico Finan, and Martín A. Rossi. 2013. "Strengthening State Capabilities: The Role of Financial Incentives in the Call to Public Service." *Quarterly Journal of Economics* 128 (3): 1169–1218.
- Das, Jishnu, and Jeffrey Hammer. 2007. "Money for Nothing: The Dire Straits of Medical Practice in Delhi, India." *Journal of Development Economics* 83 (1): 1–36.
- Das, Jishnu, Alaka Holla, Veena Das, Manoj Mohanan, Diana Tabak, and Brian Chan. 2012. "In Urban and Rural India, a Standardized Patient Study Showed Low Levels of Provider Training and Huge Quality Gaps." *Health Affairs* 31 (12): 2774–84.
- De Mel, Suresh, David McKenzie, and Christopher Woodruff. 2010. "Who Are the Microenterprise Owners? Evidence from Sri Lanka on Tokman Versus De Soto." In *International Differences in Entrepreneurship*, edited by Josh Lerner and Antoinette Schoar, 63–87. Chicago: University of Chicago Press.
- Delfgaauw, Josse, Robert Dur, Joeri Sol, and Willem Verbeke. 2013. "Tournament Incentives in the Field: Gender Differences in the Workplace." *Journal of Labor Economics* 31 (2): 305–26.
- Drexler, Alejandro, Greg Fischer, and Antoinette Schoar. 2014. "Keeping It Simple: Financial Literacy and Rules of Thumb." *American Economic Journal: Applied Economics* 6 (2): 1–31.
- Duflo, Esther, Michael Kremer, and Jonathan Robinson. 2008. "How High Are Rates of Return to Fertilizer? Evidence from Field Experiments in Kenya." *American Economic Review* 98 (2): 482–88.
- . 2011. "Nudging Farmers to Use Fertilizer: Theory and Experimental Evidence from Kenya." *American Economic Review* 101 (6): 2350–90.
- Dupas, Pascaline, and Jonathan Robinson. 2014. "The Daily Grind: Cash Needs, Labor Supply and Self-Control." Unpublished paper.
- Fafchamps, Marcel, David McKenzie, Simon Quinn, and Christopher Woodruff. 2014. "Microenterprise Growth and the Flypaper Effect: Evidence from a Randomized Experiment in Ghana." *Journal of Development Economics* 106 (January): 211–26.
- Fehr, Ernst, and Lorenz Goette. 2007. "Do Workers Work More if Wages Are High? Evidence from a Randomized Field Experiment." *American Economic Review* 97 (1): 298–317.
- Fehr, Ernst, Georg Kirchsteiger, and Arno Riedl. 1993. "Does Fairness Prevent Market Clearing? An Experimental Investigation." *Quarterly Journal of Economics* 108 (2): 437–59.
- Foster, Andrew D., and Mark R. Rosenzweig. 1995. "Learning by Doing and Learning from Others: Human Capital and Technical Change in Agriculture." *Journal of Political Economy* 103 (6): 1176–1209.
- Fryer Jr., Roland G., Steven D. Levitt, John List, and Sally Sadoff. 2012. "Enhancing the Efficacy of Teacher Incentives through Loss Aversion: A Field Experiment." Working Paper 18237, National Bureau of Economic Research, Cambridge, MA.
- Gilchrist, Duncan, Michael Luca, and Deepak Malhotra. 2013. "When 3+1>4: Gift Structure and Reciprocity in the Field." Harvard Business School Working Paper, Cambridge, MA.
- Giné, Xavier, M. Martinez-Bravo, and Marian Vidal-Fernandez. 2010. "Intertemporal Substitution, Weekly Target Earnings or Both? Evidence from Daily Labor Supply of Southern Indian Fishermen." Unpublished manuscript, World Bank.
- Glewwe, Paul, Nauman Ilias, and Michael Kremer. 2010. "Teacher Incentives." *American Economic Journal: Applied Economics* 2 (3): 205–27.
- Gneezy, Uri, and John A. List. 2006. "Putting Behavioral Economics to Work: Testing for Gift Exchange in Labor Markets Using Field Experiments." *Econometrica* 74 (5): 1365–84.
- Gneezy, Uri, and Aldo Rustichini. 2000. "Pay Enough or Don't Pay at All." *Quarterly Journal of Economics* 115 (3): 791–810.
- Gollin, Douglas, David Lagakos, and Michael E. Waugh. 2014. "Agricultural Productivity Differences across Countries." *American Economic Review* 104 (5): 165–70.
- Grant, Adam M. 2008. "Does Intrinsic Motivation Fuel the Prosocial Fire? Motivational Synergy in Predicting Persistence, Performance, and Productivity." *Journal of Applied Psychology* 93 (1): 48–58.
- Hanna, Rema, Sendhil Mullainathan, and Joshua Schwartzstein. 2014. "Learning through Noticing: Theory and Experimental Evidence in Farming." *Quarterly Journal of Economics* 129 (529): 1311–53.
- Heyman, James, and Dan Ariely. 2004. "Effort for Payment: A Tale of Two Markets." *Psychological Science* 15 (11): 787–93.
- Hossain, Tanjim, and John A. List. 2012. "The Behavioralist Visits the Factory: Increasing Productivity Using Simple Framing Manipulations." *Management Science* 58 (12): 2151–67.
- Jayaraman, Rajshri, Debraj Ray, and Francis De Vericourt. 2014. "Productivity Response to a Contract Change." Working Paper 19849, National Bureau of Economic Research, Cambridge, MA.

- Karlan, Dean, Robert Darko Osei, Isaac Osei-Akoto, and Christopher Udry. 2014. "Agricultural Decisions after Relaxing Credit and Risk Constraints." *Quarterly Journal of Economics* 129 (2): 597–652.
- Kaur, Supreet, Michael Kremer, and Sendhil Mullainathan. 2010. "Self-Control and the Development of Work Arrangements." *American Economic Review* 100 (2): 624–28.
- . Forthcoming. "Self-Control at Work." *Journal of Political Economy*.
- Krueger, Alan B., and Alexandre Mas. 2004. "Strikes, Scabs and Tread Separations: Labor Strife and the Production of Defective Bridgestone/Firestone Tires." *Journal of Political Economy* 112 (2): 253–89.
- Leonard, Kenneth L., and Melkiory C. Masatu. 2005. "The Use of Direct Clinician Observation and Vignettes for Health Services Quality Evaluation in Developing Countries." *Social Science and Medicine* 61 (9): 1944–51.
- Macours, Karen, and Renos Vakis. 2014. "Changing Households' Investments and Aspirations through Social Interactions: Evidence from a Randomized Transfer Program." *Economic Journal* 124 (576): 607–33.
- Mas, Alexandre. 2006. "Pay, Reference Points, and Police Performance." *Quarterly Journal of Economics* 121 (3): 783–821.
- Mas, Alexandre, and Enrico Moretti. 2009. "Peers at Work." *American Economic Review* 99 (1): 112–45.
- Munshi, Kaivan. 2004. "Social Learning in a Heterogeneous Population: Technology Diffusion in the Indian Green Revolution." *Journal of Development Economics* 73 (1): 185–213.
- Muralidharan, Karthik, and Venkatesh Sundararaman. 2011. "Teacher Performance Pay: Experimental Evidence from India." *Journal of Political Economy* 119 (1): 39–77.
- Propper, Carol, and John Van Reenen. 2010. "Can Pay Regulation Kill? Panel Data Evidence on the Effect of Labor Markets on Hospital Performance." *Journal of Political Economy* 118 (2): 222–73.
- Vasilaky, Kathryn, and Kenneth L. Leonard. 2013. "As Good as the Networks They Keep? Improving Farmers' Social Networks via Randomized Information Exchange in Rural Uganda." Working Paper, University of Maryland, College Park.
- WDI (World Development Indicators) (database). World Bank, Washington, DC. <http://data.worldbank.org/data-catalog/world-development-indicators>.

Spotlight 4

Using ethnography to understand the workplace

Understanding the social and cultural context of formalistic procedures in African utility companies

Researchers studying the Water Authority of Togo in the early 1990s, a high-performing company at the time, found that most employees welcomed the fact that there was a voluminous manual of procedures (Henry 1991). Employees agreed with management that these detailed procedures improved relations between colleagues and between superiors and subordinates.

A short time later, the chief executive officer of the Cameroon Electricity Company decided that his company should draft similar procedures to address a long-standing issue of lack of staff empowerment (d'Iribarne and Henry 2007). Feeling apprehensive, employees were constantly coming to their superiors to obtain authorization for what they were going to do. To address this situation, an impressive manual, comprising a dozen large binders, was written in just a few months. The manual described what everyone should do and how it should be done (detailed questions to be asked, rules of good behavior, the procedures and content for management checks, and so on).

Some foreign experts were puzzled: they thought these procedures amounted to micromanagement. However, employees strongly backed the detailed manuals: "They put them at ease," explained a supervisor. Detailed procedures provide a comprehensive

framework within a large organization, similar to what can occur in a smaller organization through case-by-case agreement with the superior. Eventually, other utility companies in Africa followed suit, adopting similar manuals. Manuals of detailed procedures seemed to improve workplace performance, observers believed.

Why were these manuals—which might be seen to be intrusive in other environments—valuable for the companies? As this Report argues, context matters. The manuals correspond to the written rules that are used in traditional associations in many West and Central African communities, the *tontines* (Henry, Tchenté, and Guillaume-Dieumegard 1991). They prescribe, with the same sense of minutia, the conduct to be observed for everything from dealing with lateness, to the right to make jokes, to the organization of meals.

In Cameroon and Togo, as elsewhere in the world, the success of collective enterprises depends on managing tensions between personal interests and group goals. Observation of the particular culturally informed strategies for managing these conflicts helped shape the business manuals. On-the-ground investigation found that employees constantly and subtly sounded out the underlying intentions and interests of the people around them (Smith 2008; Godong 2011). People feared greed and "bad faith guided by personal interests." Conversely, each person was examined to see if he or she was acting as a "true friend." In that context, acting as a true friend meant participating in the duty of mutual aid. Refusals could be viewed as a sign of

This spotlight is based on a background paper prepared by Agence Française de Développement.

underlying nastiness of character. Many people were questioning whether business decisions were motivated by duties of mutual assistance or by the disinterested application of a rule. Professional situations were reexamined in light of the personal relationships among the parties involved. At the same time, people feared acting in ways that might elicit suspicion. “People are afraid of anyone saying, ‘There’s the nasty guy,’” explained a director. “They think that it might bring trouble down on their own head or on the family.”

The approach of formalizing procedures, enforced by a regular audit, was seen as a way to reassure others that what each person does was not motivated by his or her own personal interests, their friends’ interests, or bad intentions, but by what the company expects. Formal procedures reassured people and made them more responsible.

Ethnography can be a powerful tool for understanding the ways in which social and cultural context shapes decision making, choices, and interpersonal relations.

This brief account shows the value of careful ethnographic observation. In the words of anthropologist Clifford Geertz (1994), “thick description”—or a detailed understanding of the social and cultural context surrounding decisions and actions—was necessary to understanding how employees interpreted their interpersonal relations and organizational procedures (d’Iribarne 2002; Booth and Cammack 2013).

Although valuable, thick descriptions have limitations. A danger with some forms of thick description is that they can leave out the ways in which political and economic power, in addition to cultural meanings, also shape individual choice and behavior (Asad 1993). Approaches to thick

description can also sometimes treat individual lives as abstractions, almost like characters in literary texts (Clifford and Marcus 1986). But wielded appropriately, ethnography can be a powerful tool for understanding the ways in which social and cultural context shapes decision making, choices, and interpersonal relations.

References

- Asad, Talal. 1993. *Genealogies of Religion: Discipline and Reasons of Power in Christianity and Islam*. Baltimore: Johns Hopkins University Press.
- Booth, David, and Diana Rose Cammack. 2013. *Governance for Development in Africa: Solving Collective Action Problems*. London: Zed Books.
- Clifford, James, and George E. Marcus. 1986. *Writing Culture: The Poetics and Politics of Ethnography*. Berkeley: University of California Press.
- d’Iribarne, Philippe. 2002. “Motivating Workers in Emerging Countries: Universal Tools and Local Adaptations.” *Journal of Organizational Behavior* 23 (3): 243–56.
- d’Iribarne, Philippe, and Alain Henry. 2007. *Successful Companies in the Developing World: Managing in Synergy with Cultures*. Paris: Agence Française de Développement.
- Geertz, Clifford. 1994. “Thick Description: Toward an Interpretive Theory of Culture.” In *Readings in the Philosophy of Social Science*, edited by Michael Martin and Lee C. McIntyre, 213–31. Cambridge, MA: MIT Press.
- Godong, Serge Alain. 2011. *Implanter le capitalisme en Afrique: Bonne gouvernance et meilleures pratiques de gestion face aux cultures locales*. Paris: Karthala Editions.
- Henry, Alain. 1991. “Vers un modèle du management Africain.” *Cahiers d’études Africaines* 447–73.
- Henry, Alain, Guy-Honoré Tchenté, and Philippe Guillerme-Dieumegard. 1991. *Tontines et banques au Cameroun: Les principes de la société des amis*. Paris: Karthala Editions.
- Smith, James Howard. 2008. *Bewitching Development: Witchcraft and the Reinvention of Development in Neoliberal Kenya*. Chicago: University of Chicago Press.

CHAPTER 8 Health

Every day, people get sick, stay sick, or even die because of missed opportunities.¹ Each year, 7.6 million children under the age of five die from avoidable causes (Liu and others 2012). In countries that suffer the greatest share of these deaths, the most effective interventions are almost all preventive or therapeutic measures that should be within the reach of most households and communities, including breastfeeding, vaccinations, assisted deliveries, oral rehydration therapy, water sanitation measures that do not require major investments in infrastructure, and insecticide-treated mosquito nets (Jones and others 2003).

Telling people that there is a way to improve their health is rarely sufficient to change behavior. Successful information campaigns are as much about social norms as they are about information.

Health outcomes can be improved by applying the insights from behavioral economics and related fields: individuals have limited attention and act on the basis of what is salient (chapter 1); individuals intrinsically value social approval and adherence to social norms (chapter 2); and individuals have many frames (or mental models) through which they can interpret a situation (chapter 3).

Changing health behaviors in the face of psychological biases and social influences

Telling people that there is a way to improve their health is rarely sufficient to change behavior. In general, successful health promotion campaigns engage people emotionally and activate or change social norms as much as they provide information. The message disseminated should be that others will support you or even applaud you if you do it, not just that something is good for you. Successful campaigns address many or most of the following: information, performance, problem solving, social support, materials, and media (Briscoe and Aboud 2012). A campaign should tell people that a behavior will improve their health (information), demonstrate and model the behavior (performance), reduce barriers to its adoption (problem solving), create a system for supporting people who choose to adopt it (social support), provide the materials necessary to begin adoption (materials), and provide a background of support through in-person, print, radio, television, and other approaches (media).

An example of a campaign that pulled together these elements occurred in Bangladesh. In 2006, more than 75 percent of urban dwellers and 60 percent of rural residents used oral rehydration salts (ORS) as a treatment for diarrhea, thanks to a prior public health campaign (Larson, Saha, and Nazrul 2009). But in addition, public health officials wanted people to use zinc (which was widely available and cheap) together with ORS, and a major campaign was introduced to increase the use of zinc as a supplement for infants, which greatly increases the rate of survival in cases of severe

diarrhea. Officials mounted a campaign that included direct marketing (painted dinner plates), community engagement and social support (courtyard meetings), and role modeling (plays, radio dramas, and television serials), as well as public displays like branded rickshaws. As a result of this campaign, knowledge about the use of zinc increased from almost zero to more than 75 percent.

Enhancing the use of mass media

Three examples of mass media illustrate the dual challenge of changing individuals' beliefs and their health behaviors. The examples relate to breastfeeding, smoking, and HIV testing.

Breastfeeding is one of the least expensive strategies for improving the health of young children. Many mass media campaigns have encouraged breastfeeding. Evaluation of seven campaigns in developed countries found that they increased rates of initiating breastfeeding among poor women (Dyson, McCormick, and Renfrew 2006). No mass media campaigns in developing countries have been systematically evaluated, but the available information suggests that they can work when paired with local efforts that involve direct and proactive interactions with women and their social networks (Renfrew and others 2012; Naugle and Hornik 2014).

Mass media campaigns have frequently been used to reduce smoking rates. Such campaigns have been extensively studied and evaluated in developed countries, mostly in the United States, where variation in campaigns across states can be used to measure impact. These campaigns have been most effective at preventing young people from taking up smoking and in supporting individuals who have already quit smoking (see, for example, Bala and others 2013). Using community members such as teachers and parents to deliver messages and extending the campaigns over a long period (at least 12 months) increase their success. However, the reviews find no evidence that the campaigns lead smokers to quit smoking or change the social norms of smoking.

Similarly, a review of over 20 mass media campaigns to encourage HIV testing finds no long-term effects after the campaigns ended (Vidanapathirana and others 2005). In many cases, however, there are short-term effects. In the case of HIV testing, even short-term effects are socially important.

A review of the published literature evaluating all types of mass media campaigns for health echoes these findings. The campaigns effectively promote positive

behaviors and prevent negative behaviors only when the campaigns are paired with local efforts to support the desired behavior change (Wakefield, Loken, and Hornik 2010). Most campaigns are too short in duration, and some even backfire. For instance, a recent U.S. antidrug campaign targeting youth may have unintentionally increased drug use by suggesting that it was commonplace. Teens took this message to mean that it was acceptable among their peers (Wakefield, Loken, and Hornik 2010). The health information was ignored, but not the information about the social norm.

Mass media campaigns on health do not appear to be useful in changing mistaken mental models of illness because the message is filtered through the model itself. For example, over a third of poor women in India believe that increasing fluid intake for children with

Policy makers can make major strides in improving health outcomes by understanding that people think automatically, interpret the world based on implicit mental models, and think socially.

diarrhea makes them sicker. They follow a model in which diarrhea is interpreted as leaking; since more fluid means more leaking, it must be bad (Datta and Mullainathan 2014). With such a mental model, the message that ORS helps children survive diarrhea may fall on deaf ears, since, according to that model, ORS only increases leaking—it does not decrease it.

One opportunity for tackling mental models can come from the juxtaposition of well-known “moral” or “valuable” members of society and misunderstood illnesses or stigmatized individuals. For example, media coverage of celebrity medical diagnoses increases screening and can stimulate interest in behavior change (Ayers and others 2014). In 2011, for example, former Brazilian president Lula da Silva publicly discussed his throat cancer, which he attributed to his long-held smoking habit. His frank discussion of the illness and his own role in causing it was widely covered in the media (photo 8.1). Following his announcement, interest in quitting smoking reached unprecedented

Photo 8.1 Former Brazilian president Lula da Silva's battle with throat cancer was widely covered in the media



Credit: Ricardo Stuckert/Instituto Lula.

levels, and Brazil passed new antismoking laws. Figure 8.1 shows one indicator of interest—Google searches related to quitting smoking. In Brazil, these searches were 71 percent higher even four weeks after the announcement, long after the media had stopped covering Lula's diagnosis. According to Ayers, "Lula's announced cancer diagnosis, though tragic, was potentially the greatest smoking cessation-promoting event in Brazilian history" (Price 2013).

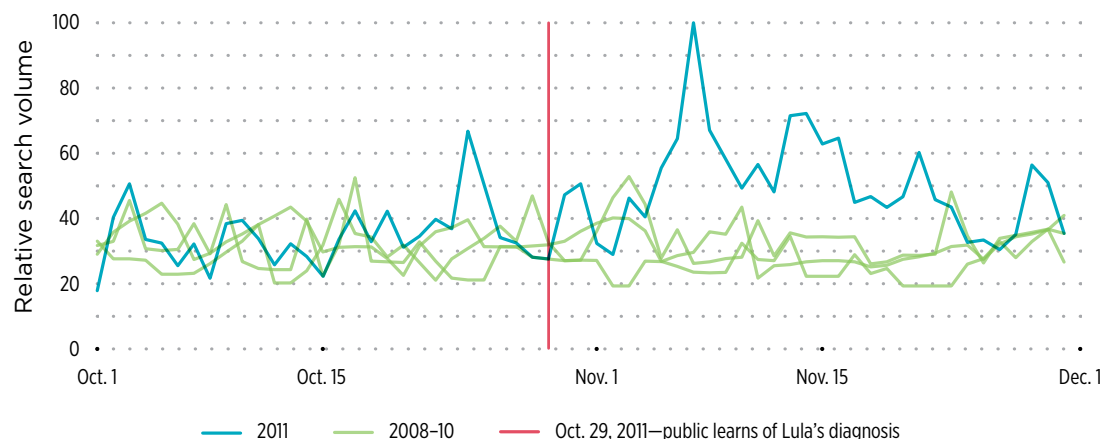
Social learning about health care quality

People learn about the quality of health care from each other. Typically, if an individual visits a new doctor and is cured, the word spreads and the doctor's reputation improves. But what happens when the individual visits a new doctor and does not get the medicine he sought (antibiotics or steroids, for example)? Sometimes households will take the event as evidence that the doctor is not responsive to patients' needs or does not stock the necessary medicines, rather than that the doctor knows what is best for the patient and is determined to provide the best possible care. When people learn from one another, they may all end up holding the correct beliefs, or they may all end up mistaken. For example, if a person receives a referral by one doctor to visit another doctor, households take that as a signal to avoid the referring practitioner and visit only the referred practitioner (Leonard, Adelman, and Essam 2009). This behavior prevents people from learning the underlying relationships between the practice of referral and health outcomes. Because households avoid doctors who refer their patients, they do not learn that those providers are actually better than the ones who refuse to refer their patients.

Evidence from multiple studies of rural African households (reviewed in Leonard 2014) shows that people seek to match their illness to the most appropriate

Figure 8.1 If a well-known person has a disease, the public might think more seriously about ways to prevent it

After former Brazilian president Lula da Silva publicly discussed his throat cancer, which he attributed to smoking, Brazilians became much more receptive to information about smoking.



Source: Ayers and others 2014.

Note: The blue line shows time trends for daily Internet searches related to quitting smoking around the time of former Brazilian president Lula da Silva's cancer diagnosis. The green lines show time trends for the same period from prior years. Search volume is measured as relative search volume (RSV), where RSV = 100 is the day with the highest search proportion, and RSV = 50 is a day with 50 percent of that highest proportion.

health care provider. When a new option or a new doctor becomes available, they are particularly interested to hear about others' experiences. They are more likely to visit a doctor when someone in their close community has recently visited that provider and had a good outcome (Leonard, Adelman, and Essam 2009). By following this simple process of updating expectations in the face of the unknown, households in Tanzania made better decisions over time and visited better doctors, as objectively measured by medical experts (Leonard, Mliga, and Haile Mariam 2002). The process of social learning, though, even when it is useful, can be very slow. For example, it took between three and four years for communities to learn whether new doctors in their area gave good or bad advice (Leonard 2007).

Unlike information about how to improve their health (which is often ignored), information that aids households in seeking the best available care, based on realistic assessments of the capabilities and quality of the facilities from which households can choose, is likely to be very useful because households are already seeking this information. Better information could help them make better decisions more quickly.

Psychological and social approaches to changing health behavior

Even after people accept information, they do not always act on it. The zinc campaign discussed earlier succeeded in educating 75 percent of Bangladeshis, but two years after the program, zinc was used in only 35 percent of the indicated cases. Although there are many models of health behavior,³ an assumption common to most is that people carefully weigh the benefits and barriers to adoption against their susceptibility to, and the likely severity of, bad outcomes if they do not adopt. That is, the standard models assume that individuals think deliberatively, not automatically. But as chapter 1 showed, the reverse is actually true.

Imagine someone who considers getting tested for tuberculosis: she knows she has a chance of being infected and that the illness is severe. But at the same time, taking the test would require her to leave work early and stand in a line at a clinic. Studies about how people make decisions about health care have consistently found that people tend to consider the benefits and barriers, while ignoring susceptibility and severity (Zimmerman and Vernberg 1994; Carpenter 2010). Thus people will often forgo preventive medicine because of small obstacles, even when they know that they are highly susceptible and face potentially severe consequences. Individuals frame the problem too narrowly.

Inducing people to take more preventive care is difficult, but a deeper understanding of the way people think can help. One possibility, for example, is to reduce barriers to the desired behavior by making the exact steps needed for the preventive care more salient or by providing a small material incentive. It is also possible to alter the way people weigh the benefits of action by using nudges and other behavioral tools to alter the choice architecture (Thaler and Sunstein 2008). In addition, it may be possible to change behavior by changing the beliefs a person holds that are not related to the private benefits and costs of a given health measure, including beliefs that others would approve of the behavior, beliefs that others engage in the behavior, and beliefs in one's ability to perform the behavior (self-efficacy). In addition, people may be more willing to engage in the behavior if they know they will receive support, reinforcement, feedback, or reminders.

The discussion that follows gives several examples of the first two methods: presenting advice in ways that recognize how people make decisions, and reducing the barriers to changing behaviors. The second two methods—community-level models of behavior and the use of support, reinforcement, and feedback—are covered in the upcoming section on follow-through and habit formation.

Framing information about vaccinations and HIV testing

There is a world of difference between these two statements—"If you get the flu vaccine, you will be less likely to get the flu" versus "If you do not get the flu vaccine, you are more likely to get the flu"—even though they contain the same information. In a review of 94 studies comparing gain-framed to loss-framed messages, gain-framed messages consistently improved adoption of preventive behaviors (such as vaccinations) when compared to loss-framed messages with the same objective information (Gallagher and Updegraff 2012). Interestingly, people who hear one or the other of the two messages are equally likely to say that they want to seek preventive care, but people who hear the first message are much more likely to follow through and actually get the vaccine. In general, the same information can be presented in different ways to improve actual behavior.

Chapter 1 described how raising the number of free test reports, from three to four, that a testing agency routinely sent to colleges had the effect of increasing the number of low-income students attending selective colleges. More generally, many program choices entail a default condition in which people either can choose

to do something when asked (opt in) or are automatically enrolled but given the choice to withdraw (opt out). When using a preventive service is believed to make all or most people better off, and when, even for those who do not gain from it, the cost is small, then wherever possible, it is better to present preventive services on an opt-out basis: the default should be set to the behavior that would make most people better off. Health care is full of examples of opt-out activities. The doctor takes patients' pulse and temperature without asking them if they think it would be a good idea, for example. Surgical consent forms are designed to present the doctors' recommendations as the default, forcing the patient to find an alternative.

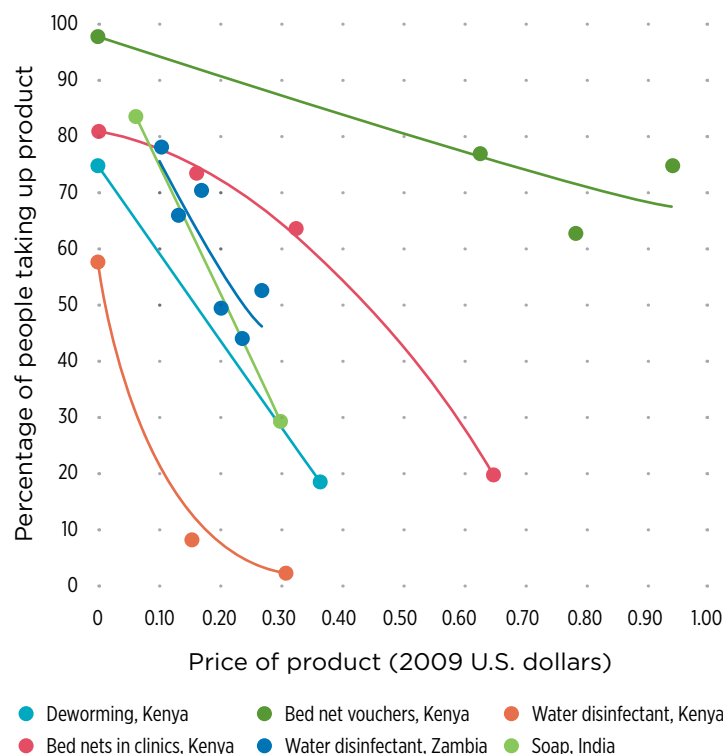
What is the potential for increasing the number of defaulted behaviors? HIV testing is an area in which a change from opt in to opt out has been extensively studied. In 2004, the World Health Organization initi-

ated a shift in its approach to counseling and testing for HIV by declaring an opt-out approach to be ethically acceptable for certain populations (specifically including people with tuberculosis). Reviews of programs that compare the opt-in to the opt-out default generally find increased testing rates, but they also find low levels of testing in either program (see, for example, Baisley and others 2012). Most often, the reason is that the health services that provide counseling and testing have shortcomings of infrastructure, incentives, or governance (Roura and others 2013). In addition, some of the studies find that the increased rate of testing did not result in more detection of HIV/AIDS, suggesting that the additional people tested because of the new defaults were from populations that had not been exposed to HIV/AIDS.

Opt-out defaults are likely to increase the use of preventive services when health systems are able to provide them. However—as in the case of HIV-negative patients not opting out of testing—this improvement may occur at the cost of bringing in people for whom these services are less useful.

Figure 8.2 Take-up of health products drops precipitously in response to very small fees

Policies often set the prices of preventive health care products low to promote access while also providing a revenue stream to providers. But if access is important, it makes sense to bring the price all the way down to zero. A series of evaluations finds that even small price increases above zero lead to large drops in the number of people who choose to buy health products.



Source: Abdul Latif Jameel Poverty Action Lab 2011.

Prices as a source of meaning

Because the most obvious barrier to adopting new behavior is cost, lowering prices should be the best way to improve adoption. But prices have many meanings besides a value in exchange. Prices at or near zero may constitute a special threshold, according to a review by Kremer and Glennerster (2011). People are willing to adopt many health goods at a price of zero (or almost zero) but almost completely unwilling to adopt it at prices just slightly above zero (see figure 8.2). The study demonstrates this effect for deworming medicine, mosquito nets, water disinfectants, and soap.

It appears that prices contain at least two different signals for people. First, low prices make things more affordable. But *free* means something special. When prices fall toward zero, *free* may convey a social norm: we all should be doing this. *Free* allows people to experiment with a product when they are uncertain of its value, and *free* can have an affective influence (an individual is excited to have *won* the opportunity to get something free). Households given free mosquito nets may use them differently from the way households that purchase subsidized mosquito nets use them and may be more likely to use them for their children, possibly responding to a social signal in the price (Hoffmann 2009). Perhaps households adopt new technologies that are free in the short run, and then after they have experienced their value, they become willing to pay positive prices for them later, as Dupas (2014) suggests. People are less likely to adopt a free option if

they have been asked to reflect carefully on its value in comparison to a positively priced item, as Shampanier, Mazar, and Ariely (2007) show. This finding suggests that the immediate response to free items is not fully rational. At least in some cases, it is based on an automatic, not a reasoned, response.

When things are free, however, people may overconsume or waste the product. Positive prices may also help target goods to where they can do the most good. And for curative medicine, the willingness to pay can be high (Ashraf, Jack, and Kamenica 2013).

The cognitive effect of free or minimal pricing is a new area of research in developing countries, and much will be learned over the coming decade. However, policy makers can already begin to think about how to signal the excitement that is contained in the word *free* without incurring the costs of offering a zero price. If the good is important to health and has positive externalities, if demand for the good is otherwise low, and if waste is not a large concern, then reducing the price to zero should be considered for the sake of the affective response it can invoke. Vaccinations, for example, meet these conditions.

In contrast, if waste is a large concern, prices should be kept above zero, and social norms should be invoked to increase demand for the good. The positive prices are a targeting mechanism: they help ensure that the right people are buying the good or service. Coupons, prizes, public celebrations, and media can all be used to create or strengthen a social norm or generate an affective response, even if prices are not zero.

Conditional cash transfers and commitment mechanisms

In some cases, goods and services are free and people still do not use them. Many preventive services, such as antenatal services, are provided free but are underutilized. One well-documented way to increase use is to create conditional cash transfers (CCTs) where, for example, women receive payments for going to the antenatal clinic but forfeit them if they fail to go. On the surface, these programs do not appear to use anything but standard economic incentives to improve behavior, but, considered more broadly, some incentive programs reveal interesting behaviors. Banerjee and others (2010) examine a program in which women received free lentils and plates as an incentive to immunize their children. Many parents were taking their children to receive at least one vaccination, but were not following through to complete the entire series. The incentive helped increase the rates of full immunization. Thus, even when people value services (many parents made sure that their children were partially immunized),

money can help people focus on completing a full course of action.

Commitment devices can help people follow through on intentions to change behavior. In a case involving smokers in the Philippines (Giné, Karlan, and Zinman 2010), people voluntarily deposited their own money in accounts that would be forfeited if they did not quit smoking; participating in this experiment did indeed help smokers quit (and not resume) smoking. The randomly selected individuals offered this opportunity were 3 percent more likely to quit (as measured one year later). Eleven percent of people offered the opportunity chose to commit their own funds, and 34 percent of them made good on their intentions.

Asking people why they don't seek care is not useful

Asking people why they forgo care that would seem to make them better off is generally not helpful for forming policy. The studies often appear to have great predictive power, in that what people say matches what they do. However, this is deceptive because people adapt their beliefs to match their behavior (Harrison, Mullen, and Green 1992), and thus while the studies tell us that people did choose a certain behavior, they do not tell us why. These studies do a better job of explaining and predicting intentions than actions. Thus surveys of knowledge, attitudes, and practices (so-called KAP studies) fail to identify explicit ways to change behavior.

Improving follow-through and habit formation

As discussed, sometimes people form intentions to adopt preventive actions but do not follow through. They intend to change, but before an activity becomes a habit, it is difficult for them to maintain the energy and focus to carry out their good intentions. The key to behavioral interventions is to make the long-term benefits of adherence salient in the short term. Individuals often do not need information about distant benefits; they need to experience immediate benefits. A good example of how immediate benefits can help improve adherence is HIV/AIDS treatment in Africa. Despite significant additional difficulties in access, education, and information, Mills and others (2006) found that baseline adherence to antiretroviral therapy (ART) was much higher among African patients than among patients in developed countries like the United States, primarily because the African patients were sicker when they first received care and therefore felt the benefits of ART more immediately. Adherence is easier when the benefits are salient on a day-to-day basis.

Using reminders to increase adherence to medical regimens

One of the most rapidly expanding tools in health care is the use of mobile phones to communicate regularly with populations that were previously difficult to reach. There has been positive experience in multiple settings with reminders, now easily sent through text messaging. In developed countries, there is robust evidence of the effectiveness of using mobile technologies to remind people to attend health appointments (Tomlinson and others 2013).

The evidence in developing countries is more mixed—not because the technology is not effective but because few studies have been carefully evaluated. Systematic reviews of the existing evidence in developing countries recommend implementation and scaling up but caution that little evidence points to what works best in different situations (Cole-Lewis and Kershaw 2010). They suggest that mobile messages are more likely to be effective when there is follow-up, when the message is personally tailored to the recipient, and when the frequency, wording, and content are highly relevant to the patient. Blasting text messages to large portions of the population reminding them of all the things they can do to improve their health is likely to be a waste of resources: the messages are not salient or tailored. Indeed, Pop-Eleches and others (2011) find that daily messages about adherence to ART for HIV/AIDS are not effective but that weekly messages are, suggesting that people are not forgetting to take their medicine (taken daily) but rather need a reinforcing message on a less frequent basis (see figure 8.3).

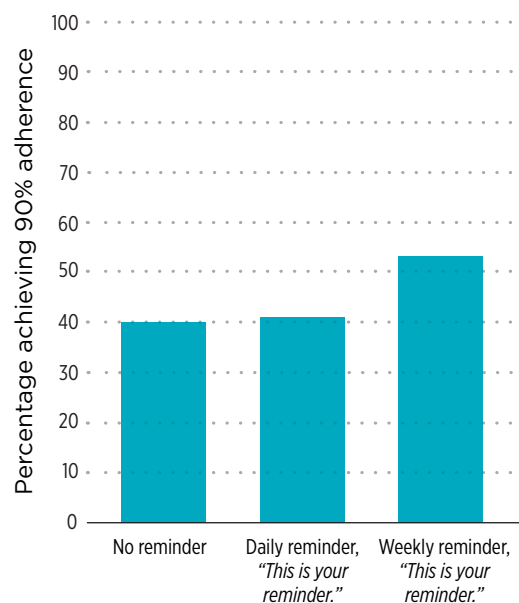
Triggering community-level responses

Patients are more likely to adopt a new health practice when their experience with the provider has been positive (Peltzer and others 2002) or if they have positive responses from their community. A good experience with the provider gives patients a sense of immediate satisfaction when they follow through, similar to the sense of satisfaction from conforming to community norms. In the latter case, community feedback becomes the benefit. Thus even when there are no immediate benefits to adherence or adoption, community reinforcement can be generated by encouraging adoption at the community level.

Consider one of the biggest causes of health problems in the world, open defecation. Globally, 2.5 billion people have inadequate sanitation; 1.2 billion defecate in the open. Lack of sanitation causes a tremendous disease burden among the poor, especially poor infants and young children. Each year, more than 1.5 million children under the age of five die from diarrhea

Figure 8.3 Text message reminders can improve adherence to lifesaving drugs

Text message reminders improved adherence to antiretroviral therapy in a study among HIV/AIDS patients in Kenya. Although reminders have been used for other behaviors as well, especially saving, not all reminders work the same way. In this case, people seemed to tune out reminders that arrived daily.



Source: Pop-Eleches and others 2011.

resulting from inadequate and unsafe water, poor sanitation, and unhygienic practices (UNICEF and WHO 2009). New evidence discussed by Spears, Ghosh, and Cumming (2013) links open defecation to stunting. By reducing normal nutrient absorption, diarrheal diseases lead to impaired physical growth and cognitive development.

The traditional approach to ending open defecation was to provide information to communities about the transmission of disease and to subsidize the construction of toilets. An alternative approach, Community-Led Total Sanitation (CLTS),³ aims to generate demand for a community free of open defecation and to elicit from the community itself an increase in the supply of sanitation products. It does this by raising collective awareness of the sanitation problem. Facilitators are sent to the community to initiate discussions, which are held in public places and involve a “walk of shame,” during which groups walk to places that have been used for open defecation, collect some of the feces, place it on the ground next to a bowl of rice, and watch as flies move between the feces and the rice. Then the CLTS facilitator asks community members, “Would you like to eat the rice?” Although people know that

flies travel, the image of food and feces next to each other triggers an emotional response (disgust) that makes it difficult for them to forget their own intention to change behavior. The program stimulates a desire by the villagers to end open defecation and to forge their own plan for achieving it, with limited follow-up support. Communities that become open-defecation free receive recognition by local governments.

Until recently, the available evidence on the success of CLTS was from small-scale interventions. In 2007, local and national governments in rural India and Indonesia,⁴ with technical support from an international sanitation program, began implementing the first large-scale CLTS programs to be experimentally evaluated (Cameron, Shah, and Olivia 2013). Some communities were randomly selected to receive the treatment, while others were randomly selected to serve as controls and not to receive the treatment within the period of the evaluation. As shown in figure 8.4, the CLTS programs were found to decrease open defecation by 7 percent and 11 percent from very high levels in Indonesia and India, respectively, compared to the control villages. Additional findings suggest that CLTS can complement, but perhaps not substitute for, resources for building toilets. In India, the CLTS program was combined with a subsidy for toilet construction, and the impact on toilet construction—20 percentage points—was greater than that in Indonesia. In summary, a comparison of outcomes in treatment and control communities shows declines in open defecation and increases in toilet construction. A program to change social norms about sanitation in these two countries was important but not sufficient to end open defecation.

Encouraging health care providers to do the right things for others

Health is co-created by patients, doctors, nurses, other experts, community health workers, and household members.⁵ As Ashraf (2013) has noted, “Health isn’t something that can be handed to people; it is a state that they must produce themselves by interacting with a health care system . . . providers and recipients co-create health” (120–23). A key element in the production of health is the trust that patients have in their providers: trust to seek care, trust to follow through on the prescribed treatment, and trust to understand messages about what is good for them. Such trust is not possible in a system that provides low-quality care.

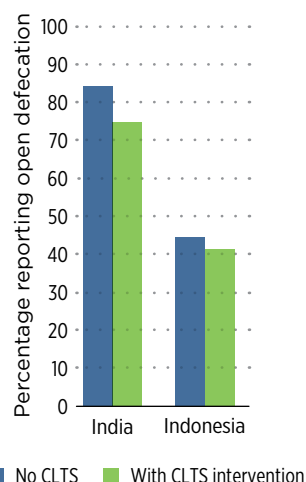
Why do health care providers sometimes provide low-quality care? It is not sufficient to focus only on material incentives for providing quality care.

Figure 8.4 Changing social norms is important but not sufficient for ending open defecation

Community-Led Total Sanitation (CLTS) is a methodology for engaging communities in eliminating open defecation. It tries to trigger collective shame and disgust for the implications of open defecation.

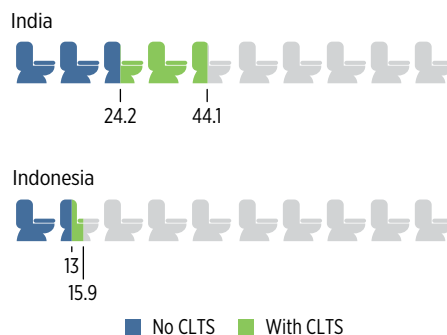
Randomized controlled trials have tested the effectiveness of CLTS implemented at scale in Madhya Pradesh, India, and East Java, Indonesia.

Open defecation decreased.



The program increased toilet construction, with a particularly large effect in India, where the CLTS program was combined with a subsidy for toilet construction.

Percentage of households with a toilet



Sources: Patil and others 2014; Cameron, Shah, and Olivia 2013.

Note: The study in Indonesia measured the presence of a toilet that was constructed in the two years prior to the survey.

Empirical work points to many additional factors. Even with the best training, health care providers suffer from the same biases as everyone else. They cannot consider all possible symptoms, conditions, diagnoses, and treatments. They must use simplifying rules and heuristics to do their job, and these heuristics can lead to systematic mistakes (Croskerry 2002). Many of these biases have been discussed in previous chapters: anchoring, the availability and representativeness of heuristics, framing effects, overconfidence bias, and confirmation bias. In addition, some biases are more specific to health care and to the relationship between providers and their patients. For example, “diagnosis momentum” occurs when changing a diagnosis feels harder than keeping it, despite new evidence that runs counter to the original diagnosis. “Fundamental attribution error” occurs when health workers blame their patients for their symptoms rather than looking for other causes. “Gender bias” occurs when health workers assume that gender is a factor in an illness even when the evidence is not supportive. “Outcome bias” results when health workers choose the diagnosis that has the best possible outcome (essentially hoping for the best), despite evidence that points to a different diagnosis. Health workers suffer from “premature closure,” ending their careful consideration of a case as soon as they have a plausible diagnosis but before they can be sure.

Health workers also suffer from a “visceral bias,” in which liking or disliking the patient causes them to rule out certain outcomes too soon (Croskerry 2002). This bias is especially likely when a patient suffers from a stigmatized illness or is a member of a stigmatized population. Such a patient is less likely to seek care in the first place, and when he does, he is much less likely to receive the type of care he needs. The bias can be subtle, in the sense of premature diagnoses, or severe. In its worst manifestation, the health system assigns a low priority to illnesses suffered by an entire population (Gauri and Lieberman 2006; Lieberman 2009), health care providers refuse to provide service, and afflicted individuals are reluctant to seek treatment for even life-threatening health problems.

Thus, there is also a gap between knowledge and actions. Recent studies in Tanzania (Leonard, Masatu, and Vialou 2007; Leonard and Masatu 2010) found that in sessions with a patient, almost half the doctors did not touch the patient and therefore did not know the patient’s temperature, respiratory rate, pulse, and the like. The research found that the doctors knew much of what they were supposed to do and were even willing to demonstrate all the proper steps to the research team. They decided not to do what they knew they

should. In Delhi, India, Das and Hammer (2007) found that some of the most qualified doctors were the least likely to follow through on their knowledge, implying that the doctors with the highest qualifications were not providing the best medicine. Many other studies have also found that, although knowledge could be higher, doctors do not use the knowledge they already possess (Das and others 2012). As a result, there has been a shift from a focus on competence to a focus on the “know-do” gap, the difference between competence and performance (Rowe and others 2005; Das, Hammer, and Leonard 2008; Das and others 2012). Given the existence of that gap, increasing spending on training will not improve quality, and it is time to focus on ways to get doctors to put into practice what they already know.

Reminders for adhering to protocols

Often, simply reminding health workers of the social expectations of their performance can improve it. Evidence from almost 100 studies on the impact of peer visits to remind health workers about best practices finds that these visits have an impact—but not because they introduced a financial incentive to improve quality (Jamtvedt and others 2007). For example, clinicians in urban Tanzania significantly increased their effort when a visiting peer simply asked them to improve their care (Brock, Lange, and Leonard, forthcoming). In that study, there was no new information or change in incentives or material consequences from the visit. Health workers already have the competence to improve quality and will respond to visits by their peers that set new expectations or remind them of existing expectations. Indeed, supportive supervision (regular contact with medical peers who provide reminders of expectations, not enforcement of rules or regulations) is necessary for sustained success, a review of the literature on successful community health worker programs concludes (Jaskiewicz and Tulenko 2012). Even for community health workers, who are serving their neighbors and should be the most likely to be motivated by prosocial preferences, exposure to peers and supervisors (not neighbors) is necessary to sustain norms of professional behavior.

Professional and service norms in recruitment and quality assurance

Reminding health workers about the impact of their actions on the welfare of their patients and on their reputation among peers can improve service quality. Most health workers are responsive to the norms set by their peers, which is a type of professionalism (Freidson 2001; Akerlof and Kranton 2005). How can

policy makers create or activate a professional norm in settings where quality is low? The literature offers many examples in which leadership transformed an underperforming health service into a high-quality service with motivated providers at all levels (see, for example, Tendler 1997; Wasi 2000; Hall and Lamont 2009; Wibulpolprasert and others 2011). The success stories point to the fact that the transformation is possible, but they cannot isolate the elements of a solution that would work in all places.

Programs that pay providers to improve quality or quantity of services (pay for performance or results-based financing) have gained attention recently, in part based on the success documented in Rwanda (Basinga and others 2011). Providers in that study responded dramatically to a change in financing from input-based (paying for what is needed) to reward-based (paying staff bonuses if certain targets are met with respect to assisted deliveries, vaccinations, or well-baby visits, for example). This might suggest that monetary incentives are the solution and that behavioral interventions are not important. However, a careful examination of pay-for-performance incentive programs such as that in Rwanda reveals that the programs not only use monetary incentives but also expand autonomy, accountability, team-based recognition of effort, and exposure to external peers. All these aspects could increase quality by activating professional norms.

Growing evidence indicates that health workers respond well to social cues in the form of recognition and gifts (for more on this, see chapter 7). When health workers are given small gifts like a book or a pen, they will respond by improving the quality of care they provide, in some cases, for significant periods of time (Currie, Lin, and Meng 2013; Brock, Lange, and Leonard, forthcoming). In addition, health workers respond to the recognition that comes from awards and token prizes like stars to display in the workplace and congratulatory plaques (Ashraf, Bandiera, and Jack, forthcoming). This response to gifts and tokens makes little sense in standard economic models but can be easily understood in the terms laid out in part 1: in this broader view, gifts can be understood as a way of making social ties and connections more salient, activating a frame of gift giving, and signaling social approval.

Conclusion

Understanding that people think automatically, interpret the world based on implicit mental models, and think socially allows policy makers to make major strides in improving health outcomes. Individuals sometimes value information highly (for example, when seeking curative care), but at other times

providing information is not sufficient to get people to change behaviors that undermine health. Framing effects that make social expectations and social approval more salient can sometimes encourage individuals to seek preventive care and adhere to treatment when they otherwise would not, even though the individual benefits exceed the individual costs. Individuals can suffer from an intention-action divide and

Whereas increasing information or knowledge is often not helpful or sufficient, simply reminding health workers of social expectations about their performance can improve it.

so can health care providers, and commitment devices and reminders can narrow those divides. Appealing to social expectations and professional standards can lead to significant improvements in the actions of providers. When providers act in the best interests of their patients, their patients are likely to notice and increase their trust in the advice provided by these same providers, which should lead to further improvements in health outcomes.⁶

Notes

1. This chapter benefited from a number of recent review pieces, notably, Frederick, Loewenstein, and O'Donoghue (2002); DellaVigna (2009); Dupas (2011); Kremer and Glennerster (2011); Lawless, Nayga, and Drichoutis (2013); and Kessler and Zhang (forthcoming).
2. See Noar and Zimmerman (2005) for a survey of elements in health behavior models, including the Health Belief Model, the Theory of Reasoned Action, the Theory of Planned Behavior, the Social Cognition Theory, and the Transtheoretical Model.
3. Kamal Kar developed CLTS in Bangladesh in 2000. Since then, CLTS has been used in over 60 countries and has become national policy in at least 20 countries.
4. The program was also launched in a third country, Tanzania, but results from this case are not yet available.
5. Recognizing the economic implications of co-created health has been proposed as one of the unique features of traditional medicine in Africa (Leonard and Graff Zivin 2005); it may be that this indigenous institution represents the first foray into behavioral health.
6. This chapter was based on a systematic literature review using the following methods. In October 2013, we conducted keyword searches of the following

databases: Academic Search Premier, Econlit, PsycINFO, PsycARTICLES, and PsycAbstracts. The search was restricted to academic articles published after 1990. We used search terms related to the following categories: social norms, present bias, status quo bias, and trust/persuasion intersecting with the following diseases: pneumonia, measles, diarrhea, malaria, and tuberculosis, HIV/AIDS, smoking, and obesity. Due to the large number of hits for HIV/AIDS, smoking, and obesity, the evidence presented for these three fields is based on Cochrane Reviews of behavioral interventions. The abstracts of the extracted articles were reviewed and only papers meeting the following criteria were considered. First, only studies in English and studies with human subjects were included. Second, studies that were not directly relevant to one of the five diseases and one of the keyword categories were excluded. This restriction accounts for the fact that some of the articles that were identified in the keyword search used the keywords to illustrate a different concept than the behavioral biases we are interested in. Other articles focused on a different disease but mentioned the disease of interest in passing, for example, as a side effect. The third selection criterion was that the study had to contain an evaluation of an intervention (a randomized controlled trial, pre-post study, natural experiment, or the like) or a lab or field economic experiment. Finally, studies that contained only qualitative data from interviews and opinions about different interventions were also excluded.

References

- Abdul Latif Jameel Poverty Action Lab. 2011. "The Price Is Wrong: Charging Small Fees Dramatically Reduces Access to Important Products for the Poor." April Bulletin. <http://www.povertyactionlab.org/publication/the-price-is-wrong>.
- Akerlof, George A., and Rachel E. Kranton. 2005. "Identity and the Economics of Organizations." *Journal of Economic Perspectives* 19 (1): 9–32.
- Ashraf, Nava. 2013. "Rx: Human Nature." *Harvard Business Review* 91 (4): 119–25.
- Ashraf, Nava, Oriana Bandiera, and B. Kelsey Jack. Forthcoming. "No Margin, No Mission? A Field Experiment on Incentives for Public Service Delivery." *Journal of Public Economics*.
- Ashraf, Nava, B. Kelsey Jack, and Emir Kamenica. 2013. "Information and Subsidies: Complements or Substitutes?" *Journal of Economic Behavior and Organization* 88: 133–39.
- Ayers, John W., Benjamin M. Althouse, Seth M. Noar, and Joanna E. Cohen. 2014. "Do Celebrity Cancer Diagnoses Promote Primary Cancer Prevention?" *Preventive Medicine* 58: 81–84.
- Baisley, Kathy, Aoife M. Doyle, John Chagalucha, Kaballa Maganja, Deborah Watson-Jones, Richard Hayes, and David Ross. 2012. "Uptake of Voluntary Counselling and Testing among Young People Participating in an HIV Prevention Trial: Comparison of Opt-out and Opt-in Strategies." *PLoS ONE* 7 (7): e42108. doi: 10.1371/journal.pone.0042108.
- Bala, Malgorzata M., Lukasz Strzeszynski, Roman Topor-Madry, and Kate Cahill. 2013. "Mass Media Interventions for Smoking Cessation in Adults." *Cochrane Database of Systematic Reviews* January 23 (1): CD004704. doi: 10.1002/14651858.CD004704.pub2.
- Banerjee, Abhijit Vinayak, Esther Duflo, Rachel Glennerster, and Dhruva Kothari. 2010. "Improving Immunisation Coverage in Rural India: Clustered Randomised Controlled Evaluation of Immunisation Campaigns with and without Incentives." *BMJ* 2010 (340): c2220. doi: <http://dx.doi.org/10.1136/bmj.c2220>.
- Basinga, Paulin, Paul J. Gertler, Agnes Soucat, and Jennifer Sturdy. 2011. "Effect on Maternal and Child Health Services in Rwanda of Payment to Primary Health-Care Providers for Performance: An Impact Evaluation." *Lancet* 377 (9775): 1421–28.
- Briscoe, Ciara, and Frances Aboud. 2012. "Behaviour Change Communication Targeting Four Health Behaviours in Developing Countries: A Review of Change Techniques." *Social Science and Medicine* 75 (4): 612–21.
- Brock, J. Michelle, Andreas Lange, and Kenneth L. Leonard. 2014. "Giving and Promising Gifts: Experimental Evidence on Reciprocity from the Field." Working Paper 165, European Bank for Reconstruction and Development, London.
- . Forthcoming. "Generosity and Prosocial Behavior in Health Care Provision: Evidence from the Laboratory and Field." *Journal of Human Resources*.
- Cameron, Lisa, Manisha Shah, and Susan Olivia. 2013. "Impact Evaluation of a Large-Scale Rural Sanitation Project in Indonesia." Policy Research Working Paper 6360, World Bank, Washington, DC.
- Carpenter, Christopher J. 2010. "A Meta-Analysis of the Effectiveness of Health Belief Model Variables in Predicting Behavior." *Health Communication* 25 (8): 661–69.
- Cole-Lewis, Heather, and Trace Kershaw. 2010. "Text Messaging as a Tool for Behavior Change in Disease Prevention and Management." *Epidemiologic Reviews* 32: 56–69.
- Croskerry, Pat. 2002. "Achieving Quality in Clinical Decision Making: Cognitive Strategies and Detection of Bias." *Academic Emergency Medicine* 9 (11): 1184–1204.
- Currie, Janet, Wanchuan Lin, and Juanjuan Meng. 2013. "Social Networks and Externalities from Gift Exchange: Evidence from a Field Experiment." *Journal of Public Economics* 107 (November): 19–30.
- Das, Jishnu, and Jeffrey Hammer. 2007. "Money for Nothing: The Dire Straits of Medical Practice in Delhi, India." *Journal of Development Economics* 83 (1): 1–36.
- Das, Jishnu, Jeffrey S. Hammer, and Kenneth L. Leonard. 2008. "The Quality of Medical Advice in Low-Income Countries." *Journal of Economic Perspectives* 22 (2): 93–114.

- Das, Jishnu, Alaka Holla, Veena Das, Manoj Mohanan, Diana Tabak, and Brian Chan. 2012. "In Urban and Rural India, a Standardized Patient Study Showed Low Levels of Provider Training and Huge Quality Gaps." *Health Affairs* 31 (12): 2774–84.
- Datta, Saugato, and Sendhil Mullainathan. 2014. "Behavioral Design: A New Approach to Development Policy." *Review of Income and Wealth* 60 (1): 7–35.
- DellaVigna, Stefano. 2009. "Psychology and Economics: Evidence from the Field." *Journal of Economic Literature* 47 (2): 315–72.
- Dupas, Pascaline. 2011. "Health Behavior in Developing Countries." *Annual Review of Economics* 3 (1): 425–49.
- . 2014. "Short-Run Subsidies and Long-Run Adoption of New Health Products: Evidence from a Field Experiment." *Econometrica* 82 (1): 197–228.
- Dyson, Lisa, F. McCormick, and Mary J. Renfrew. 2006. "Interventions for Promoting the Initiation of Breast-feeding." *Evidence-Based Child Health: A Cochrane Review Journal* 1 (2): 592–616.
- Frederick, Shane, George Loewenstein, and Ted O'Donoghue. 2002. "Time Discounting and Time Preference: A Critical Review." *Journal of Economic Literature* 40 (2): 351–401.
- Freidson, Eliot. 2001. *Professionalism: The Third Logic*. Chicago: University of Chicago Press.
- Gallagher, Kristel M., and John A. Updegraff. 2012. "Health Message Framing Effects on Attitudes, Intentions, and Behavior: A Meta-Analytic Review." *Annals of Behavioral Medicine* 43 (1): 101–16.
- Gauri, Varun, and Evan S. Lieberman. 2006. "Boundary Institutions and HIV/AIDS Policy in Brazil and South Africa." *Studies in Comparative International Development* 41 (3): 47–73.
- Giné, Xavier, Dean Karlan, and Jonathan Zinman. 2010. "Put Your Money Where Your Butt Is: A Commitment Contract for Smoking Cessation." *American Economic Journal: Applied Economics* 2 (4): 213–35.
- Hall, Peter A., and Michèle Lamont, eds. 2009. *Successful Societies: How Institutions and Culture Affect Health*. New York: Cambridge University Press.
- Harrison, J. A., P. D. Mullen, and L. W. Green. 1992. "A Meta-Analysis of Studies of the Health Belief Model with Adults." *Health Education Research* 7 (1): 107–16.
- Hoffmann, Vivian. 2009. "Intrahousehold Allocation of Free and Purchased Mosquito Nets." *American Economic Review* 99 (2): 236–41.
- Jamtvedt, G., J. M. Young, D. T. Kristoffersen, M. A. O'Brien, and A. D. Oxman. 2007. "Audit and Feedback: Effects on Professional Practice and Health Care Outcomes." Cochrane Library. <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD000259.pub2/abstract>.
- Jaskiewicz, Wanda, and Kate Tulenko. 2012. "Increasing Community Health Worker Productivity and Effectiveness: A Review of the Influence of the Work Environment." *Human Resources for Health* 10 (1): 38. doi: 10.1186/1478-4491-10-38.
- Jones, Gareth, Richard W. Steketee, Robert E. Black, Zulfiqar A. Bhutta, and Saul S. Morris. 2003. "How Many Child Deaths Can We Prevent This Year?" *Lancet* 362 (9377): 65–71.
- Kessler, Judd B., and C. Yiwei Zhang. Forthcoming. "Behavioral Economics and Health." *The Oxford Textbook of Public Health*. http://assets.wharton.upenn.edu/~czhan/KesslerZhang_BehavioralEconomicsHealth.pdf.
- Kremer, Michael, and Rachel Glennerster. 2011. "Improving Health in Developing Countries: Evidence from Randomized Evaluations." In *Handbook of Health Economics*, Vol. 2, edited by Thomas G. McGuire, Mark V. Pauly, and Pedro P. Barros, 201–315. Amsterdam: Elsevier.
- Larson, Charles P., Unnati Rani Saha, and Hazera Nazrul. 2009. "Impact Monitoring of the National Scale Up of Zinc Treatment for Childhood Diarrhea in Bangladesh: Repeat Ecologic Surveys." *PLoS Med* 6 (11): e1000175.
- Lawless, Lydia J. R., Rodolfo Nayga, and Andreas Dri-choutis. 2013. "Time Preference and Health Behavior: A Review." *Agricultural and Food Economics* 1: 17. doi: 10.1186/2193-7532-1-17.
- Leonard, K. L. 2007. "Learning in Health Care: Evidence of Learning about Clinician Quality in Tanzania." *Economic Development and Cultural Change* 55 (3): 531–55.
- . 2014. "Active Patients' in Rural African Health Care: Implications for Research and Policy." *Health Policy and Planning* 29 (1): 85–95.
- Leonard, Kenneth L., Sarah W. Adelman, and Timothy Essam. 2009. "Idle Chatter or Learning? Evidence of Social Learning about Clinicians and the Health System from Rural Tanzania." *Social Science and Medicine* 69 (2): 183–90.
- Leonard, Kenneth L., and Melkiory C. Masatu. 2010. "Using the Hawthorne Effect to Examine the Gap between a Doctor's Best Possible Practice and Actual Performance." *Journal of Development Economics* 93 (2): 226–34.
- Leonard, Kenneth L., Melkiory C. Masatu, and Alexandre Vialou. 2007. "Getting Doctors to Do Their Best: The Roles of Ability and Motivation in Health Care Quality." *Journal of Human Resources* 42 (3): 682–700.
- Leonard, Kenneth L., Gilbert R. Mliga, and Damen Haile Mariam. 2002. "Bypassing Health Centres in Tanzania: Revealed Preferences for Quality." *Journal of African Economies* 11 (4): 441–71.
- Leonard, Kenneth L., and Joshua Graff Zivin. 2005. "Outcome versus Service Based Payments in Health Care: Lessons from African Traditional Healers." *Health Economics* 14 (6): 575–93.
- Lieberman, Evan S. 2009. *Boundaries of Contagion: How Ethnic Politics Have Shaped Government Responses to AIDS*. Princeton, NJ: Princeton University Press.
- Liu, Li, Hope L. Johnson, Simon Cousens, Jamie Perin, Susana Scott, Joy E. Lawn, Igor Rudan, Harry Campbell, Richard Cibulskis, and Mengying Li. 2012. "Global, Regional, and National Causes of Child Mortality:

- An Updated Systematic Analysis for 2010 with Time Trends since 2000." *Lancet* 379 (9832): 2151–61.
- Mills, Edward J., Jean B. Nachega, Iain Buchan, James Orbinski, Amir Attaran, Sonal Singh, Beth Rachlis, Ping Wu, Curtis Cooper, and Lehana Thabane. 2006. "Adherence to Antiretroviral Therapy in Sub-Saharan Africa and North America: A Meta-Analysis." *JAMA* 296 (6): 679–90.
- Naugle, Danielle A., and Robert C. Hornik. 2014. "Systematic Review of the Effectiveness of Mass Media Interventions for Child Survival in Low- and Middle-Income Countries." *Journal of Health Communication: International Perspectives* 19 (Supplement 1): 190–215.
- Noar, Seth M., and Rick S. Zimmerman. 2005. "Health Behavior Theory and Cumulative Knowledge Regarding Health Behaviors: Are We Moving in the Right Direction?" *Health Education Research* 20 (3): 275–90.
- Patil, S. R., B. F. Arnold, A. L. Salvatore, B. Briceno, S. Ganguly, J. Colford Jr., and P. J. Gertler. 2014. "The Effect of India's Total Sanitation Campaign on Defecation Behaviors and Child Health in Rural Madhya Pradesh: A Cluster Randomized Controlled Trial." *PLoS Med* 11(8): e1001709. doi: 10.1371/journal.pmed.1001709.
- Peltzer, K., H. Onya, P. Seoka, F. M. Tladi, and R. N. Malema. 2002. "Factors at First Diagnosis of Tuberculosis Associated with Compliance with the Directly Observed Therapy (DOT) in the Limpopo Province, South Africa." *Curationis* 25 (3): 55–67.
- Pop-Eleches, Cristian, Harsha Thirumurthy, James Habyarimana, Joshua Graff Zivin, Markus Goldstein, Damien de Walque, Leslie Mackeen, Jessica Haberer, John Sidle, and Duncan Ngare. 2011. "Mobile Phone Technologies Improve Adherence to Antiretroviral Treatment in Resource-Limited Settings: A Randomized Controlled Trial of Text Message Reminders." *AIDS* 25 (6): 825–34.
- Price, Michael. 2013. "Stars Offer Incentive to Quit." San Diego State University News Center. http://newscenter.sdsu.edu/sdsu_newscenter/news.aspx?s=74629.
- Renfrew, Mary J., Felicia M. McCormick, Angela Wade, Beverley Quinn, and Therese Dowswell. 2012. "Support for Healthy Breastfeeding Mothers with Healthy-Term Babies." *Cochrane Database of Systematic Reviews* May 16 (5): CD001141. doi: 10.1002/14651858.CD001141.pub4.
- Roura, M., D. Watson-Jones, T. M. Kahawita, L. Ferguson, and D. A. Ross. 2013. "Provider-Initiated Testing and Counselling Programmes in Sub-Saharan Africa: A Systematic Review of Their Operational Implementation." *AIDS* 27 (4): 617–26.
- Rowe, A. K., D. de Savigny, C. F. Lanata, and C. G. Victora. 2005. "How Can We Achieve and Maintain High-Quality Performance of Health Workers in Low-Resource Settings?" *Lancet* 366: 1026–35.
- Shampanier, Kristina, Nina Mazar, and Dan Ariely. 2007. "Zero as a Special Price: The True Value of Free Products." *Marketing Science* 26 (6): 742–57.
- Spears, Dean, Arabinda Ghosh, and Oliver Cumming. 2013. "Correction: Open Defecation and Childhood Stunting in India: An Ecological Analysis of New Data from 112 Districts." *PLoS ONE* 8 (9): September 23. <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0073784>.
- Tendler, Judith. 1997. *Good Government in the Tropics*. Baltimore: Johns Hopkins University Press.
- Thaler, Richard H., and Cass R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. New Haven: Yale University Press.
- Tomlinson, M., M. J. Rotheram-Borus, L. Swartz, and A. C. Tsai. 2013. "Scaling Up mHealth: Where Is the Evidence?" *PLoS Med* 10 (2): e1001382. doi: 10.1371/journal.pmed.1001382.
- Topp, Stephanie M., Julien M. Chipukuma, Matimba M. Chiko, Chibesa S. Wamulume, Carolyn Bolton-Moore, and Stewart E. Reid. 2011. "Opt-Out Provider-Initiated HIV Testing and Counselling in Primary Care Out-patient Clinics in Zambia." *Bulletin of the World Health Organization* 89 (5): 328–35.
- UNICEF (United Nations Children's Fund) and WHO (World Health Organization). 2009. *Diarrhoea: Why Children Are Still Dying and What Can Be Done*. New York: UNICEF and WHO.
- Vidanapathirana, J., M. J. Abramson, A. Forbes, and C. Fairley. 2005. "Mass Media Interventions for Promoting HIV Testing." *Cochrane Database of Systematic Reviews* July 20 (3): CD004775.
- Wakefield, Melanie A., Barbara Loken, and Robert C. Hornik. 2010. "Use of Mass Media Campaigns to Change Health Behaviour." *Lancet* 376 (9748): 1261–71.
- Wasi, Prawase. 2000. "Triangle That Moves the Mountain and Health Systems Reform Movement in Thailand." *Human Resources for Health Development Journal* 4 (2): 106–10.
- Wibulpolprasert, Suwit, Vichai Chokevivat, Cecilia Oh, and Inthira Yamabhai. 2011. "Government Use Licenses in Thailand: The Power of Evidence, Civil Movement and Political Leadership." *Globalization and Health* 7 (1): 1–8.
- Zimmerman, Rick S., and Dee Vernberg. 1994. "Models of Preventative Health Behavior: Comparison, Critique, and Meta-Analysis." *Advances in Medical Sociology* 4: 45–67.

CHAPTER 9 Climate change

English settlers to the New World believed that the climate of Newfoundland would be moderate, New England would be warm, and Virginia would be like southern Spain. They based these beliefs on the seemingly commonsense view that climate is much the same at any given latitude around the globe.

What is striking is that these views persisted despite mounting evidence to the contrary. As late as 1620, after 13 years in the settlement, residents in Jamestown, Virginia, were still trying to import olive trees and other tropical plants, perhaps inspired by Father

land were anomalously cold, including the absence of people with good character. “He is wretched that believes himself wretched,” scoffed one writer (quoted in Kupperman 1982, 1283).

Eventually, the English settlers did adjust their mental models about North American climate. The accumulation of scientific data, combined with personal experience, was undeniable. But the adjustment was slow and costly, both in money and in lives lost. Mental models about climate do not change easily.

Responding to climate change is one of the defining challenges of our time. There is massive scientific evidence that human activity is changing the earth’s climate, with consequences that may be disruptive—potentially even catastrophic.¹ Evidence on climate change and its risks are reported in the technical summary from the 2014 *Assessment Report of the Intergovernmental Panel on Climate Change* (Stocker and others 2013; Field and others 2014). This material is widely considered to be the most authoritative review of scientific knowledge on climate change. To briefly paraphrase, in the history of modern civilization, the earth’s surface has never been so hot. Glaciers are already disappearing, and the ice masses of Greenland are melting. Depending on how much carbon is released into the air, sea levels will rise significantly in this century, potentially flooding coastal cities and submerging low-lying islands. Temperatures will rise and likely become more variable. Rainfall patterns also will change, with more and heavier rains in some areas and more intense and longer droughts in others.

The causes of climate change are clear. Greenhouse gases trap heat from the sun that would otherwise escape Earth. The levels of greenhouse gases (such as carbon dioxide, methane, and nitrous oxide) are too high. Carbon dioxide is released largely from

An important role for psychological and social insights is to identify ways to convince populations to support, and governments to adopt, effective economic tools, such as carbon pricing, to curb greenhouse gas emissions.

Andrew White, who had assured them that it was “probable that the soil will prove to be adapted to all the fruits of Italy, figs, pomegranates, oranges, olives, etc.” Captain John Smith, whose books and maps helped encourage English colonization of the Americas, predicted that the crops of all the richest parts of the world would be grown in New England. Settlers continued to arrive in Newfoundland despite early failures. Investors and settlers resorted to ever more complex explanations for why winters in Newfound-

burning fossil fuels and deforestation, while methane and nitrous oxide—which are more powerful greenhouse gases than carbon dioxide—are released from agriculture (growing crops and raising grass-eating and grain-eating livestock). Never in the past 800,000 years have concentrations of greenhouse gases in the atmosphere been so high. These phenomena explain changes in weather patterns, ice melts, the already visible rise in sea levels, and many other factors, such as increases in seawater acidity.

Changes in climate create a variety of risks affecting human well-being (Stocker and others 2013; Field and others 2014). The likelihood and severity of these risks will depend on the amount of additional greenhouse gases added to the atmosphere and on the extent to which individuals and organizations take steps to mitigate and adapt to the risks. While climate change is a global threat, it is of most danger to developing countries, which are both more exposed to its impact and less well equipped to deal with it (World Bank 2012).

The *World Development Report 2010* (World Bank 2009) describes three sources of inertia that make responding to climate change such a pressing and difficult challenge. The first is inertia in the environment itself. Even if greenhouse gas emissions are stabilized over the next 100 years, biological and geophysical feedback loops will cause increases in temperatures and sea levels and other climatic changes to continue for centuries—in some cases even millennia. Second, inertia embodied in physical capital, as well as in current research and development streams, dramatically affects the cost of reducing emissions. Retiring, retrofitting, and replacing power plants and other machinery using high-carbon energy sources the world over will require significant investments and substantial social and technological coordination.

Finally, there is inertia in the behavior of individuals and organizations. In the industrialized world, people have grown accustomed to driving particular kinds of automobiles, living and working in comfortable indoor temperatures, and raising and eating methane-emitting animals. Many people in developing countries also engage in “high-carbon behaviors,” or they aspire to do so. In addition, farmers around the world grow crops that may be unsuited to a changing climate, households settle in vulnerable zones, and builders use construction methods not designed to optimize energy efficiency. Finally, political parties in many countries depend on fuel subsidies to garner support, and governments fear the implications, for the economy or tax revenues, of changes in energy policies.

This chapter presents ideas related to that last category of inertia—the behavior of individuals and organizations. For the most part, it focuses on how automatic

thinking, cognitive illusions, mental models, and social norms contribute to behavior. It is clear that taxes on carbon emissions, property rights in carbon abatement, redistributive transfers, or other changes in economic incentives will be required to address climate change adequately. This chapter argues, however, that economic incentives are not the whole story and that inertia in behavior arises from psychological and ideological sources as well. At the same time, the chapter examines the prospects for invoking social norms and other communication strategies both to change behavior and to generate support for various policies—such as carbon prices, cap-and-trade systems, and financial transfers for lower emissions—that would be needed to overcome the inertia embodied in physical capital. In other words, an important role for psychological and social insights is to identify ways to convince populations to support, and governments to adopt, what are known to be effective economic tools, such as carbon pricing, to curb greenhouse gas emissions.

Cognitive obstacles inhibit action on climate change

Biases affect how people process complex information

Climate is usually understood as the weather conditions prevailing in an area over a long period. It is a long-term pattern of variations among meteorological variables, including average temperature and variability across time in rainfall. Grasping climate change and its socioeconomic impacts requires a shift from automatic and associative to deliberative and analytic thinking. The paradigmatic time period for identifying variations in climate—a 30-year window—is much more easily examined with long-term data sets and computer modeling techniques than with personal memories and conversations. Because analytic thinking is hard and attention is costly, people tend to use mental shortcuts to evaluate the evidence on climate change and its risks.

Typically, how people think about climate change is subject to the *availability heuristic* (Marx and Weber 2012). The term refers to the human tendency to judge an event by the ease with which examples of the event can be retrieved from memory or constructed anew. A number of studies present strong evidence that a recent pattern of warm weather affects beliefs in climate change. For each 3.1 degrees Fahrenheit increase in local temperatures above normal in the week before being surveyed, Americans become one percentage point more likely to agree that there is “solid evidence” that the earth is getting warmer—an effect size comparable to that of age and education but less than the

influence of political party identification and ideology on assessments of scientific evidence (Egan and Mullin 2012). People typically do not systematically update their views over months and years but rather express views based on what they have experienced recently. Eventually, memories of personal experiences could become a reliable indicator that the climate has changed, but this adjustment may be slow, given the inertia of the climate system and the nature of people's beliefs. Assuming that adjusting a mental model of climate requires three consecutive years in which the maximum temperature is a full standard deviation or more above the historical high, Szafran, Williams, and Roth (2013) calculate, using a simulation based on U.S. weather station data from 1946 to 2005, that it will take the majority of people up to 86 years to adjust their mental models—too late for policies aiming to forestall climate disruption.

Generally speaking, grasping climate change is challenging because it requires understanding complex aspects of both mathematics and atmospheric chemistry, including probabilities, recognizing the difference between the flow of greenhouse gases and the existing stock in the air, and appreciating feedback loops and time lags. As in preventive health, the immediate and direct effects of risky behaviors are often invisible. In light of this, literature reviews in science communication emphasize that “mere transmission of information in reports and presentations is not enough” and that interactive, transparent simulations of the climate may be more valuable (Sterman 2011, 821).

Cultural worldviews and social networks inform opinions

Crucially, however, people interpret scientific information in light of their cultural worldviews, obtain information through social networks and favored media channels, and rely on trusted messengers to make sense of complex information. A number of studies show that many people interpret evidence of climate change in the light of their worldviews and social networks. An individual's level of support for social hierarchy and equality is a better predictor of his or her perceptions of changes in temperature over the past few years than actual temperature changes, as Goebbert and others (2012) demonstrate, drawing on an account developed by Douglas and Wildavsky (1983) of how worldviews affect risk perceptions.

It may be that people use their rational faculties not primarily to understand the world but to express solidarity with their group, Kahan, Jenkins-Smith, and Braman (2011) and Kahan and others (2012) argue, putting forward an account of

“expressive rationality.” One explanation for inaction on climate change is that it is a complex problem and that more information better explained will raise concern and trigger action. On that view, which the authors call the Scientific Communication Thesis, perceptions of risk should increase as numeracy and scientific literacy increase. Figure 9.1, panel a, presents this prediction visually. Risk perceptions are based on responses to the question, How much risk do you believe climate change poses to human health, safety, or prosperity? The study uses a battery of standard questions to measure numeracy and scientific literacy. The authors assess political worldviews along two standard dimensions: individualism (a belief that government should avoid affecting individual choice) and egalitarianism (support for equality and nondiscrimination).

What they find is that perceptions of climate change risk actually decline as scientific literacy and numeracy increase (figure 9.1, panel b). That decline is attributable to the decline in risk perceptions among a subset of people who support individualism and oppose egalitarianism (whom the authors call “hierarchical individualists”). The authors argue that people may use their scientific knowledge defensively, identifying and resisting efforts to convince them to go against their allegiances.

The way people respond to scientific communication about climate change seems to depend on whether, and how, messages trigger group identities and use charged language. For instance, the use of the word “tax” leads more individuals to focus on cheap options with lower environmental benefits, but the term “offset” does not have that effect. Moreover, when people choose between otherwise identical products or services, whether a surcharge for emitted carbon dioxide is framed as a tax or as an offset changes preferences for some political groups but not for others (Hardisty, Johnson, and Weber 2010).

This means that even more information, however beautifully presented, might fail to move climate change opinion in a politicized environment. Indeed—in a related fashion but on another topic—a recent survey experiment found that presenting information, scientifically ratified data, images, and personal narratives all failed to convince people that the measles, mumps, and rubella vaccine is safe. Parents who were already anxious about vaccine safety became less likely to have their children vaccinated after receiving any of those four modes of intervention (Nyhan and others 2014). Similarly, a recent study observed that in the United States, politically conservative individuals were less likely to purchase a more expensive

energy-efficient lightbulb labeled as environmentally friendly than to buy the identical product when it was unlabeled (Gromet, Kunreuther, and Larrick 2013). In general, scientific communication needs to be mindful of a potential *boomerang effect*, in which arguments trigger antagonistic responses by threatening the attachment of individuals to their social groups (Dillard and Shen 2005) or lead to unexpected and worse outcomes by highlighting low levels of support for what people believed to be a common social behavior (Schultz and others 2007).

How the media portray a social problem can also have powerful effects. Assessing how frames affect support for altruistic policies in another domain, Iyengar (1990) shows that media presentations influence support for antipoverty policies. For example, episodic coverage of poverty, usually focused on specific individuals, led people to blame individuals for being poor, but thematic coverage of antipoverty policies led people to think that the government was primarily responsible for poverty. Similarly, stating that human activity is responsible for climate change dramatically increases support for actions that address it (Pew Research Center 2009). Again, although this line of work is suggestive, it is preliminary, and more work is needed to understand how normative frames affect support for action on climate change.² It is also likely to be the case that frames need to be tailored to specific audiences. For example, while students respond to messages about energy consumption presented in terms of carbon emissions (Spence and others 2014), middle-class families are more attuned to messages emphasizing the financial cost of energy consumption (Simcock and others 2014).

Communication about climate change can draw on local narratives. In parts of Brazil, India, Melanesia, and the Sahel, some residents believe that weather is a reward for good human behavior or a punishment for bad human behavior. While these rewards and punishments are believed to be channeled through a deity, other groups, like the Kalahari San, the Inuit, and the indigenous Siberian, share similar beliefs without a religious connection. These narratives of human influence on the weather may provide foundations for presenting contemporary accounts of anthropogenic climate change and informing dialogues among citizens and scientists in different settings (Rudiak-Gould 2013).

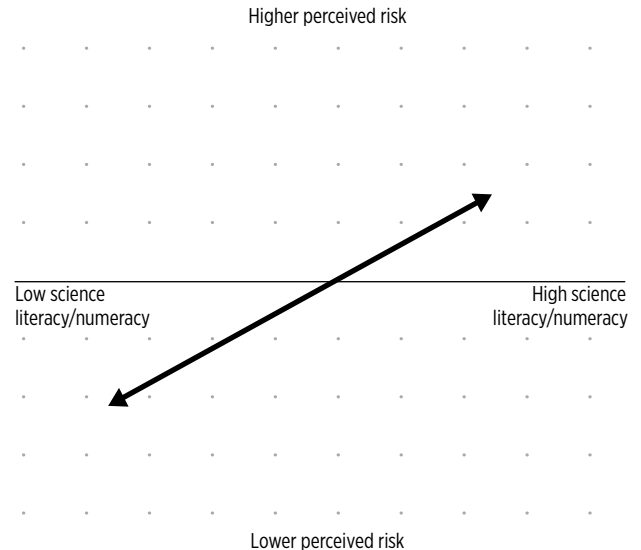
Automatic cognitive processes affect how people interpret probabilities

Sometimes strong ties to specific places or landscapes, and incentives to pay attention, may help people assess changes in climate. For example, elders and subsistence

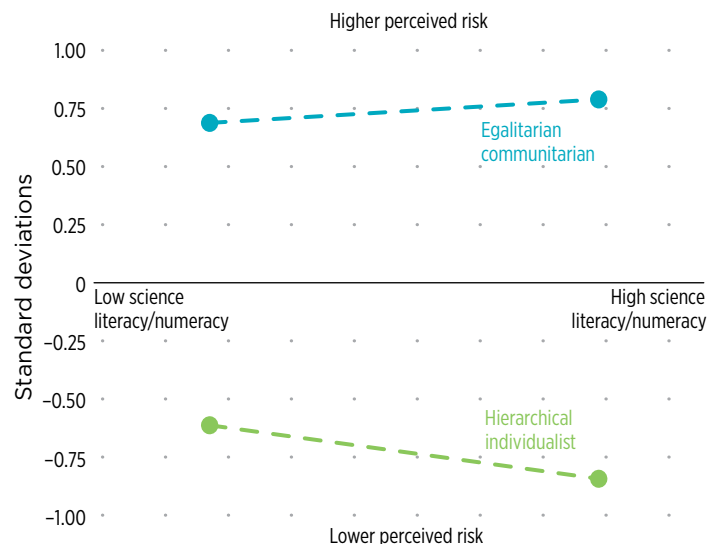
Figure 9.1 Worldviews can affect perceptions of the risk posed by climate change

While the Scientific Communication Thesis (panel a) predicts that perceptions of climate change risks increase as scientific literacy and numeracy improve, in actuality risk perceptions remain unchanged or even decline (panel b), especially for people with particular cultural worldviews. *Individualism* refers to a belief that government should avoid affecting individual choice; *communitarianism* is its opposite. *Egalitarianism* refers to support for equality and nondiscrimination; *hierarchy* is the opposite.

a. Prediction according to the Scientific Communication Thesis



b. Actual response



Source: Kahan and others 2012.

farmers in the Central Plateau of Burkina Faso correctly perceived that “big rains” in their region have become less frequent and dry years more common over the past 20 years. As one elderly man said,

Now is not like before. It is the drought. Before Independence, we could count on rain until October and grow long-cycle millet that we would harvest and leave in granaries out in our fields. Since then, there is not enough rain and we can't grow that kind of millet anymore. It has vanished from here. There is less rain now and we grow different crops. (West, Roncoli, and Ouattara 2008, 296)

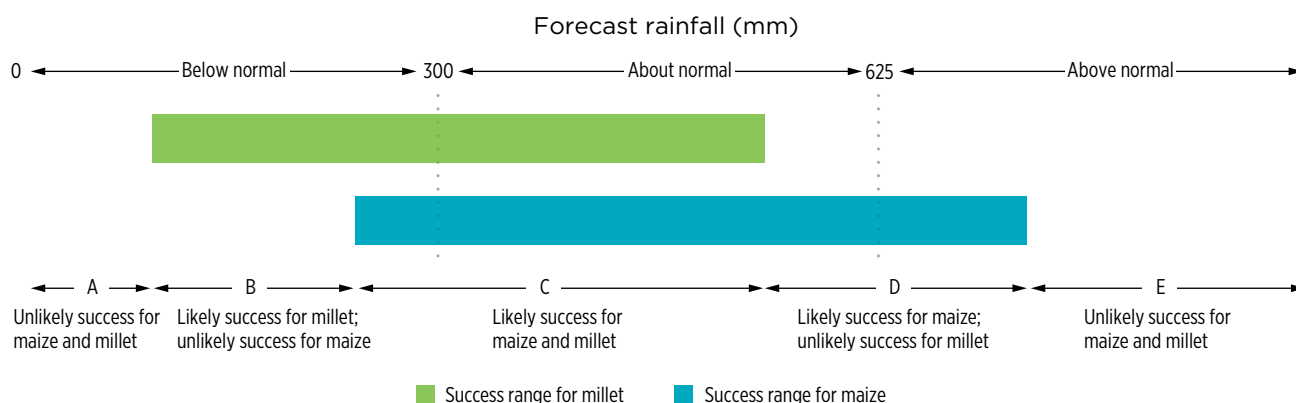
In that instance and locale, farmers were able, after training, to adapt to variation in climate. But this response is far from uniform. In a study of whether farmers in Zimbabwe shifted from maize to millet when seasonal rain forecasts changed, Grothmann and Patt (2005) found that farmers typically ignored rainfall forecasts unless they were at the extremes—rainfall far above normal or far below normal. Figure 9.2 depicts this tendency graphically. In particular, farmers' forecasts of seasonal rainfall in the D range were indistinguishable from their forecasts of rainfall in the B range. Farmers focused on the fact that in both instances both maize and millet harvests could be grown. They did not focus on the fact that millet could be grown successfully under nearly all rainfall amounts in the B range but under only a portion of those in the D range, and vice versa for maize. Some farmers also felt that the B and D ranges were equal because the forecasts expressed estimates using terms such as *might* or *likely*, rather than certainties.

As chapter 1 discussed, there are two distinct “systems” involved in cognitive processing: the automatic system and the deliberative system. Human beings rely on both when processing probabilities. Tversky and Kahneman (1982) showed that although most people neglect information about background frequencies, such as the fact that “15% of the taxis in a city are operated by the Blue Cab company,” they notice information that is case specific and information that is part of a narrative, such as the fact that “15% of the taxi accidents in a city involve the Blue Cab company.” The reason is that the automatic system (System 1) is highly attuned to situations of cause and effect; it is deployed when processing information about taxi accidents but not for unadorned statements concerning relative frequencies.

Researchers have used this insight to help individuals make sense of forecasts about climate change. Analogies to how an injury to a star player would affect the odds of winning a football match between Argentina and Zimbabwe helped Zimbabwean farmers grasp how the El Niño phenomenon might affect the odds of a rainy season (Suarez and Patt 2004). Comparisons to the familiar task of predicting the gender of an unborn child helped Ugandan farmers understand the probability distribution that underlies government-issued weather forecasts (Orlove and Kabugo 2005). Concrete images and comparisons to familiar experiences help make concepts such as relative frequencies and conditional probabilities easier to absorb.

Figure 9.2 Predicting the effect of rainfall forecasts on the success of growing familiar crops was difficult for farmers in Zimbabwe

In a series of workshops, subsistence farmers in Zimbabwe were asked what crops they grew, given seasonal rainfall forecasts. Farmers said they grew maize when forecasts were in the D range, and they did not switch to millet when the forecast was in the B range, even though millet was more likely to be successful.



Source: Grothmann and Patt 2005.

Note: mm = millimeters.

The future is far off, and risk is emotional

A key obstacle to action on climate change is the fact that human beings focus intensely on the present and discount concerns perceived to be in the far-off future, such as climate change risks (see the discussions of present bias and psychological “distance” in chapter 6). But research indicates that the extent to which people undertake future-oriented actions depends not only on cognitive processes but also on emotional ones; furthermore, risk is not constant across activities but rather is contextual. People process risk as a feeling rather than as a probability (Loewenstein and others 2001). Because perception of risk and support for policy are strongly influenced by experiences, emotions, imagery, and values (Leiserowitz 2006), climate change messaging might be more effective if it tugged at the emotions more often.

However, too much doom and gloom may lower an individual's sense of self-efficacy and reduce the motivation to act. People may have a “finite pool of worry” available to handle problems. For example, the proportion of Americans who viewed climate change as a “very serious” problem dropped from a two-year steady level of 47 percent to 35 percent during the global financial crisis (Pew Research Center 2009). In the domain of adaptation, a study of Argentine farmers showed that steps to cue more worry about global warming decreased concern about the political situation in Argentina (Hansen, Marx, and Weber 2004). Relatedly, Argentine farmers who were worried about global warming were more likely to change some aspect of their production practices (such as insurance or irrigation) but hardly ever undertook more than one change. It was as if the farmers were eager to dismiss climate change worries in their own minds, believing that with one action they had addressed their problems (Weber 1997).

The ambiguous, difficult-to-quantify risks surrounding climate change may also pose challenges. It has been argued that when people face risks of unknown magnitude (ambiguous risks), they tend to avoid making decisions (Ellsberg 1961; Shogren 2012). However, for some individuals, ambiguity can increase the likelihood of taking precautionary measures. A recent framed field experiment documented high levels of risk aversion among coffee farmers in Costa Rica. The study also found that, among farmers with clearly identifiable preferences regarding ambiguity, twice as many chose to adapt to the risk than not to adapt when confronting ambiguous climate change risks (Alpizar, Carlsson, and Naranjo 2011). In other words, the fact that the risk was unknown induced more adaptation than the corresponding situation with known risk.

The common framing of climate change as an unsolvable global tragedy may also be contributing to a sense of uncertainty and a lack of self-efficacy that together disempower local action. Ostrom (2014, 107) argues that “the ‘problem’ has been framed so often as a global issue that local politicians and citizens sometimes cannot see that there are things that can be done at a local level that are important steps in the right direction.” While admittedly many such steps are needed to deal with the truly global-scale challenge of mitigating greenhouse gas emissions, local action has considerable potential for reducing vulnerability to climate change risks.

Communication strategies can draw on local mental models. The presentation of climate forecasts can be more intuitive. Institutions can take advantage of cooperative tendencies and social networks among policy makers and firms.

Film and entertainment education can change opinions, but the effects may not last long

Hoping for traction with busy people on a seemingly remote and global topic, some climate change campaigners have turned to art and imagery. This may be useful. An experiment was done to coincide with the release of a movie called *The Day after Tomorrow*, which depicts the impact and aftermath of catastrophic storms hitting major U.S. cities, including Los Angeles and New York—storms caused by a climate shift that ultimately brings on an ice age. The film had a significant impact on people's belief in climate change, despite the fact that the climate shift shown in the movie is scientifically fallacious. Forty-nine percent of viewers surveyed said that seeing the movie increased their worry about global warming, while only 1 percent said it made them less worried (Leiserowitz 2004).

More generally, narrative communication structures may also play a key role in influencing an individual's perception of risk and policy preferences, especially through the vehicle of a “hero” character. In a 2013 study, respondents exposed to climate change information presented in a narrative structure—complete with

a setting, characters (heroes and villains), a plot, and a moral—were more inclined to view the hero and the hero's preferred policy solution favorably (Jones 2014). Three carefully tailored narratives were each designed to appeal to one particular worldview—egalitarian, hierarchical, and individualist—with a control group receiving objective climate facts in a bulleted list. Those exposed to narrative structures were found to have retained more information from the story and were better able to draw emotional conclusions about groups portrayed as either heroes or villains than the respondents in the control group. These results suggest that overt value statements, cultural symbolism, and strong connections to individual or group “heroes” may be more effective forms of climate messaging than objective scientific communication strategies currently used in the mainstream media.

Social norms and comparisons can be used to reduce energy consumption. Information campaigns can be made more effective and clear. Default settings can be used more widely.

It is unclear, however, how long the effect of watching such a movie persists and whether people's increased concern translates into action. A recent study of U.K. viewers of the climate change movie *The Age of Stupid* found that people reported increased concern about climate change after viewing the movie, as well as a greater sense of agency and motivation to act. When the moviegoers were surveyed again several weeks later, however, these effects had disappeared (Howell 2014).

One problem with movies and media campaigns is that people often experience them individually, not as political actors or in social groups. Only “organizationally mobilized public opinion matters,” as Skocpol's political history of climate change legislation suggests (2013, 118). What is needed is not messaging with “subliminal” appeal but a focus on networks and organizations, which are the “real stuff” of politics, Skocpol argues.

People understand fairness in self-serving ways

International negotiations on climate are hampered by well-known problems related to collective action

(these are nicely summarized in Bernauer 2013). Every country might want a global agreement to reduce carbon emissions, but what it might desire even more is for every other country to comply with the agreement and make the requisite economic sacrifices, while it does not. Recognizing this, some countries may decide to focus just on adapting to climate change, rather than also taking steps to mitigate it; resources spent on adaptation will benefit the country, whereas resources spent on mitigation may provide little gain if other countries do not live up to their end of the bargain. A second barrier to an international agreement is that the costs and benefits of reducing carbon emissions are not distributed equally. Poor countries and communities are generally more vulnerable to the effects of climate disruption and also bear significant costs during a transition to a low-carbon economy. Finally, just as countries cannot easily coordinate with one another, different political generations cannot coordinate effectively. Even if people made sacrifices today, future political leaders might reverse course.

In addition, nations need to converge on a working agreement, or at least an overlapping consensus, regarding fairness. Principles of fairness are the subject of intense competition and controversy among nations and social groups. There are many ways to distribute the burdens of mitigating and adapting to climate change; and there are several principles of distributive justice underlying those distributions, from the idea that the people and countries with the most emissions should contribute the most to abating greenhouse gases (“polluter pays”), to strict egalitarianism of emissions rights on a per capita basis, to contributions linked to income levels, to equal percentage reductions for each country. Thus finding a shared view of fairness that promotes climate action is a major obstacle (see, for instance, Gardiner and others 2010).

Moreover, efforts to identify an international standard of fairness are complicated by the widespread human tendency to select principles of fairness that happen to coincide with one's interests (*self-serving bias*). Drawing on a survey of participants in workshops sponsored by the Intergovernmental Panel on Climate Change (IPCC), Lange and others (2010) show that there is a strong correlation between the principles of distributive justice that negotiators endorse and their national self-interests. Taking this a step further, Kriss and others (2011) show that Chinese and U.S. students can agree how burdens for environmental challenges should be distributed between two anonymous countries but stake out very different views as soon as the countries are named as China and the United States. In other words, people may be able to agree on a fairness

principle, but their social allegiances and mental models affect their moral reasoning. What psychological and social factors underlie individuals' allegiances to fellow nationals, most of whom they will never meet? This is an intriguing topic on which more research is needed. One possibility is that prioritizing the interests of fellow nationals is a social norm; in other words, people prioritize conationals not from reasoned choice but because that is what most people around them do and believe they should do (Baron, Ritov, and Greene 2013).

Democratic rules and laws can promote conditional cooperation

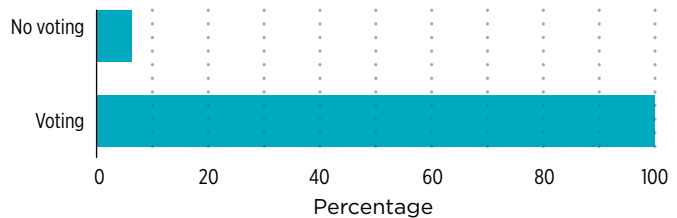
Chapter 2 argued that most individuals are conditional cooperators. In the context of global warming, this means that people would be more willing to take action to address climate change if they could be assured that others will do the same. Hauser and others (2014) conduct a laboratory experiment in which individuals make contributions to combat climate change on behalf of “future generations” of players. They find, pessimistically, that even if most people are prepared to conserve public resources on behalf of future generations, those resources can nevertheless be ruined by a small minority of people within a population who do not conserve resources. More optimistically, they find that *conditional cooperation*, in the form of binding democratic votes, can make a difference: by introducing democratic principles, the contributing majority can force the “selfish” minority to conserve. And even more interestingly, players increase contributions to shared resources when they are assured that their good behavior is being reciprocated by others; in other words, contributions increase because democratic voting brings conditional cooperators on board. As figure 9.3 shows, voting measures dramatically increased the sustainability of resource pools in the laboratory experiment. The implications are that many individuals are indeed ready to sacrifice for the greater good if institutions can be crafted to take advantage of conditional cooperation.

Conditional cooperation can also be promoted by international law and international organizations. Even if a body of law has weak enforcement mechanisms, as is the case in various domains of international law, it can affect behavior when it expresses and concentrates social meanings (Sunstein 1996). If international climate agreements were entirely ineffective, countries would not hesitate to sign them; that many countries do avoid signing indicates that countries regard noncompliance as potentially costly (Bernauer 2013). International multilateral and bilateral agreements can serve as a focal point for mobilizing domes-

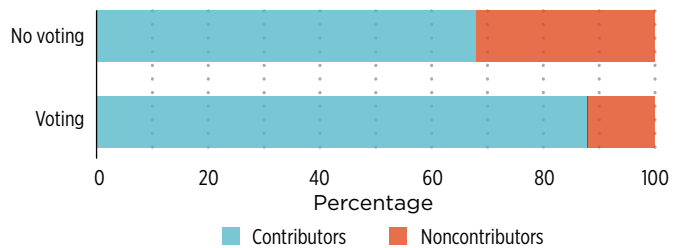
Figure 9.3 Democratic rules can achieve high levels of resource sustainability

In a laboratory experiment, individuals made contributions to shared resources on behalf of future generations of players. Decisions of a small minority resulted in very few pools being sustained. When binding votes were used to make decisions, all resource pools were sustained (panel a). Voting rules led more individuals to contribute because the rules reassured conditional cooperators that others also would have contributed (panel b).

a. Resource pools sustained



b. Individuals who contributed



Source: Hauser and others 2014.

tic actors, such as civil society and courts, which then may impose costs on the state (Simmons 2009; Gauri 2011; Bernauer 2013). Participation may itself affect choices. According to Spilker's findings (2012), developing countries with higher levels of membership in international organizations have lower levels of greenhouse gas emissions, controlling for time trends and a range of economic and political variables, although issues of selection and causality remain to be worked out in such analyses. The research in this area is preliminary and suggestive, but intriguing.

Psychological and social insights for motivating conservation

Invoking social norms can reduce consumption

There have been several pioneering efforts to use social norms to cut energy consumption and encourage adoption of energy-conserving practices and technologies. In a series of large-scale programs run in the United States in partnership with the energy company Opower, “home energy reports” were mailed to residential utility customers, providing them with feedback on

how their own energy use compared to that of their neighbors (as well as providing simple information about energy consumption). On average, this intervention reduced energy consumption by 2 percent—equivalent to the effect of a short-run increase in electricity prices of about 11–20 percent (Allcott 2011). Numerous other projects have found similar effects (see, for example, Ayres, Raseman, and Shih 2013; Dolan and Metcalfe 2013).

While these interventions elicit immediate energy conservation and behavior change in the short term, consumers' initial efforts to conserve tend to decrease over time. The longest-running study sites of the Opower energy conservation program, for example, showed that consumers' initial efforts began to decline in less than two weeks (Allcott and Rogers 2014). However, as the interventions have been repeated and more reports have been delivered, customers seem to develop new consumption habits or acquire a new stock of physical capital (purchasing more energy-efficient lightbulbs, for example). Long-term impacts persist. Overall, the intervention costs between 1.4 and 1.8 cents per kilowatt hour of electricity saved. Commonly used energy conservation programs typically cost between 1.6 and 3.3 cents per kilowatt hour (Allcott and Rogers 2014). A similar intervention found that impacts of an intervention centered on changing social norms on residential water use could be detected more than two years after residents received a message (Ferraro, Miranda, and Price 2011). Spotlight 5 documents how the city of Bogotá drew on social norms to reduce consumption during a water supply crisis.

Social norms might also be used to motivate individuals to adapt to environmental risks. In a laboratory simulation, individuals were asked to make improvements to homes to reduce their exposure to the risk of earthquakes. At the end of the experiment, each person was paid the difference between the value of his or her home and the amount of interest earned on money they did not invest in home improvements minus the cost of repairs and the cost of damage. No one knew whether home repairs to reduce earthquake risk were cost effective or not, but each person could observe the choices others made. Half the subjects were placed in a world where repairs were cost effective and half were not. The major driver of individual decisions was the average level of investment made by neighbors. Even players who were told that investments were 100 percent effective started copying their neighbors and investing less—probably because, as mentioned, unadorned probabilities may mean less to people than narratives, and the behavior of neighbors

readily lends itself to a story line (Kunreuther, Meyer, and Michel-Kerjan 2013). This suggests that opinion leaders might be used to push individuals toward more adaptive behaviors.

While it appears that social norm-based policy interventions can be cost effective and have a lasting impact, careful attention to their design is critical. First, it is necessary to identify the relevant social norm. Evidence from a study of the participation of hotel guests in an environmental conservation program suggests that messages appealing to social norms (such as “The majority of guests reuse their towels”) are more effective in encouraging conservation behavior than messages focusing on environmental protection. The most effective messages (resulting in 49 percent reuse) are those that refer to circumstances that are most closely related to the current situation (such as “The majority of guests in this room reuse their towels”) (Goldstein, Cialdini, and Griskevicius 2008).

Messages about social norms can also have unintended consequences; they can normalize undesirable as well as desirable behaviors. Information campaigns aimed at reducing undesirable behavior sometimes unwittingly draw attention to the fact that a specific undesirable behavior is actually widespread (Cialdini 2003). In an environmental context, it has been shown that visitors to Arizona's Petrified Forest National Park who receive empirical information (“Many past visitors have removed the petrified wood from the park, changing the state of the Petrified Forest”) were likely to steal more petrified wood, whereas normative messages (“Please don't remove the petrified wood from the park”) helped reduce theft (Cialdini and others 2006).

The use of messages expressing certain social norms has also been shown to have a boomerang effect: messages about average neighborhood energy use have led to energy savings among households with high levels of energy consumption but have increased consumption among those households already consuming at low rates. Adding a message about normative expectations was found to eliminate this boomerang effect (Schultz and others 2007). Furthermore, there may be important complementarities between social norms and financial incentives; social comparison messages related to water consumption were found to be most effective in reducing consumption among the least price-sensitive users, such as those consuming large amounts of water before the intervention (Ferraro and Price 2013).

To be most effective, interventions such as these also benefit from careful targeting. Peer comparisons targeting energy conservation through the means

of home electricity reports, for example, are two to four times more effective when sent to political liberals than to conservatives (Costa and Kahn 2013). In contexts where environmental social norms are ineffective, focusing on health-based messages related to the dangers of climate change could provide a useful alternative.

Depending on the context, it may be useful to complement private information with public information, if feasible. Providing college students in residence halls in the United States with private information on their real-time energy use for appliances compared to their peers was ineffective in reducing energy consumption. However, students who also received an individual conservation rating that was publicly available significantly reduced their use of heating and cooling, leading to a 20 percent drop in electricity consumption (Delmas and Lessem 2012).

Finally, behavioral “barriers” to investments in energy-saving technologies apply to firms as well as to individuals. A systematic literature review found that business investments in energy efficiency in countries in the Organisation for Economic Co-operation and Development (OECD) require very high rates of return—higher than for other investments with comparable risks (Centre for Sustainable Energy 2012). The review attributes this finding to organizational norms and to the lack of salience, for many firms, of energy efficiency. To motivate firms, it advocates reframing energy efficiency and climate policy as a strategic benefit, rather than as a short-term cost decision.

Psychological and social insights can make information campaigns and indicators more effective

Disclosing information is often viewed as a useful policy tool in many different areas, including finance, health, and the environment. A recent meta-analysis of information-based energy conservation experiments quantifies the effectiveness of interventions, evaluating evidence from 156 published field trials and 525,479 study subjects between 1975 and 2012 (Delmas, Fischlein, and Asensio 2013). It finds that average electricity consumption is reduced by 7.4 percent in the studies but also finds that this effect decreases with increasing rigor of the study. A recent study of energy-efficiency labeling attempts to disentangle the relative importance of different kinds of information. Simple information on the economic value of saving energy was found to be most important in guiding investments in energy-efficient technology, with addi-

tional but smaller impacts from information about energy use or carbon emissions (Newell and Siikamäki 2013). However, evidence on the effectiveness of such interventions is mixed (Kallbekken, Sælen, and Hermansen 2013).

While disclosing information can have a significant impact on people's behavior, it is important to consider how that information is conveyed. If information is too abstract or vague, too detailed and complex, or poorly framed, disclosing that information may be ineffective in bringing about behavior change. As people's attention is a scarce resource, vivid and novel ways of presenting information can capture the attention in ways that abstract or familiar ones cannot (Sunstein 2013). Without careful design, information disclosure can be not only ineffective and confusing but also potentially misleading and counterproductive. The widely used measure of fuel efficiency, “miles per gallon,” for example, is generally not well understood and leads people to undervalue the fuel and cost savings of replacing the most inefficient vehicles (Larrick and Soll 2008).

People often struggle to make decisions in situations of risk and uncertainty. Even when people do understand the risks and benefits of different actions, they are more likely to act on the basis of this information if they are also provided with information about how to proceed (Nickerson and Rogers 2010; Milkman and others 2011). Identifying a specific plan of action can thus have a significant impact on bringing about social outcomes, as complex or vague information can lead to inaction, even when people understand the risks and benefits associated with different choices.

In practice, some informational campaigns may be framed around climate change only indirectly. A recent large-scale randomized controlled trial found that messages emphasizing the health-related impacts of energy consumption were more effective in motivating energy conservation than similar messages focusing on potential cost savings (Asensio and Delmas 2014). Given the fact that both social norms and the extent to which people try to conform differ according to social context, both the effectiveness and the particular features of such policies will vary. Similarly, efforts to replace fuel subsidies with social transfers, often couched as reforms for efficiency or equity, would have significant effects on greenhouse gas emissions as well (Stocker and others 2013; Field and others 2014). The IPCC Working Group 3 on Mitigation notes the political importance of emphasizing policies to “integrate multiple objectives” and produce “co-benefits.”

Policies requiring carbon disclosure for companies, and then benchmarking company emissions, can

capitalize on social motivations. The Carbon Disclosure Project (CDP) and the associated Climate Performance Leadership Index work in that manner. These kinds of public pressure may be effective: combined with shareholder activism, participation in the CDP can increase shareholder value if the external business environment is climate conscious (Kim and Lyon 2011).

Why a firm may choose to join a carbon disclosure initiative is an intriguing area of study and one closely related to the establishment and emergence of social norms. One recent analysis of 394 European and Latin American corporations that chose to join the United Nations Global Compact looked at three behavioral influences on their institutions and stakeholders: *coercive*, *normative*, and *mimetic behaviors*. Coercive behavior—in this case, government regulation—exerted little effective pressure on firm participation. Rather, it was the normative pressure from academia, as well as the mimetic pressure to imitate peer corporations listed on the New York Stock Exchange, that had

missioned by the French government, Stiglitz, Sen, and Fitoussi (2009) examined a wider variety of possible economic indicators, with the goal of developing indicators that better incorporate well-being metrics and environmental sustainability. These are much more likely to be widely adopted if major economies make a collective decision, perhaps through a body such as the OECD, to begin reporting them as part of their standard economic statistics. Once statistics like these become more readily available, peer comparison will follow.

Setting the default

Default rules can help overcome procrastination and inertia, promoting social goals while preserving people's freedom of choice. "Green defaults" have been tested for a number of policy interventions, including choosing an electricity provider, conserving energy, and reducing food waste. Three related mechanisms appear to contribute to the effectiveness of default rules: people's inertia and tendency to procrastinate, a perceived implicit endorsement of the default rule, and the establishment of a reference point relative to which changes may be evaluated (Sunstein and Reisch 2013).

In southern Germany, for example, the power company Energiedienst GmbH offered three separate tariffs: a default "green" tariff (which was also 8 percent cheaper than the previous tariff), a cheaper but less green tariff, and a greener but more expensive tariff. Almost everyone (94 percent of consumers) remained with the default tariff; only 4.3 percent switched to the cheaper option, less than 1 percent switched to the greener tariff, and the remainder switched to a different supplier (Pichert and Katsikopoulos 2008). While many people in Germany stated a preference for green energy, the national average percentage of consumers actually choosing this kind of energy provider, under circumstances in which the "green" tariff was not the default, was less than 1 percent for a long time. Defaults thus appear to have a powerful effect on social choices.

Similar results have been reported in the United States, where more customers enroll in time-based rate programs (designed to encourage smarter energy use) when these are offered on an opt-out rather than on an opt-in basis. Participation rates among customers recruited using an opt-out approach were 84 percent, while only 11 percent of customers joined the program when recruitment was done on an opt-in basis (U.S. Department of Energy 2013).

In developing such policy interventions, the question arises, Which default should be chosen? Choosing an overly ambitious default might lead to greater opt-out rates. A randomized controlled experiment of thermostat default settings for heating found that

Climate change is such a large problem that multiple, coordinated approaches will be needed to address it. Psychological, social, and cultural insights can make significant contributions.

the strongest effects (Perez-Batres, Miller, and Pisani 2011). These types of pressure may already be driving new norms for social sustainability.

Social norms also operate on policy makers themselves, who appear responsive not just to their constituents but also to one another. What neighboring jurisdictions do influences policy choice, as shown in a number of policy domains, including the adoption of vaccines, Washington Consensus policies, and carbon taxes (Gauri and Khaleghian 2002; Dobbin, Simmons, and Garrett 2007; Krause 2011). The insight that countries, companies, and localities care about their relative performance can be leveraged to generate political support. This is an instance of what has become known as "governance by indicators"—using metrics to create new forms of peer pressure to induce better governance policies.³ At the macro level, alternatives to the measure of gross domestic product can offer countries clearer economic indicators of their stewardship of core resource stocks. In a wide-ranging report com-

relatively small decreases in the default setting (1°C) led to a greater reduction in the average setting chosen than did large decreases in the default setting (2°C) (Brown and others 2013).

Defaults can be used to improve outcomes when people faced with certain decisions choose not to make an active choice. The power of defaults arises from the fact that people's behavior may not be determined by active choice most of the time. Evidence from a study of an eight-month period of compulsory electricity rationing in Brazil shows that the policy led to a persistent reduction of electricity use, with consumption 14 percent lower even 10 years after the period of rationing. Household data on ownership of appliances and consumption habits indicate that habits have been the main source of the persistent reduction in electricity consumption (Costa 2013).

Conclusion

Dan Ariely (2010, 251) notes that “if we tried to manufacture an exemplary problem that would inspire general indifference,” it would probably be climate change. This is because climate change implicates several cognitive illusions. Climate changes slowly, whereas individuals' judgments about the climate are based on what they have perceived recently. Ideological and social allegiances affect how communication about climate change is received. People tend to ignore or underappreciate information presented in probabilities, such as forecasts for seasonal rainfall and other climate-related variables. Human beings are far more concerned with the present than with the future, whereas many of the worst impacts of climate change could take place many years from now. Some of those risks remain ambiguous, and some people avoid action in the face of the unknown. When deciding how to share the burdens of responding to climate change, individuals and organizations usually adopt principles of fairness that serve their own interests.

At the same time, promising approaches to action on climate change also draw on psychological and social insights. Communication strategies can incorporate local mental models and narratives. The presentation of climate forecasts can be more intuitive. Institutions can be crafted to take advantage of conditional cooperation and social networks. Social norms and comparisons can be used to reduce energy consumption. Information campaigns can be made more effective and clear. Default settings can be used more widely. Climate change is such a large problem that multiple, coordinated approaches will be needed to address it. Psychological, social, and cultural insights can make significant contributions.

Notes

1. A 2013 study on the evolution of the scientific consensus on man-made (anthropogenic) climate change (ACC) analyzed 11,944 peer-reviewed papers studying “global climate change” or “global warming” from 2001 to 2011. Of the abstracts that took a stance on ACC, more than 97 percent agreed with the scientific consensus, including more than 97 percent of authors when asked. The authors concluded that “the number of papers rejecting [ACC] is a minuscule proportion of the published research, with the percentage slightly decreasing over time” (Cook and others 2013, 1). Clearly, for misperceptions about the occurrence of climate change and its potential threats to persist in light of the body of evidence, there is more at work here; psychological, cultural, and political factors are likely at play (Norgaard 2009).
2. Indeed, a number of studies (notably Small, Loewenstein, and Slovic 2005) find that when people are shown that specific individuals are suffering, they are more likely to be generous, seemingly contradicting the findings by Iyengar (1990). The frames that motivate personal generosity may be distinct from those that motivate support for public action.
3. For more on the concept, see Davis and others 2012.

References

- Allcott, H. 2011. “Social Norms and Energy Conservation.” *Journal of Public Economics* 95 (9): 1082–95. doi: DOI 10.1016/j.jpubeco.2011.03.003.
- Allcott, Hunt, and Todd Rogers. 2012. “The Short-Run and Long-Run Effects of Behavioral Interventions: Experimental Evidence from Energy Conservation.” Working Paper 18492, National Bureau of Economic Research, Cambridge, MA.
- . 2014. “The Short-Run and Long-Run Effects of Behavioral Interventions: Experimental Evidence from Energy Conservation.” *American Economic Review* 104 (10): 3003–37.
- Alpizar, Francisco, Fredrik Carlsson, and Maria A. Naranjo. 2011. “The Effect of Ambiguous Risk, and Coordination on Farmers' Adaptation to Climate Change: A Framed Field Experiment.” *Ecological Economics* 70 (12): 2317–26.
- Ariely, Dan. 2010. *The Upside of Irrationality: The Unexpected Benefits of Defying Logic*. New York: Harper Perennial.
- Asensio, Omar, and Magali A. Delmas. 2014. “The Dynamics of Information Framing: The Case of Energy Conserving Behavior.” UCLA Working Paper, University of California, Los Angeles.
- Ayres, Ian, Sophie Raseman, and Alice Shih. 2013. “Evidence from Two Large Field Experiments That Peer Comparison Feedback Can Reduce Residential Energy Usage.” *Journal of Law, Economics, and Organization* 29 (5): 992–1022.
- Baron, Jonathan, Ilana Ritov, and Joshua D. Greene. 2013. “The Duty to Support Nationalistic Policies.” *Journal of Behavioral Decision Making* 26 (2): 128–38.

- Bernauer, Thomas. 2013. "Climate Change Politics." *Annual Review of Political Science* 16: 421–48.
- Brown, Zachary, Nick Johnstone, Ivan Haščič, Laura Vong, and Francis Barascud. 2013. "Testing the Effect of Defaults on the Thermostat Settings of OECD Employees." *Energy Economics* 39: 128–34.
- Centre for Sustainable Energy. 2012. "What Are the Factors Influencing Energy Behaviours and Decision-Making in the Non-Domestic Sector? A Rapid Evidence Assessment." U.K. Government Policy Paper, Department of Energy and Climate Change, London.
- Cialdini, Robert B. 2003. "Crafting Normative Messages to Protect the Environment." *Current Directions in Psychological Science* 12 (4): 105–09.
- Cialdini, Robert B., Linda J. Demaine, Brad J. Sagarin, Daniel W. Barrett, Kelton Rhoads, and Patricia L. Winter. 2006. "Managing Social Norms for Persuasive Impact." *Social Influence* 1 (1): 3–15.
- Cook, John, Dana Nuccitelli, Sarah A. Green, Mark Richardson, Bärbel Winkler, Rob Painting, Robert Way, Peter Jacobs, and Andrew Skuce. 2013. "Quantifying the Consensus on Anthropogenic Global Warming in the Scientific Literature." *Environmental Research Letters* 8 (2): 024 (7 pp.).
- Costa, Dora L., and Matthew E. Kahn. 2013. "Energy Conservation 'Nudges' and Environmentalist Ideology: Evidence from a Randomized Residential Electricity Field Experiment." *Journal of the European Economic Association* 11 (3): 680–702.
- Costa, Francisco J. M. 2013. "Can Rationing Affect Long-Run Behavior? Evidence from Brazil." Working Paper, London School of Economics, London. Available at <http://ssrn.com/abstract=2028684> or <http://dx.doi.org/10.2139/ssrn.2028684>.
- Davis, Kevin, Angelina Fisher, Benedict Kingsbury, and Sally Engle Merry. 2012. *Governance by Indicators: Global Power through Classification and Rankings*. Vol. 1. Oxford, U.K.: Oxford University Press.
- Delmas, Magali A., Miriam Fischlein, and Omar I. Asensio. 2013. "Information Strategies and Energy Conservation Behavior: A Meta-Analysis of Experimental Studies from 1975–2012." Working Paper, University of California Center for Energy and Environmental Economics.
- Delmas, Magali, and Neil Lessem. 2012. "Saving Power to Conserve Your Reputation?" Working Paper, Institute of the Environment and Sustainability, University of California, Los Angeles.
- Dillard, James Price, and Lijiang Shen. 2005. "On the Nature of Reactance and Its Role in Persuasive Health Communication." *Communication Monographs* 72 (2): 144–68.
- Dobbin, Frank, Beth Simmons, and Geoffrey Garrett. 2007. "The Global Diffusion of Public Policies: Social Construction, Coercion, Competition, or Learning?" *Annual Review of Sociology* 33: 449–72.
- Dolan, Paul, and Robert Metcalfe. 2013. "Neighbors, Knowledge, and Nuggets: Two Natural Field Experiments on the Role of Incentives on Energy Conservation." Discussion Paper, Centre for Economic Performance, London School of Economics, London.
- Douglas, Mary, and Aaron Wildavsky. 1983. *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers*. Berkeley: University of California Press.
- Egan, Patrick J., and Megan Mullin. 2012. "Turning Personal Experience into Political Attitudes: The Effect of Local Weather on Americans' Perceptions about Global Warming." *Journal of Politics* 74 (3): 796–809.
- Ellsberg, Daniel. 1961. "Risk, Ambiguity, and the Savage Axioms." *Quarterly Journal of Economics* 75 (4): 643–69.
- Ferraro, Paul J., Juan Jose Miranda, and Michael K. Price. 2011. "The Persistence of Treatment Effects with Norm-Based Policy Instruments: Evidence from a Randomized Environmental Policy Experiment." *American Economic Review* 101 (3): 318.
- Ferraro, Paul J., and Michael K. Price. 2013. "Using Non-pecuniary Strategies to Influence Behavior: Evidence from a Large-Scale Field Experiment." *Review of Economics and Statistics* 95 (1): 64–73.
- Field, C. B., and others. 2014. "Technical Summary." In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by C. B. Field, V. R. Barros, D. J. Dokken, K. J. Mach, M. D. Mastrandrea, T. E. Bilir, M. Chatterjee, K. L. Ebi, Y. O. Estrada, R. C. Genova, B. Girma, E. S. Kissel, A. N. Levy, S. MacCracken, P. R. Mastrandrea, and L. L. White. Cambridge, U.K., and New York: Cambridge University Press. http://ipcc-wg2.gov/AR5/images/uploads/WGI_IAR5-TS_FGDall.pdf.
- Gardiner, Stephen, Simon Caney, Dale Jamieson, and Henry Shue. 2010. *Climate Ethics: Essential Readings*. New York: Oxford University Press.
- Gauri, Varun. 2011. "The Cost of Complying with Human Rights Treaties: The Convention on the Rights of the Child and Basic Immunization." *The Review of International Organizations* 6 (1): 33–56.
- Gauri, Varun, and Peyvand Khaleghian. 2002. "Immunization in Developing Countries: Its Political and Organizational Determinants." *World Development* 30 (12): 2109–32.
- Goebbert, Kevin, Hank C. Jenkins-Smith, Kim Klockow, Matthew C. Nowlin, and Carol L. Silva. 2012. "Weather, Climate, and Worldviews: The Sources and Consequences of Public Perceptions of Changes in Local Weather Patterns." *Weather, Climate and Society* 4 (2): 132–44.
- Goldstein, Noah J., Robert B. Cialdini, and Vidas Griskevicius. 2008. "A Room with a Viewpoint: Using Social Norms to Motivate Environmental Conservation in Hotels." *Journal of Consumer Research* 35 (3): 472–82.
- Gromet, Dena M., Howard Kunreuther, and Richard P. Larrick. 2013. "Political Ideology Affects Energy-

- Efficiency Attitudes and Choices." *Proceedings of the National Academy of Sciences* 110 (23): 9314–19.
- Grothmann, Torsten, and Anthony Patt. 2005. "Adaptive Capacity and Human Cognition: The Process of Individual Adaptation to Climate Change." *Global Environmental Change* 15 (3): 199–213.
- Hansen, James W., Sabine M. Marx, and Elke U. Weber. 2004. "The Role of Climate Perceptions, Expectations, and Forecasts in Farmer Decision Making: The Argentine Pampas and South Florida." International Research Institute for Climate Prediction Technical Report 04-01, Earth Institute, Columbia University, New York.
- Hardisty, David J., Eric J. Johnson, and Elke U. Weber. 2010. "A Dirty Word or a Dirty World? Attribute Framing, Political Affiliation, and Query Theory." *Psychological Science* 21 (1): 86–92.
- Hauser, Oliver P., David G. Rand, Alexander Peysakhovich, and Martin A. Nowak. 2014. "Cooperating with the Future." *Nature* 511 (7508): 220–23.
- Howell, Rachel A. 2014. "Investigating the Long-Term Impacts of Climate Change Communications on Individuals' Attitudes and Behavior." *Environment and Behavior* 46 (1): 70–101.
- Iyengar, Shanto. 1990. "Framing Responsibility for Political Issues: The Case of Poverty." *Political Behavior* 12 (1): 19–40.
- Jones, M. D. 2014. "Cultural Characters and Climate Change: How Heroes Shape Our Perception of Climate Science." *Social Science Quarterly* 95: 1–39. doi: 10.1111/ssqu.12043.
- Kahan, Dan M., Hank Jenkins-Smith, and Donald Braman. 2011. "Cultural Cognition of Scientific Consensus." *Journal of Risk Research* (2) 14: 147–74.
- Kahan, Dan M., Ellen Peters, Maggie Wittlin, Paul Slovic, Lisa Larrimore Ouellette, Donald Braman, and Gregory Mandel. 2012. "The Polarizing Impact of Science Literacy and Numeracy on Perceived Climate Change Risks." *Nature Climate Change* 2: 732–35.
- Kallbekken, Steffen, Håkon Sælen, and Erlend A. T. Hermansen. 2013. "Bridging the Energy Efficiency Gap: A Field Experiment on Lifetime Energy Costs and Household Appliances." *Journal of Consumer Policy* 36 (1): 1–16.
- Kim, Eun-Hee, and Thomas Lyon. 2011. "When Does Institutional Investor Activism Increase Shareholder Value? The Carbon Disclosure Project." *B. E. Journal of Economic Analysis and Policy* 11 (1). <http://www.bepress.com/bejeap/vol11/iss1/art50>.
- Krause, Rachel M. 2011. "Policy Innovation, Intergovernmental Relations, and the Adoption of Climate Protection Initiatives by U.S. Cities." *Journal of Urban Affairs* 33 (1): 45–60.
- Kriss, Peter H., George Loewenstein, Xianghong Wang, and Roberto A. Weber. 2011. "Behind the Veil of Ignorance: Self-Serving Bias in Climate Change Negotiations." *Judgment and Decision Making* 6 (7): 602–15.
- Kunreuther, Howard, Robert Meyer, and Erwann Michel-Kerjan. 2013. "Overcoming Decision Biases to Reduce Losses from Natural Catastrophes." In *Behavioral Foundations of Policy*, edited by E. Shafir. Princeton, NJ: Princeton University Press.
- Kupperman, Karen Ordahl. 1982. "The Puzzle of the American Climate in the Early Colonial Period." *American Historical Review* 87 (5): 1262–89.
- Lange, Andreas, Andreas Löschel, Carsten Vogt, and Andreas Ziegler. 2010. "On the Self-Interested Use of Equity in International Climate Negotiations." *European Economic Review* 54 (3): 359–75.
- Larrick, Richard P., and Jack B. Soll. 2008. "The MPG Illusion." *Science* 320 (5883): 1593–94.
- Leiserowitz, Anthony A. 2004. "Day after Tomorrow: Study of Climate Change Risk Perception." *Environment: Science and Policy for Sustainable Development* 46 (9): 22–39.
- . 2006. "Climate Change Risk Perception and Policy Preferences: The Role of Affect, Imagery, and Values." *Climate Change* 77: 45–72.
- Loewenstein, George F., Elke U. Weber, Christopher K. Hsee, and Ned Welch. 2001. "Risk as Feelings." *Psychological Bulletin* 127 (2): 267.
- Marx, Sabine M., and Elke U. Weber. 2012. "Decision Making under Climate Uncertainty: The Power of Understanding Judgment and Decision Processes." In *Climate Change in the Great Lakes Region: Navigating an Uncertain Future*, edited by Thomas Dietz and David Bidwell, 99–128. East Lansing: Michigan State University Press.
- Milkman, K. L., J. Beshears, J. J. Choi, D. Laibson, and B. C. Madrian. 2011. "Using Implementation Intentions Prompts to Enhance Influenza Vaccination Rates." *Proceedings of the National Academy of Sciences* 108 (26): 10415–20.
- Newell, Richard G., and Juha V. Siikamäki. 2013. "Nudging Energy Efficiency Behavior: The Role of Information Labels." Working Paper 19224, National Bureau of Economic Research, Cambridge, MA.
- Nickerson, David W., and Todd Rogers. 2010. "Do You Have a Voting Plan? Implementation Intentions, Voter Turnout, and Organic Plan Making." *Psychological Science* 21 (2): 194–99.
- Norgaard, Kari Marie. 2009. "Cognitive and Behavioral Challenges in Responding to Climate Change." Policy Research Working Paper 4940, World Bank, Washington, DC.
- Nyhan, Brendan, Jason Reifler, Sean Richey, and Gary L. Freed. 2014. "Effective Messages in Vaccine Promotion: A Randomized Trial." *Pediatrics* 133 (4): e835–42.
- Orlove, B. S., and Merit Kabugo. 2005. "Signs and Sight in Southern Uganda: Representing Perception in Ordinary Conversation." *Etnofoor* 18 (1): 124–41.
- Ostrom, Elinor. 2014. "A Polycentric Approach for Coping with Climate Change." *Annals of Economics and Finance* 15 (1): 97–134.
- Perez-Batres, Luis A., Van V. Miller, and Michael J. Pisani. 2011. "Institutionalizing Sustainability: An Empirical Study of Corporate Registration and Commitment to the United Nations Global Compact Guidelines." *Journal of Cleaner Production* 19 (8): 843–51.

- Pew Research Center. 2009. *Modest Support for "Cap and Trade" Policy: Fewer Americans See Solid Evidence of Global Warming*. Washington, DC: Pew Research Center.
- Pichert, Daniel, and Konstantinos V. Katsikopoulos. 2008. "Green Defaults: Information Presentation and Pro-Environmental Behaviour." *Journal of Environmental Psychology* 28 (1): 63–73.
- Rudiak-Gould, Peter. 2013. *Climate Change and Tradition in a Small Island State: The Rising Tide*. London: Routledge.
- Schultz, P. Wesley, Jessica M. Nolan, Robert B. Cialdini, Noah J. Goldstein, and Vidas Griskevicius. 2007. "The Constructive, Destructive, and Reconstructive Power of Social Norms." *Psychological Science* 18 (5): 429–34.
- Shogren, Jason. 2012. "Behavioural Economics and Environmental Incentives." Environment Working Paper 49, OECD, Paris.
- Simcock, Neil, Sherilyn MacGregor, Philip Catney, Andrew Dobson, Mark Ormerod, Zoe Robinson, Simon Ross, Sarah Royston, and Sarah Marie Hall. 2014. "Factors Influencing Perceptions of Domestic Energy Information: Content, Source and Process." *Energy Policy* 65 (Feb.): 455–64.
- Simmons, Beth A. 2009. *Mobilizing for Human Rights: International Law in Domestic Politics*. Cambridge, U.K.: Cambridge University Press.
- Skocpol, Theda. 2013. "Naming the Problem: What It Will Take to Counter Extremism and Engage Americans in the Fight against Global Warming." Paper presented at the Harvard University symposium on the politics of America's fight against global warming, Cambridge, MA, February 14.
- Small, Deborah A., George Loewenstein, and Paul Slovic. 2005. "Can Insight Breed Callousness? The Impact of Learning about the Identifiable Victim Effect on Sympathy." Unpublished manuscript.
- Spence, A., C. Leygue, B. Bedwell, and C. O'Malley. 2014. "Engaging with Energy Reduction: Does a Climate Change Frame Have the Potential for Achieving Broader Sustainable Behaviour?" *Journal of Environmental Psychology* 38: 17–28.
- Spilker, Gabriele. 2012. "Helpful Organizations: Membership in Inter-Governmental Organizations and Environmental Quality in Developing Countries." *British Journal of Political Science* 42 (2): 345–70.
- Sterman, John D. 2011. "Communicating Climate Change Risks in a Skeptical World." *Climatic Change* 108 (4): 811–26.
- Stiglitz, Joseph, Amartya Sen, and Jean-Paul Fitoussi. 2009. "The Measurement of Economic Performance and Social Progress Revisited." *Reflections and Overview*. Paris: Commission on the Measurement of Economic Performance and Social Progress.
- Stocker, T. F., and others. 2013. "Technical Summary." In *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by T. F. Stocker, D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Bosch Hung, A. Nauels, Y. Xia, V. Bex, and P. M. Midgley, 33–115. Cambridge, U.K., and New York: Cambridge University Press.
- Suarez, Pablo, and Anthony Patt. 2004. "Cognition, Caution, and Credibility: The Risks of Climate Forecast Application." *Risk Decision and Policy* 9 (1): 75–89.
- Sunstein, Cass R. 1996. "On the Expressive Function of Law." *University of Pennsylvania Law Review* 144 (5): 2021–53.
- . 2013. "Behavioral Economics, Consumption, and Environmental Protection." Regulatory Policy Program Working Paper RPP-2013-19, Mossavar-Rahmani Center for Business and Government, Harvard Kennedy School, Harvard University, Cambridge, MA.
- Sunstein, Cass R., and Lucia A. Reisch. 2013. "Green by Default." *Kyklos* 66 (3): 398–402.
- Szafran, Robert F., Jerry L. Williams, and Jeffery E. Roth. 2013. "If Local Weather Was Our Only Indicator: Modeling Length of Time to Majority Belief in Climate Change." *Simulation and Gaming* 44 (2/3): 409–26.
- Tversky, A., and D. Kahneman. 1982. "Evidential Impact of Base Rates." In *Judgment under Uncertainty: Heuristics and Biases*, edited by D. Kahneman, P. Slovic, and A. Tversky, 153–62. Cambridge, U.K.: Cambridge University Press.
- U.S. Department of Energy. 2013. "Assessment of Demand Response and Advanced Metering." Staff Report, Federal Energy Regulatory Commission, U.S. Department of Energy, Washington, DC.
- Weber, Elke U. 1997. "Perception and Expectation of Climate Change." In *Psychological Perspectives to Environmental and Ethical Issues in Management*, edited by D. Messick, M. Bazerman, A. Tenbrunsel, and K. Wade-Benzoni, 314–41. San Francisco: Jossey-Bass.
- West, Collin Thor, Carla Roncoli, and Frederic Ouattara. 2008. "Local Perceptions and Regional Climate Trends on the Central Plateau of Burkina Faso." *Land Degradation and Development* 19 (3): 289–304.
- World Bank. 2009. *World Development Report 2010: Development and Climate Change*. Washington, DC: World Bank.
- . 2012. *Turn Down the Heat: Why a 4°C Warmer World Must Be Avoided*. Washington, DC: World Bank.

Spotlight 5

Promoting water conservation in Colombia

Behind every intervention lies an assumption about human motivation and behavior. When a tunnel providing water to the city of Bogotá, Colombia, partially collapsed in 1997, triggering a water shortage, the city government declared a public emergency and initiated a communication program to warn inhabitants of the threat of a crisis: 70 percent of the city would be left without water if current water use was not reduced.

The city's strategy was based on the assumption that if individuals were informed of the situation, they would adjust their behavior and reduce usage—after all, no one wants to be without water. But the assumption was wrong. In fact, the city's strategy *increased* water consumption. Many people did not change their behavior because they did not think they could make a difference and did not know which steps were most important. Some people even started to stockpile water.

Recognizing the mistake in its assumptions, the city government changed its strategy (Guillot 2014). First, the government reminded people to take action by conserving water at times when they were most likely to overuse it. Stickers featuring a picture of a statue of San Rafael—which was the name of the emergency reservoir the city was relying on after the tunnel collapse—were distributed throughout the city. People were asked to place a sticker by the faucet that a particular household, office, or school used most frequently. The stickers made the need to conserve water at all times salient. Daily reports of the city's water consumption were prominently published in the country's major newspapers. The reports became a part of public discussions about the emergency.

Second, the city government launched engaging and entertaining campaigns to teach individuals the most effective techniques for household water conservation. The campaigns contained memorable slogans and organized 4,000 youth volunteers to go throughout the city to inform people about the emergency and teach them effective strategies to reduce consumption (*Formar Ciudad* [city development plan], 1995–97). The mayor himself appeared in a TV ad taking a shower with his wife, explaining how the tap could be turned off while soaping and suggesting taking showers in pairs. Catholic priests were explicitly asked to invite their communities to join the cooperative efforts, which, in a religious country, proved to be particularly effective.

A change in strategy, building on conditional cooperation, helped create a new social norm to conserve.

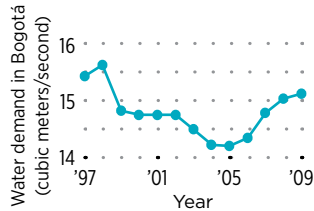
Third, the city government publicized information about who was cooperating and who was not. The chief executive officer of the water company personally awarded households with exceptional water savings a poster of San Rafael with the legend, "Here we follow a rational plan for using the precious liquid." These awards were made visible in the media. Three months later, when a second tunnel collapsed in the reservoir, the city imposed sanctions for *despilfarradores* (squanderers), those with the highest levels of overconsumption. While

Figure S5.1 The story of Bogotá's 1997 water supply crisis

In January 1997, a tunnel connecting Bogotá, the capital of Colombia, to its main supply of fresh water partially collapsed, leaving the city dependent on a small emergency reservoir.

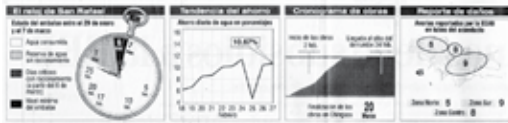
An emergency was declared.

Water consumption at first increased as citizens stockpiled water. Eventually, the city's strategy led to a decrease in water consumption. Water consumption then stayed low for several years.



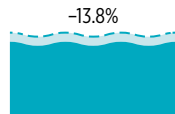
Mayor Antanas Mockus launched measures to change conservation norms among citizens.

Daily reports in newspapers became references for public discussion and featured personal experiences of citizens' conservation efforts. The mayor even showered with his wife in a TV ad to demonstrate a water-reduction strategy.

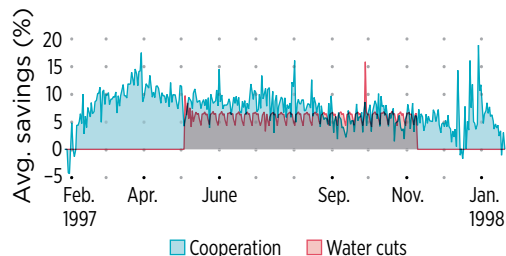


Source: *El Espectador* (Bogotá), February 28, 1997, A6.

Citywide water savings peaked at 13.8% after 8 weeks.



Per capita water usage remained lower than precrisis levels for more than a decade even when water cuts were implemented after a second tunnel collapsed. This suggests that the new social norms around conservation persisted over time.



the sanctions were minor—squanderers had to participate in a water-saving workshop and were subject to an extra day of water cuts—they were nevertheless effective because they targeted highly visible actors. Car-washing businesses, although collectively not a major source of water waste, were the primary targets.

The assumption underlying the new strategy was that conservation would improve if the city created a greater scope for social rewards and punishments that helped to reassure people that achieving the public good—continued access to water—was likely (see chapter 2 for a fuller discussion of the dynamic of conditional cooperation, which may have undergirded the success of the city's revised strategy). This time, the assumption was correct. The change in strategy helped to create a social norm of water conservation. By the eighth week of the campaign, citywide water savings had significantly exceeded even the most optimistic technical predictions. Moreover, the reductions in water use persisted long after the tunnel was repaired and the emergency had been addressed (see figure S5.1).

This case study from Bogotá provides a real-world example of how interventions that take into account conditional cooperation may be useful for achieving policy goals.

Reference

Guillot, Javier. 2014. "Achieving Long-Term Citywide Cooperation in Water Consumption Reduction: The Story of Bogotá's 1997 Water Supply Crisis." Background note prepared for the *World Development Report 2015*.

PART 3

Improving the work of
development professionals

CHAPTER 10

The biases of development professionals

Experts, policy makers, and development professionals are also subject to the biases, mental shortcuts (heuristics), and social and cultural influences described elsewhere in this Report. Because the decisions of development professionals often can have large effects on other people's lives, it is especially important that mechanisms be in place to check and correct for those biases and influences. Dedicated, well-meaning professionals in the field of development—including government policy makers, agency officials, technical consultants, and

and the beliefs and attitudes that shape their lives. A deeper understanding of the context yields policies that more accurately “fit” local conditions and thus have a higher probability of succeeding. To put this assumption to the test, the 2015 team for the *World Development Report* (WDR 2015 team) collected data examining how World Bank staff perceived the beliefs and attitudes of the poor across several measures and compared their findings against the actual beliefs and attitudes of a representative sample of individuals in developing countries.

Development professionals can be susceptible to a host of cognitive biases, can be influenced by their social tendencies and social environments, and can use deeply ingrained mindsets when making choices.

frontline practitioners in the public, private, and non-profit sectors—can fail to help, or even inadvertently harm, the very people they seek to assist if their choices are subtly and unconsciously influenced by their social environment, the mental models they have of the poor, and the limits of their cognitive bandwidth. They, too, rely on automatic thinking and fall into decision traps.

Perhaps the most pressing concern is whether development professionals understand the circumstances in which the beneficiaries of their policies actually live

It is perhaps uncontroversial to suggest that World Bank staff have a different worldview from others. World Bank staff are highly educated and relatively wealthier than a large proportion of the world. However, it is interesting to note that while the goal of development is to end poverty, development professionals are not always good at predicting how poverty shapes mindsets. For example, although 42 percent of Bank staff predicted that most poor people in Nairobi, Kenya, would agree with the statement that “vaccines are risky because they can cause sterilization,” only 11 percent of the poor people sampled in Nairobi actually agreed with that statement. Overall, immunization coverage rates in Kenya are over 80 percent. There were also no significant differences in the responses of Bank staff in country offices and those in headquarters or in responses of staff working directly on poverty relative to staff working on other issues. This finding suggests the presence of a shared mental model, not tempered by direct exposure to poverty. The disparity represents not simply knowledge gaps on the part of development professionals but a mistaken set of mental models for how poverty can shape the mindsets of poor people. This is crucially important since how development

professionals perceive the poor affects how development policy is created, implemented, and assessed.

This chapter focuses on the kinds of automatic thinking that can compromise the effectiveness of development professionals in light of the three main insights discussed throughout this Report. It argues that development professionals are susceptible to a host of cognitive biases, are influenced by their social tendencies and social environments, and use deeply ingrained mindsets when making choices. This chapter reviews four kinds of challenges and the associated decision traps that affect them: the use of shortcuts (heuristics) in the face of complexity; confirmation bias and motivated reasoning; sunk cost bias; and the effects of context and the social environment on group decision making. The challenge that development organizations face is how to develop better decision-making procedures and policy processes to mitigate these problems. Improving these decision-support environments can have a direct impact on policy outcomes simply by eliminating errors of reasoning.

Complexity

Development is a complex, messy, conflict-ridden process. Its complexity may affect the kinds of decisions made by development professionals. The more complex a decision is, the more difficult it is to make. However, even the decisions in areas in which people have expertise can be affected by the complexity of the decision-making environment. As the number of options increases, people's ability to accurately evaluate the different options declines.

This point is demonstrated in an experiment by Redelmeier and Shafir (1995). Family physicians were mailed a survey outlining a medical situation: a patient suffered with chronic hip pain, and doctors were asked to decide whether to put their patient on new medication. In the case received by the first half of doctors in the sample, all prior drug treatments had failed. The problem was described in roughly this way (some language is paraphrased for brevity, and labels are added for emphasis):

You decide to refer the patient to an orthopedic consultant for consideration for hip replacement surgery. He agrees to this plan. However, before sending him away, you learn that there is one medication (ibuprofen) that the patient has not yet tried. Your task is to choose between two alternatives:

1. *Ibuprofen + referral.* Refer to orthopedics and also start ibuprofen.

2. *Just referral.* Refer to orthopedics and do not start any new medication.

The second half of doctors received a scenario that differed in just one respect. The doctor learned, just before sending the patient to an orthopedic consultant, that there are two drug treatments (ibuprofen and piroxicam) that the patient has not yet tried. The respondent's task in the second version was to choose among three options:

1. *Ibuprofen + referral.* As above.
2. *Piroxicam + referral.* Refer to orthopedics and also start piroxicam.
3. *Just referral.* As above.

More physicians chose the simplest option—"just referral"—in the second, more complicated version than in the basic version (72 percent versus 53 percent). Increasing the complexity of the problem may have led physicians to skip over possibly effective medicines altogether. This happened to highly educated and experienced professionals who are dedicated to their patients' health. Development professionals who design and implement development projects grapple with highly complex problems, too. That very complexity gives rise to a special set of challenges (Ramalingam 2013).

Many situations offer not only several options but also multiple ways of understanding those options. How policy options are framed has a large effect on behavior. This is known as the *framing effect* (see chapters 1 and 3). One of the most famous demonstrations of the framing effect was done by Tversky and Kahneman (1981). They posed the threat of an epidemic to students in two different frames, each time offering them two options. In the first frame, respondents could definitely save one-third of the population or take a gamble, where there was a 33 percent chance of saving everyone and a 66 percent chance of saving no one. In the second frame, they could choose between a policy in which two-thirds of the population definitely would die or take a gamble, where there was a 33 percent chance that no one would die and a 66 percent chance that everyone would die. Although the first and second conditions frame outcomes differently—the first in terms of gains, the second in terms of losses—the policy choices are identical. However, the frames affected the choices students made. Presented with the gain frame, respondents chose certainty; presented with a loss frame, they preferred to take their chances. The WDR 2015 team replicated the study with World Bank staff and found the same effect. In the gain

frame, 75 percent of World Bank staff respondents chose certainty; in the loss frame, only 34 percent did. Despite the fact that the policy choices are equivalent, how they were framed resulted in drastically different responses.

Faced with complex challenges, development agencies seek to bring a measure of uniformity and order through the widespread application of standard management tools—a process Scott (1998) calls “thin simplification.” This approach brings its own potential for error in the opposite direction, as discussed later in this chapter.

One promising strategy for constructively addressing complexity stems from the work of Weick (1984), who proposes breaking down seemingly intractable issues into more discrete problems, thereby generating an incremental set of “small wins.” Argyris (1991) extends this insight to stress the importance, for organizations, of a kind of learning in which not only the means used but also the ends sought and strategies employed are reexamined critically; that effort entails learning not only from success but also from failure. More recent work by Andrews, Pritchett, and Woolcock (2013) proposes incorporating such an approach more systematically into development operations. Rather than trying to grapple with problems at higher orders of abstraction or defining problems as the absence of a solution (for example, inadequately trained teachers), decision makers instead are urged to pursue a concerted process of problem identification: the most basic step is to identify the problem correctly. Then development professionals can work incrementally with counterparts to define a problem such that it becomes both an agreed-upon binding constraint to reaching a certain set of goals *and* a manageable challenge that allows for some initial progress (for example, enhancing student learning in the classroom).

Confirmation bias

When development professionals engage with projects and other development problems, they bring with them disciplinary, cultural, and ideological priors, leaving them susceptible to confirmation bias. *Confirmation bias* refers to the selective gathering of (or the giving of undue weight to) information in order to support a previously held belief (Nickerson 1998) and to the neglect (or discounting) of information that does not support those previously held beliefs. It arises when individuals restrict their attention to a single hypothesis and fail to actively consider alternatives (Fischhoff and Beyth-Marom 1983). Once a particular hypothesis has been accepted, individuals selectively look for information to support it (see, among others, Wason 1960, 1977;

Wetherick 1962). Confirmation bias may arise from a fundamental tendency of human beings to use reason for the purposes of persuading others and winning arguments (Mercier and Sperber 2011).

Recent research has shown that cultural and political outlooks affect how individuals interpret data. Kahan and others (2013) present respondents with two versions of identical data—one framed in the context of a study on the effectiveness of a skin cream, the other on the effectiveness of gun control laws. Respondents are randomly assigned to one of the two frames. The study assesses the numeracy of respondents, as well as their cultural and ideological outlooks. The authors find that for the case of skin cream, as might be expected, the likelihood of correctly identifying the answer supported by the data goes up as numeracy increases and is not affected by cultural and political outlooks. However, in the case of gun control laws, respondents are more likely to get the right answer when that answer corresponds to their cultural views than when it does not. Moreover, when the answer in the gun control law framing is consistent with ideology, numeracy helps (by boosting the odds of getting the answer right), but when the answer is inconsistent with ideology, numeracy has minimal impact. On topics that are important for social and political identity, individuals tend to engage in *motivated reasoning*, the tendency to arrive at conclusions they like.

To see if cultural cognition of this kind affects development experts, and not only the general population used in the study by Kahan and others (2013), the WDR 2015 team implemented a very similar test by surveying World Bank staff.¹ The team replicated the skin cream (neutral) frame, but replaced the gun control law frame with one about the impact of minimum wage laws on poverty rates—a controversial topic among development economists, whose views on the issue appear to be related to broader disciplinary and political identities.

Using a sample of professional-level World Bank staff, stationed both in country offices and the Washington, D.C., headquarters, the team found that respondents are significantly less accurate when interpreting data on minimum wage laws than when interpreting data on skin cream (figure 10.1), even though the data presented are identical in each scenario. The differences in accuracy are not explained by differences in cognitive ability or seniority. As in the study by Kahan and others (2013), there is, however, evidence of a relationship between ideology and accuracy. Respondents were asked whether they were more likely to support the statement “Incomes should be made more equal” or the statement “We need larger income differences

as incentives for individual effort.” Respondents supporting income equality were significantly less accurate when the data presented showed that minimum wage laws raise poverty rates than they were when minimum wage laws were shown to lower poverty rates. This study illustrates that ideological outlooks affect the reasoning of highly educated development professionals. Like most people, they tend to come up with reasons for why the evidence supports their own ideological commitments.

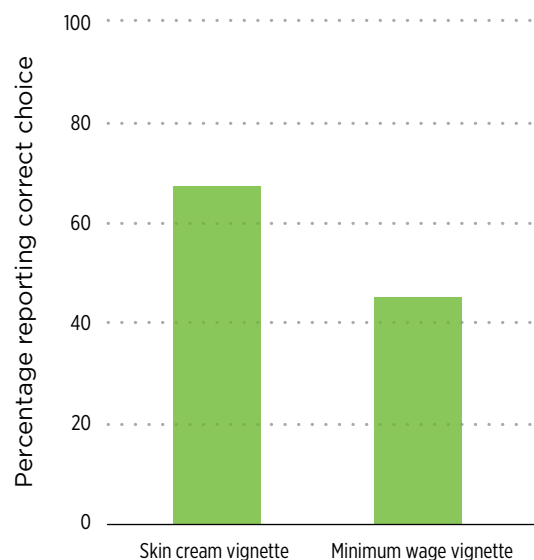
What can be done to overcome confirmation bias? One of the best ways is to expose people to opposing views and invite them to defend their own. Individuals readily argue and defend their views when exposed to opposition, but in the absence of a social setting that forces them to argue, individuals usually fall back on their prior intuitions. Social settings can motivate people to produce more effective arguments and, espe-

cially, to evaluate critically the arguments that others make. By creating argumentative and deliberative environments, organizations can reduce the risk of confirmation bias. Crucially, these processes require exposing people to individuals with different viewpoints. Discussions among people who share similar views can lead them to become more extreme in their positions, as Schkade, Sunstein, and Hastie (2010) have shown. In those circumstances, hearing from others only confirms the biases that people hold. The failure to confront individuals with differing views can lead to consistently biased decision making (box 10.1).

In short, group deliberation among people who disagree but who have a common interest in the truth can harness confirmation bias to create “an efficient division of cognitive labor” (Mercier and Sperber 2011). In these settings, people are motivated to produce the best argument for their own positions, as well as to critically evaluate the views of others. There is substantial laboratory evidence that groups make more consistent and rational decisions than individuals and

Figure 10.1 How development professionals interpreted data subjectively

Identical sets of data were presented to World Bank staff, but in different frames. In one frame, staff were asked which of two skin creams was more effective in reducing a rash. In the other, they were asked whether or not minimum wage laws reduce poverty. Even though the data were identical, World Bank respondents were significantly less accurate when considering the data for minimum wage laws than for skin cream. Views on whether minimum wage laws lower poverty tend to be related to cultural and political outlooks. Respondents supporting income equality were significantly less accurate when the data presented conflicted with their outlooks (and showed that minimum wage laws raise poverty rates) than they were when the data corresponded to their outlooks (and showed that minimum wage laws lower poverty rates).



Source: WDR 2015 team survey of World Bank staff.

Because the decisions of development professionals often can have large effects on other people’s lives, it is especially important that mechanisms be in place to check and correct for their biases and blind spots.

are less “likely to be influenced by biases, cognitive limitations, and social considerations” (Charness and Sutter 2012, 158). When asked to solve complex reasoning tasks, groups succeed 80 percent of the time, compared to 10 percent when individuals are asked to solve those tasks on their own (Evans 1989). By contrast, efforts to debias people on an individual basis run up against several obstacles, including the problem that critical thinking skills appear to be domain specific and may not generalize beyond the particular examples supplied in the debiasing efforts (Willingham 2007; Lilienfeld, Ammirati, and Landfeld 2009). Indeed, when individuals are asked to read studies whose conclusions go against their own views, they find so many flaws and counterarguments that their initial attitudes are sometimes strengthened, not weakened (Lord, Ross, and Lepper 1979).

Red teaming is an approach to fighting confirmation bias that has been a standard feature of modern military planning. In red teaming, an outside team challenges the plans, procedures, capabilities, and assumptions of commanders in the context of particular operational environments, with the goal of taking the perspective of partners or adversaries. This process is institutionalized in some military organizations.² Teams specialize in challenging assumptions. The goal is to avoid “groupthink,” uncover weaknesses in existing plans and procedures, and ensure that attention is paid to the context. It draws on the idea that individuals argue more effectively when placed in social settings that encourage them to challenge one another.

In a development context, while there may not be adversaries, there are often a variety of stakeholders, each of whom comes with a different set of mental models and potentially different goals and incentives. Institutionalizing teams that review plans in an explicitly argumentative manner offers a greater chance that

plans can be made more effective before resources are wasted. Red teams are institutionally distinct from the policy makers themselves, which creates space for more candor and critique. This approach has already moved beyond military planning and into general government use, particularly for vulnerability analysis. Red teaming encourages a culture of perspective taking and independent adversarial analysis as part of a stakeholder assessment.

This approach is broadly similar to the long-standing work of Fishkin (2009), who has sought to use open deliberative forums (citizens’ juries) to help citizens come to greater agreement (if not consensus) on otherwise polarizing issues. In his forums, citizens with different initial views on controversial issues, such as migration and regional trade agreements, are randomly assigned to groups where they receive presentations by leading researchers on the empirical evidence in support of varying policy positions. Participants are encouraged to pose questions to presenters and to

Box 10.1 The home team advantage: Why experts are consistently biased

Even the best-trained, most experienced, and seemingly impartial professionals can make systematically biased decisions. In a comprehensive empirical analysis of major sports leagues, with important implications for other professional arenas, Moskowitz and Wertheim (2011) find that in all such sports, and especially during critical moments (for example, at the end of close championship games), referees consistently favor the home team. Even though the referees in such games are the best available—and, significantly, sincerely believe themselves to be utterly impartial in performing their duties in all circumstances—they nonetheless make decisions that give the home team a clear advantage. At the end of soccer games, for example, referees have discretionary authority to add a few extra minutes corresponding to the amount of time lost due to injuries and substitutions; they routinely add more time when the home team is behind and less time when it is ahead. Similarly, in the final innings of championship baseball games, marginal calls on whether particular pitches are called as strikes or balls are made in favor of the home team. Under pressure, in other words, even the best professionals make demonstrably biased decisions. Why is this? Does this process play out in public policy? If so, what can be done about it?

Notionally independent experts make consistently biased decisions at decisive moments because they want to appease the passions—most especially, to avoid the wrath—of those closest to them, Moskowitz and Wertheim (2011) conclude. Put differently, the home team advantage stems not so much from home team players being more familiar with the idiosyncrasies of their environment or the extra effort players make in response to being cheered on by their more numerous and vocal supporters, but from those same supporters exerting pressure on otherwise impartial officials to make fine, but deeply consequential, judgment calls in their favor. No one wants to incur the displeasure of those around them.

This dynamic goes a long way toward explaining the failure of otherwise competent and experienced regulatory officials in public finance to adequately anticipate and respond to the global financial crisis of 2008, Barth, Caprio, and Levine (2013) argue. In this case, the “home team” is—or became, over time—the private sector banks and allied financial industries, whose senior officials move in a “revolving door” between the highest levels of the public and private sectors (for example, between the U.S. Federal Reserve and Goldman Sachs). In social circles and professional gatherings, the people public officials thus most frequently encountered—the people whose opinions were most proximate and salient to these officials—were those from the private sector. Without needing to question the professional integrity or competence of financial sector regulators, the public interest—and in particular, ordinary citizens whose transactions depend on the security and solvency of the banks holding their deposits and mortgages—became, in effect, the perpetual “away team,” with no one adequately voicing and protecting their interests. When the pressure intensified—when the system started to implode—only the home team continued to get the key calls.

These types of problems cannot be adequately addressed by providing “more training” or “capacity building” for individuals, since this research shows compellingly that even the “best and brightest” favor the “home team,” however that team comes to manifest itself. A partial solution in professional sports, at least, has been the introduction of instant replay, which has been shown empirically to improve the objective decision making of referees: when referees know their actions are subject to instant and public scrutiny, often from multiple angles, their bias for the home team markedly declines. This chapter later presents approaches in which development professionals might learn to view topics from multiple angles and in which they, as well as others, examine and observe one another, thus exposing and mitigating ingrained biases.

explore the finer points through discussion with one another. Fishkin's approach, which has been carried out in dozens of different country contexts on different policy issues, has been used to help citizens arrive at more informed and reasoned views and to reduce the degree of polarization between competing policy viewpoints.

Note that these approaches differ from standard peer review processes in development organizations. For the most part, those who prepare concept notes, appraisal documents, or program assessments are allowed to nominate their peer reviewers, thereby infusing the entire process with a susceptibility to confirmation bias. Authors will inevitably select sympathetic like-minded colleagues to review their work, who in turn not only are likely to assess the work through a similar lens but also know that, in time, the roles are likely to be reversed. The risk of confirmation bias could be reduced by including at least one "double-blind" peer reviewer in the assessment process: that is, a person drawn at random from an appropriate pool of "knowledgeable enough" reviewers, whose identity would remain anonymous and who (in principle) would not know the name(s) of the author(s) of the work he or she is assessing.

A final and related option is to require a stronger empirical case to be made up front about the likely impacts of the proposed intervention, following from a clearly stated theory of change. Such a process would need to make a serious effort to integrate—and where necessary reconcile—evidence pointing in different directions (see Ravallion 2011). Agencies and development institutions like the World Bank should be exercising due diligence in this domain by engaging in a more robust debate with scholarly findings, where such findings exist. However, this approach should not imply that the only proposals allowed to go forward are those formally and unambiguously verified by elite research. In addition to questions concerning the external validity of studies, this approach would bias development projects toward areas in which it is easier to conduct high-impact research. It would also stifle innovation (which by definition has uncertain impacts initially) and set unreasonable standards for functioning in the contexts in which most development work takes place. Nor should this approach imply that particular methodologies are inherently privileged over others when determining "what works" (or is likely to work in a novel context or at a larger scale).

Sunk cost bias

Policy makers can also be influenced by the *sunk cost bias*, which is the tendency of individuals to continue a project once an initial investment of resources has

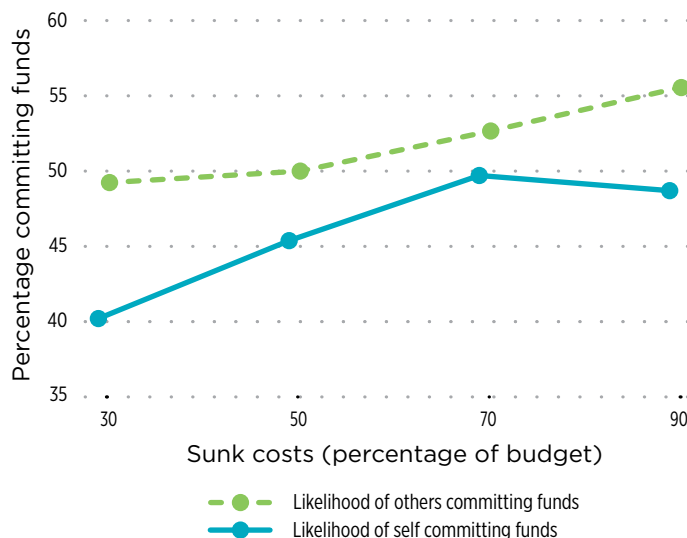
been made (Arkes and Blumer 1985). To stop a project is to acknowledge that past efforts and resources have been wasted; thus the bias may arise from the cultural admonition not to appear wasteful (even though, paradoxically, continuing a project that is questionable may incur needless costs). Actors less concerned with appearing wasteful, such as children and nonhuman animals, do not exhibit sunk cost bias (Arkes and Ayton 1999). Examples in the field of engineering illustrate particularly well an escalating commitment to a "failing course of action," where individuals continue to support a project and cite sunk costs as the major reason for doing so (Keil, Truex, and Mixon 1995). The implications of this line of research are that policy makers are particularly sensitive to policies already put in action. Being held politically accountable for risk taking explains some of the sunk cost effects, particularly the reluctance to experiment and try new ideas.

The WDR 2015 team investigated the susceptibility of World Bank staff to sunk cost bias. Surveyed staff were randomly assigned to scenarios in which they assumed the role of task team leader managing a five-year, \$500 million land management, conservation, and biodiversity program focusing on the forests of a small country. The program has been active for four years. A new provincial government comes into office and announces a plan to develop hydropower on the main river of the forest, requiring major resettlement. However, the government still wants the original project completed, despite the inconsistency of goals. The difference between the scenarios was the proportion of funds already committed to the project. For example, in one scenario, staff were told that only 30 percent (\$150 million) of the funds had been spent, while in another scenario staff were told that 70 percent (\$350 million) of the funds had been spent. Staff saw only one of the four scenarios. World Bank staff were asked whether they would continue the doomed project by committing additional funds.

While the exercise was rather simplistic and clearly did not provide all the information necessary to make a decision, it highlighted the differences among groups randomly assigned to different levels of sunk cost. As levels of sunk cost increased, so did the propensity of the staff to continue. The data show a statistically significant linear trend in the increase in likelihood of committing remaining funds. Staff also perceived their colleagues as being significantly more likely to continue to commit the remaining funds to the dying project (figure 10.2). This divergence between what individual staff say about their own choices and what they say about how other staff will behave is consistent with the existence of a social norm for disbursing funds for a dying project.

Figure 10.2 How World Bank staff viewed sunk costs

World Bank staff were asked if they would commit remaining funds to a dying project. Staff were more likely to commit additional funds as the sunk costs increased. They also perceived their colleagues as being more likely to commit funds than they themselves were, which is consistent with the existence of a social norm for disbursing funds for a dying project.



Source: WDR 2015 team survey of World Bank staff.

How might organizations mitigate sunk cost effects? The basic principle is to avoid the judgment that to cut off a dying project is to waste resources. When individuals can justify why they have “wasted” resources, they are less likely to be trapped by sunk costs (Soman and Cheema 2001). It can be easier to justify cutting off a project when there are no untoward career consequences for doing so and when criteria for ending a project are clear and public. For development organizations, there are important implications from recognizing that development is complex, that many projects will fail, and that learning is as important as investing.

The effects of context on judgment and decision making

The biases policy makers themselves may hold about the population they are intending to serve are also very important. When designing policies appropriate for a target group, policy makers must make some assumptions about this group. At a basic level, knowing whether the group’s literacy rate is low or high will guide the design of policies (for example, road safety signs may use numbers and pictures rather than letters if some drivers in the group cannot read). Less intuitively, knowing how poor people’s labor supply would change in response to a transfer is useful in

choosing between welfare-oriented and labor-oriented approaches to combating poverty. Most fundamentally, to take a policy stance, policy makers must have some knowledge about the decision context that exists in the population. In the absence of knowledge or objective interpretation of that knowledge, automatic thinking, as well as thinking unduly influenced by social context and cultural mental models, may prevail.

In this regard, designing and implementing policies combating poverty are difficult in three respects. First, most policy makers have never been poor and thus have never personally experienced the psychological and social contexts of poverty or scarcity (see chapter 4); as a result, their decision-making processes may differ from those of people living in poverty. An example of this gap is how development professionals, like other well-off people, think about trade-offs between time and money. The poor often exhibit more classically rational behavior when it comes to making such trade-offs, as Mullainathan and Shafir (2013) have argued. When presented with an option to save \$50 on a \$150 purchase by driving 45 minutes, a poor person would take the option. He or she would also take the option for a \$50 savings on higher-priced goods. Wealthier people, however, tend to be less inclined to save \$50 as the base price goes up. Although the deal is always the same—\$50 for 45 minutes—the percentage discount goes down. The wealthy respond to the discount rate, whereas the poor respond to the absolute value of the monetary savings.

The WDR 2015 team replicated this result with World Bank staff. In this experiment, respondents were randomly assigned to one of three different prompts. In each prompt, the basic setup was identical: a \$50 savings in exchange for a 45-minute drive. However, the only piece of information that changed was the price of the object (in this case, a watch). As the price of the watch increased (that is, the discount rate dropped), World Bank staff were significantly less likely to report traveling to the store. Staff valued time and money differently from the way the people whose lives they were working to improve valued them. No income groups in Nairobi, Kenya, who were asked this question changed their answers when the price of the object (in this case, a cell phone) increased (see spotlight 3).

Second, even the most well-intentioned and empathic policy maker is a representative of an organization and a professional community that deploy particular language, assumptions, norms, and resources. These may be so familiar to policy makers that they are unaware of how alien they may appear to outsiders and those they are ostensibly trying to serve. Development initiatives and discourse are replete with phrases

espousing the virtues of “participation,” “empowerment,” and “accountability,” for example, but as articulated by development practitioners, these concepts largely reflect the sensibilities of donor agencies and urban elites (Gauri, Woolcock, and Desai 2013), who tend to use them in confined ways. These may be different from how prevailing systems of order and change are experienced in, say, a given village in rural Ghana or Indonesia (Barron, Diprose, and Woolcock 2011). Even among professionals, academic researchers take it as a given that development policy should be “evidence-based,” and on this basis they proceed to frame arguments around the importance of conducting “rigorous evaluation” to assess the “effectiveness” of particular interventions. In contrast, seasoned practitioners tend to regard evidence as one factor among many shaping what policies become politically supportable and implementable and thus, on the basis of these latter criteria, are deemed “effective” (box 10.2).

Third, development policy makers and professionals usually are not familiar with the mental models and mindsets that poor people use. Policy makers are likely to live in different places from the poor, to send their children to different schools, to receive medical treatment in different hospitals, to travel on different modes of transport, and to have much stronger incentives to socialize with and listen to those who are more likely to be able to support their policy agenda and political career. One constructive response to this problem has been “village immersion” programs, in which senior officials commit to living the lives of their constituents for a week, working alongside them and eating in their houses, the better to experience firsthand what specific problems they encounter (Patel, Isa, and Vagneron 2007). In a broader sense, the widening inequality in society makes it less likely that people from different walks of life will encounter one another, even inhabit the same “moral universe” (Skocpol 1991; World Bank 2005), rendering the preferences and aspirations of marginalized groups even more marginal. The resulting difference in mindsets between rich and poor can manifest itself in very concrete ways (box 10.3).

Development professionals usually interpret the local context as something that resides “out there” in developing countries—as something that policy makers and practitioners should “understand” if they are to be effective. Taking local contexts seriously is crucial (Rao and Walton 2004). Development professionals must be constantly aware that development programming cannot begin from scratch. Every human group has a system of some kind already in place for addressing its prevailing challenges and opportunities. The introduction of development projects can bolster or disrupt

the coherence, effectiveness, and legitimacy of those prevailing systems.

What can be done to close the gap between the mental models of development professionals and the “beneficiaries” of their “interventions”? Lessons from the private sector may be useful. Consider the high-technology sector, where experts attempt to create complex products for “typical” consumers. Since designers in this industry have very specific training and are constantly immersed in the world of product design, the lens through which they view the world is often quite different from that of a common user who lacks knowledge of the theoretical principles and necessary trade-offs guiding design processes. Moreover, designers spend countless hours with their products, while users encounter them only when they are trying to satisfy some particular need. The result can be substantial underutilization of otherwise highly capable products and programs (such as all the buttons on remote control devices to operate televisions) or, at worst, abandonment in the face of a futile, frustrating experience.

One approach to meeting this challenge is known in the software industry as *dogfooding*. This expression comes from the colloquialism, “Eat your own dog food”; it refers to the practice in which company employees

Box 10.2 A clash of values between development professionals and the local populace: Agricultural reform in Lesotho

An agricultural modernization program initiative in Lesotho provides an illustration of widely divergent views of value between development professionals and the local populace. In this landlocked nation, development professionals saw the country’s grasslands as one of the few potentially exploitable natural resources and its herds of grazing animals as a “traditional” practice ripe for transformation by a “new” modern economy. Necessary changes, planners believed, included controlled grassland use, new marketing outlets for surplus animals, and more productive breeds. This seems straightforward enough from an economic point of view. But within a year of the land being fenced off for the exclusive use of more “commercially minded” farmers, the fence was cut, the gates had been stolen, and the land was being freely grazed by all. Moreover, the association manager’s office had been burned down, and the program officer in charge was said to be in fear for his life. What happened here?

The mental models of the development professionals regarding the “value” of various agricultural practices failed to take account of unique but critical features of the Lesotho economy. Planners viewed animals as simple commodities. But community members saw them very differently. Grazing animals were excluded from the otherwise modern and highly monetized economy, carrying an intrinsic value of their own that was embedded within a very different set of rules—sometimes referred to as “the bovine mystique”—that prioritized owning cattle over cash.

Source: Ferguson 1994.

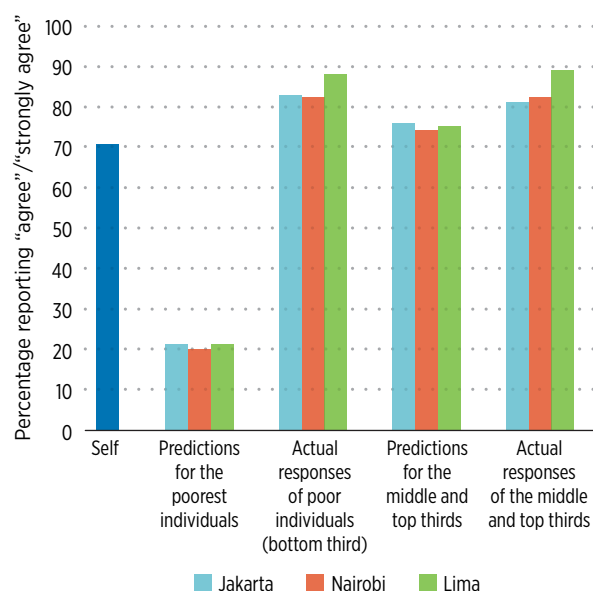
Box 10.3 It may be difficult for development professionals to accurately predict the views of poor people

As part of the research for this Report, data were collected both from development professionals within the World Bank and from individuals in the bottom, middle, and top thirds of the wealth distribution in the capital cities of selected developing countries (Jakarta, Indonesia; Nairobi, Kenya; and Lima, Peru). The data reveal a large gap between how development professionals perceive the context of poverty and how the bottom third views it. In the three figures that follow, this difference can be seen clearly in three distinct areas crucial to development: whether the bottom third thinks of themselves as having control over their lives (figure B10.3.1, panel a), how helpless they feel in dealing with the problems in their life (panel b), and their knowledge about health services (their attitudes toward vaccinations, for example) (panel c).

Figure B10.3.1 How World Bank staff predicted the views of poor people

a. Control of the future

Survey question: What happens to me in the future mostly depends on me.



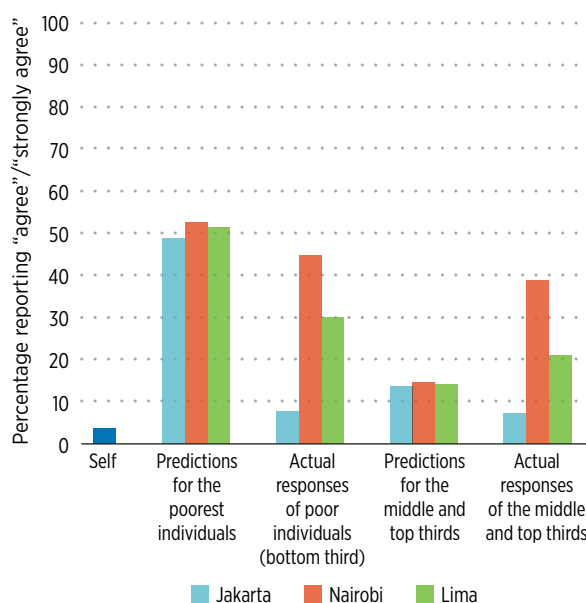
Source: WDR 2015 team survey data.

Panels a and b reveal a large disparity between how development professionals believe poor individuals (bottom third) will answer these questions and how poor individuals in fact answered them. Development professionals imagine that poor individuals are very different from themselves in their self-perceptions, but in fact they are not. In all cases, responses by the bottom and by the middle and top thirds of the income distribution are similar. However, development professionals believe there is a large disparity between the poor and the rest and see themselves as closer to the upper-level groups than to poor individuals.

In another area, development professionals imagine poor individuals to be much more suspicious of vaccines than they actually are (panel c). In each instance, the responses of poor individuals are very close to

b. Helplessness in dealing with life's problems

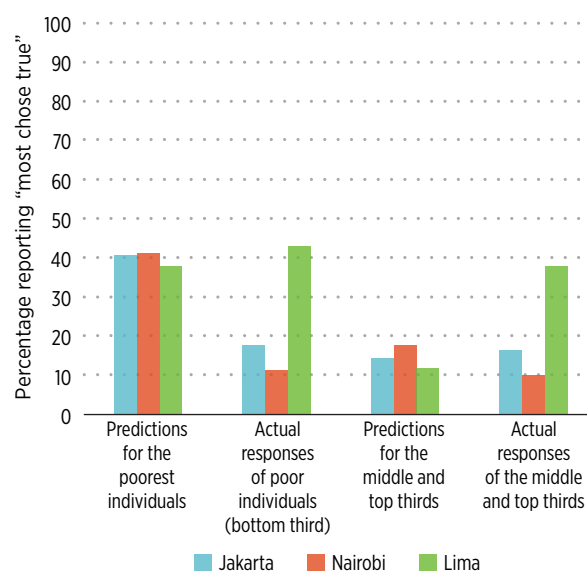
Survey question: I feel helpless in dealing with the problems of life.



Source: WDR 2015 team survey data.

c. The dangers of vaccines

Survey question: Vaccines are risky because they can cause sterilization.



Source: WDR 2015 team survey data.

those of the rest of the population. This finding suggests that development professionals assume that poor individuals are less autonomous, less responsible, less hopeful, and less knowledgeable than they in fact are. These beliefs about the context of poverty shape policy choices. It is important to check these beliefs against reality.

themselves use a product (“eat the dog food”) to work out the kinks before releasing it to the marketplace. The approach turns on the belief that the product (whether dog food, an iPad, or an electronic toothbrush) should be good enough and user-friendly enough for everyone in the company to operate or consume before they expect customers to do so. The key idea driving the dogfooding process is that while a product’s designers are often blind to how user-friendly the product is, other employees—although not exactly typical users—at least bring fresh eyes to the product and are therefore more easily able to spot trouble points, nonintuitive steps, and other impediments. It is very easy to assume that your client is just like you; dogfooding helps bring implicit (and often flawed) assumptions to the surface, to check them against the facts, discover unexpected uses, and identify opportunities for redesigns that better serve everyday customers’ needs. Dogfooding forces developers to reconcile their general, abstract knowledge with local or “situational” practical knowledge and thus raises the odds of generating a successful product. This approach is related to the importance of piloting and testing before wide-scale implementation, ideally with the designers themselves or with a subset of the users to ensure that the product (policy) has maximized effectiveness and efficiency. Chapter 11 discusses this process of piloting and testing in more detail.

Some activities analogous to dogfooding already exist in the public sector.³ Governments can use “green public purchasing” as a means of testing environmental policies and greener products. By experimenting with policies and products within their own organizations, governments might make more informed decisions about how regulations might affect broader public and private markets (see OECD 2003). When the Behavioural Insights Team in the United Kingdom initiated an effort to improve services at employment centers, team members went through the centers themselves to get a better sense of the user experience. Sometimes, however, it is necessary for an organization to go directly to its customers or users to understand how they will behave in certain situations. In such cases, well-structured focus groups can be a useful research tool for giving planners access to the experiential worlds they do not otherwise encounter. They allow policy makers and designers to see the mental models of other people in action so that they can better understand their preferences, attitudes, expectations, and abilities—in the process generating useful insights at reasonable cost. Bringing “experts” into direct contact with “users” enables both parties to gain practical knowledge of how and why the other group behaves in the way it does.

Conclusion

This chapter has sought to explain why good people can make bad decisions. More specifically, it has sought to document four different ways in which development professionals can make consequential mistakes even when they are diligent, sincere, technically competent, and experienced. Largely because of the organizational imperatives within which they and their counterparts operate and the primary reference groups with which they associate most frequently—and thus whose approval they covet (or whose opprobrium they seek to avoid)—such professionals can consistently contribute to outcomes biased against those on whose behalf they are working.

In this sense, development professionals, like professional people everywhere, are likely to make decisions that favor certain groups over others. In the development context—where knowledge, status, and power differentials are rife—this often means that disadvantaged groups face additional hurdles to getting their voices heard, their concerns heeded, and their aspirations realized. Although these biases cannot be fully eliminated, being aware of their presence, their consequences, and the mechanisms and incentives underpinning them is the first step toward addressing them.

While the goal of development is to end poverty, development professionals are not always good at predicting how poverty shapes mindsets.

The second step is to put in place measures that might plausibly help counteract them. This chapter has identified four sources of bad decision making on the part of development professionals: complexity, confirmation bias, sunk cost bias, and the influence of context on judgment and decision making. Each of these can be addressed, at least in part, through organizational measures.

As this Report has shown, because the determinants of behavior are often subtle and hard to detect, better means of detection, starting with asking the right questions, are needed (see chapter 11). This would suggest a more prominent place for investing more extensively in analyses of local social and political economies (to better understand the nature of changing contextual idiosyncrasies).

In the case of confirmation bias, it is crucial to expose individuals to social contexts in which individuals disagree with each other's views but share a common interest in identifying the best policies and programs. This can be done through red teaming major decisions: that is, subjecting the key assumptions and arguments underlying policies to a critical and adversarial process. Other approaches take the form of double-blind peer review and more intense engagement with the scholarly community.

For sunk cost bias, the key is to change the interpretation of a canceled program or project. This involves recognizing that "failure" is sometimes unavoidable in development and encouraging individuals to learn, rather than hide, from it. Indeed, it is often unclear whether apparent futility is really a product of a fundamentally flawed strategy that no manner of persistence or tinkering can fix (and thus should be abandoned) or a product of a strategy that is otherwise fundamentally sound confronting a deeply ingrained problem—like dowry systems or child marriage—that requires courage and commitment for success even to be possible. Crucially, development professionals need to recognize that even failures are opportunities to learn and adapt. The more failures are treated as somewhat expected and as opportunities to learn, the easier it can be to let go of a failing project.

Finally, this chapter has also shown how giving inadequate attention to context can bias key decisions. The decision-making processes, languages, norms, and mental models of development professionals, whether foreign or domestic, differ from those of their clients and counterparts. To address these differences, development professionals can engage in more systematic efforts to understand the mindsets of those they are trying to help. For project and program design, development professionals should "eat their own dog food": that is, they should try to experience firsthand the programs and projects they design.

If the prevalence and effects of these four errors—and the many others discussed in preceding chapters—are as important as this Report suggests, development organizations face the stark choice of "paying now or paying later": they can choose to make considered, strategic investments in minimizing these errors up front, or they can choose to deal with all manner of legal, ethical, political, financial, and public relations disasters that may emerge after the fact. (Neglecting to choose is its own form of choice.) Good social science, hard-won experience, basic professional ethics, and everyday common sense suggest that "an ounce of prevention" is a far preferable course of action for delivering on the World Bank's core agenda and mandate.

Notes

1. The WDR team invited 4,797 World Bank staff (excluding consultants) from all sectors of the World Bank to participate in a survey designed to measure perceptions. The sample was representative of staff working in World Bank headquarters in Washington, D.C., and of country offices across the world. The final number of respondents was 1,850 staff (900 from headquarters and 950 from country offices, yielding a response rate of 38.6 percent), which is well above the 1,079 needed for representativeness.
2. The U.S. military (University of Foreign Military and Cultural Studies 2012) and the U.K. government (United Kingdom, Ministry of Defense 2013) both have guides to red teaming. IBM contracts out red teams as part of its consulting services—essentially to break into people's information technology infrastructure. They brand them "tiger teams," and the teams are seen as a model to be emulated. Grayman, Ostfeld, and Salomons (2006) describe using red teams to determine locations for water quality monitors in a water distribution system.
3. Roman emperors allegedly used similar techniques to ensure the reliability of bridges: after a given bridge was completed, those involved in its construction were required to sleep under it for several days. This practice ensured that all involved had the strongest incentive to build infrastructure that actually functioned reliably, rather than merely looking impressive or being completed on time.

References

- Andrews, Matt, Lant Pritchett, and Michael Woolcock. 2013. "Escaping Capability Traps through Problem-Driven Iterative Adaptation (PDIA)." *World Development* 51 (Nov): 234–44.
- Argyris, Chris. 1991. "Teaching Smart People How to Learn." *Harvard Business Review* 69 (3). <http://hbr.org/1991/05/teaching-smart-people-how-to-learn/ar/1>.
- Arkes, Hal R., and Peter Ayton. 1999. "The Sunk Cost and Concorde Effects: Are Humans Less Rational than Lower Animals?" *Psychological Bulletin* 125 (5): 591.
- Arkes, Hal R., and Catherine Blumer. 1985. "The Psychology of Sunk Cost." *Organizational Behavior and Human Decision Processes* 35 (1): 124–40.
- Barron, Patrick, Rachael Diprose, and Michael J. V. Woolcock. 2011. *Contesting Development: Participatory Projects and Local Conflict Dynamics in Indonesia*. New Haven: Yale University Press.
- Barth, James, Gerard Caprio, and Ross Levine. 2013. "Bank Regulation and Supervision in 180 Countries from 1999 to 2011." *Journal of Financial Economic Policy* 5 (2): 2.
- Charness, Gary, and Matthias Sutter. 2012. "Groups Make Better Self-Interested Decisions." *Journal of Economic Perspectives* 26 (3): 157–76.

- Evans, Jonathan St. B. T. 1989. "Problem Solving, Reasoning and Decision Making." *Cognitive Psychology: Research Directions in Cognitive Science. European Perspectives* 1: 85–102.
- Ferguson, James. 1994. *The Anti-Politics Machine*. Minneapolis: University of Minnesota Press.
- Fischhoff, Baruch, and Ruth Beyth-Marom. 1983. "Hypothesis Evaluation from a Bayesian Perspective." *Psychological Review* 90 (3): 239.
- Fishkin, James. 2009. *When the People Speak: Deliberative Democracy and Public Consultation*. Oxford, U.K.: Oxford University Press.
- Gauri, Varun, Michael Woolcock, and Deval Desai. 2013. "Intersubjective Meaning and Collective Action in Developing Societies: Theory, Evidence and Policy Implications." *Journal of Development Studies* 49 (1): 160–72.
- Grayman, Walter M., Avi Ostfeld, and Elad Salomons. 2006. "Locating Monitors in Water Distribution Systems: Red Team-Blue Team Exercise." *Journal of Water Resources Planning and Management* 132 (4): 300–04.
- Kahan, Dan M., Ellen Peters, Erica Cantrell Dawson, and Paul Slovic. 2013. "Motivated Numeracy and Enlightened Self-Government." Working Paper, Cultural Cognition Project, Yale Law School, New Haven, CT.
- Keil, Mark, Duane P. Truex III, and Richard Mixon. 1995. "The Effects of Sunk Cost and Project Completion on Information Technology Project Escalation." *Engineering Management* 42 (4): 372–81.
- Lilienfeld, Scott O., Rachael Ammirati, and Kristin Landfeld. 2009. "Giving Debiasing Away: Can Psychological Research on Correcting Cognitive Errors Promote Human Welfare?" *Perspectives on Psychological Science* 4 (4): 390–98.
- Lord, Charles G., Lee Ross, and Mark R. Lepper. 1979. "Biased Assimilation and Attitude Polarization: The Effects of Prior Theories on Subsequently Considered Evidence." *Journal of Personality and Social Psychology* 37 (11): 2098.
- Mercier, Hugo, and Dan Sperber. 2011. "Why Do Humans Reason? Arguments for an Argumentative Theory." *Behavioral and Brain Sciences* 34 (2): 57–74.
- Moskowitz, Tobias, and L. Jon Wertheim. 2011. *Scorecasting: The Hidden Influences behind How Sports Are Played and Games Are Won*. New York: Crown Publishing.
- Mullainathan, Sendhil, and Eldar Shafir. 2013. *Scarcity: Why Having Too Little Means So Much*. New York: Times Books.
- Nickerson, Raymond S. 1998. "Confirmation Bias: A Ubiquitous Phenomenon in Many Guises." *Review of General Psychology* 2 (2): 175.
- OECD (Organisation for Economic Co-operation and Development). 2003. *The Environmental Performance of Public Procurement*. London: OECD.
- Patel, Praful, Qazi Azmat Isa, and Caroline Vagneron. 2007. "The World Bank's Village Immersion Programme in South Asia." *Participatory Learning and Action* 57 (1): 34–35.
- Ramalingam, Ben. 2013. *Aid on the Edge of Chaos: Rethinking International Cooperation in a Complex World*. Oxford, U.K.: Oxford University Press.
- Rao, Vijayendra, and Michael Walton. 2004. *Culture and Public Action: A Cross-Disciplinary Dialogue on Development Policy*. Palo Alto, CA: Stanford University Press.
- Ravallion, Martin. 2011. "Development Impact Calls for Knowledgeable Development Practitioners." *Development Impact* (blog), World Bank. <http://blogs.worldbank.org/impactevaluations/development-impact-calls-for-knowledgeable-development-practitioners>.
- Redelmeier, Donald A., and Eldar Shafir. 1995. "Medical Decision Making in Situations That Offer Multiple Alternatives." *JAMA-Journal of the American Medical Association-U.S. Edition* 273 (4): 302–05.
- Schkade, David, Cass R. Sunstein, and Reid Hastie. 2010. "When Deliberation Produces Extremism." *Critical Review* 22 (2/3): 227–52.
- Scott, James C. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven, CT: Yale University Press.
- Skocpol, Theda. 1991. "Targeting within Universalism: Politically Viable Policies to Combat Poverty in the United States." In *The Urban Underclass*, edited by Jencks C. Petersen, 411–36. Washington, DC: The Brookings Institution.
- Soman, Dilip, and Amar Cheema. 2001. "The Effect of Windfall Gains on the Sunk-Cost Effect." *Marketing Letters* 12 (1): 51–62.
- Tversky, Amos, and Daniel Kahneman. 1981. "The Framing of Decisions and the Psychology of Choice." *Science* 211 (4481): 453–58.
- United Kingdom, Ministry of Defense. 2013. *Red Teaming Guide*. 2nd ed. https://www.gov.uk/Government/Uploads/System/Uploads/Attachment_Data/File/142533/20130301_Red_Teaming_Ed2.Pdf.
- University of Foreign Military and Cultural Studies. 2012. *Red Team Handbook*. http://Usacac.Army.Mil/Cac2/Ufmc/Repository/Rt_Handbook_V6.Pdf.
- Wason, Peter C. 1960. "On the Failure to Eliminate Hypotheses in a Conceptual Task." *Quarterly Journal of Experimental Psychology* 12 (3): 129–40.
- . 1977. "Self-Contradictions." In *Thinking: Readings in Cognitive Science*, edited by P. N. Johnson-Laird and P. C. Wason, 114–28. Cambridge, U.K.: Cambridge University Press.
- Weick, Karl E. 1984. "Small Wins: Redefining the Scale of Social Problems." *American Psychologist* 39 (1): 40.
- Wetherick, N. E. 1962. "Eliminative and Enumerative Behaviour in a Conceptual Task." *Quarterly Journal of Experimental Psychology* 14 (4): 246–49.
- Willingham, D. T. 2007. "Critical Thinking: Why Is It So Hard to Teach?" *American Educator* (Summer): 8–19.
- World Bank. 2005. *World Development Report 2006: Equity and Development*. Washington, DC: World Bank.

Adaptive design, adaptive interventions

Behind every policy lie assumptions about why people behave the way they do. A policy that subsidizes fertilizer, for example, assumes that farmers find the price too high; that they can easily learn about price reductions once a subsidy is enacted; that they would benefit from using fertilizer and are aware of those benefits; that they are willing to invest some of their own money today and accept the associated risk to get payoffs at the end of the farming cycle; and that they have time to go purchase the product. But assumptions may often be incorrect, and solutions based on the wrong assumptions can lead to ineffective policies.

Concentrating more on the definition and diagnosis of problems, and expending more cognitive and financial resources at that stage, can lead to better-designed interventions.

For instance, as chapter 7 showed, farmers might find it difficult to translate their intentions to invest in fertilizer into concrete action at the time they need to purchase the fertilizer. The divide between intentions and actions may arise from the fact that farmers have cash in hand after harvest but do not need fertilizer until a few months later during the planting season. In Kenya, allowing farmers to prepay for fertilizer during the harvest and get it delivered during the next planting season proved as effective as offering a 50 percent

subsidy at the time fertilizer was applied (Duflo, Kremer, and Robinson 2011). In Malawi, allowing farmers to direct some of their harvest profits into commitment savings accounts, which held the money until the following planting season, increased investment back into crops and significantly increased the value of the subsequent harvest (Brune and others 2013).

Recognizing that individuals think automatically, think socially, and think with mental models expands the set of assumptions policy makers can use to analyze a given policy problem and suggests three main ways for improving the intervention cycle and development effectiveness. First, concentrating more on the definition and diagnosis of problems, and expending more cognitive and financial investments at that stage, can lead to better-designed interventions. For example, taking the time to figure out that application forms for financial aid for college might be the obstacle that depresses college attendance rates for low-income populations could lead to strategies that help students and their families fill out those applications—and could spare investments in an expensive and possibly ineffective information campaign (Bettinger and others 2012).

Second, an experimental approach that incorporates testing during the implementation phase and tolerates failure can help identify cost-effective interventions (Glennerster and Takavarasha 2013; Duflo and Kremer 2005). As many of the studies cited throughout this Report indicate, the process of delivering products matters as much as the product that is being delivered, and it can be difficult to predict what will matter in which context and for which population. For example, who could have predicted that weekly text-message reminders would improve adherence to a critical drug regimen for treating HIV/AIDS in Kenya better than

daily reminders (Pop-Eleches and others 2011) (see chapter 8). An experiment was required to learn that financial incentives were not effective in motivating the distributors of female condoms in Zambia (Ashraf, Bandiera, and Jack, forthcoming) (see chapter 7).

Third, since development practitioners themselves face cognitive constraints, abide by social norms, and use mental models in their work, development organizations may need to change their incentive structures, budget processes, and institutional culture to promote better diagnosis and experimentation so that evidence can feed back into midcourse adaptations and future intervention designs. Development practitioners must often act quickly and may thus feel compelled to skip a careful diagnosis and immediately apply “best practice.” Indeed, the intervention cycle typically allows neither the time nor the space to collect the data and perform the analysis needed to identify the problem properly, diagnose its determinants, and assess the fit between program and context or to make needed midcourse changes. As spotlight 3 and chapter 10 demonstrate, the mindsets of development practitioners can also differ substantially from those that prevail among low-income populations for whom they may be designing programs. Because development practitioners often have preconceived notions about a problem and its potential solutions, they may believe that they

know what should be done without having made their assumptions explicit and without having diagnosed the actual problem and its causes. While many development practitioners would agree that they often do not know what will work in a given context, their organizational environment may not allow them to admit as much (Pritchett, Samji, and Hammer 2013).

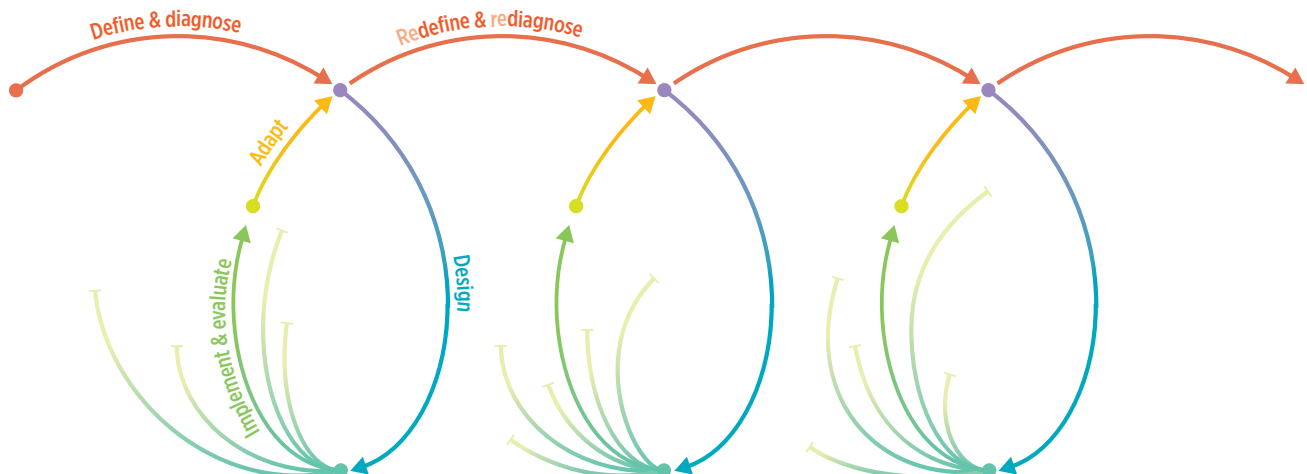
Delving deeper into the subject may lead to a better understanding of the underlying causes of an observed behavior and to identifying ways to intervene effectively. In a complex and iterative process (figure 11.1), problems may need to be redefined and rediagnosed, and multiple interventions may need to be piloted simultaneously—some of which will fail—before an effective intervention can be designed.

This chapter builds on the work by Datta and Mulainathan (2014), who discuss how to design development programs and policies in ways that are cognizant of and informed by the insights from the behavioral sciences, an approach that has been applied to design interventions for low-income populations across the United States (CFED and ideas42 2013).

To see how diagnoses and program design can evolve in the process of finding a solution to a challenge, consider the problem of ensuring access to clean water in rural Kenya and a series of field experiments that tested the effectiveness of different methods of

Figure 11.1 Understanding behavior and identifying effective interventions are complex and iterative processes

In an approach that incorporates the psychological and social aspects of decision making, the intervention cycle looks different. The resources devoted to definition and diagnosis, as well as to design, are greater. The implementation period tests several interventions, each based on different assumptions about choice and behavior. One of the interventions is adapted and fed into a new round of definition, diagnosis, design, implementation, and testing. The process of refinement continues after the intervention is scaled up.



Source: WDR 2015 team.

averting the incidence of diarrhea among children (Ahuja, Kremer, and Zwane 2010). Lack of access to clean water was diagnosed as a problem, and thus an early intervention aimed to improve infrastructure at households' water sources, naturally occurring springs, which were susceptible to contamination from the surrounding environment. In particular, the springs were covered with concrete so that water flowed from a pipe rather than seeping from the ground. While this considerably improved water quality at the source, it had only moderate effects on water quality in households because the water could easily be recontaminated during transport or storage (Kremer and others 2011).

Thus the problem was not simply access to clean water; instead, it could be redefined as a problem of inadequate water treatment within the home. Another iteration of experiments demonstrated that providing free home delivery of chlorine or discount coupons that could be redeemed in local shops elicited very high take-up of the water treatment product at first but ultimately failed to generate sustained results. People needed to remember to chlorinate their water when they returned home from the water source, and they needed to continue to go to the store to purchase the product.

These results in turn suggested yet another diagnosis of the problem: households found it difficult to sustain the use of water treatment over time. This insight led to the design of free chlorine dispensers next to the water source, which made water treatment salient (the dispenser served as a reminder just when people were thinking about water) and convenient (there was no need to make a trip to the store, and the necessary agitation and wait time for the chlorine to work automatically occurred during the walk home). It also made water treatment a public act. This proved to be the most cost-effective method for increasing water treatment and averting the incidence of diarrhea (Abdul Latif Jameel Poverty Action Lab 2012).

As this example and other chapters demonstrate, context matters in particular ways. Seemingly small details of design and implementation of policies and programs can have disproportionate effects on individual choices and actions. Similar challenges can have different underlying causes. An approach that works in one country may not necessarily work in another. Indeed, evidence on the policy implications of a psychological and social perspective on development challenges is just now coming into view.

This Report does not advocate specific interventions. Instead, it argues for the need to change the process of arriving at solutions, regardless of the nature of the problem (acute, chronic, last mile, and so forth) or

the type of environmental or institutional setting (low- or high-income, low- or high-capacity).

This chapter discusses the components of the more complex and more iterative intervention cycle proposed in figure 11.1: (1) diagnosing and rediagnosing psychological and social obstacles; (2) designing an intervention; (3) experimenting during implementation; and (4) learning from these previous steps and adapting future interventions accordingly.

Diagnosing psychological and social obstacles

While it goes without saying that identifying problems or obstacles must precede the design of solutions, there is less clarity on just how one should go about this process of diagnosis. Measuring an individual's lack of material resources or information, for example, is relatively straightforward, and countless household surveys provide data on these sorts of obstacles. In contrast, identifying the presence of psychological biases, cognitive burdens, social norms, and mental models may require more in-depth investigations.

Thick description, for example, and other forms of ethnography (spotlight 4) can be used to understand decision-making contexts. In traditional anthropology, ethnographic fieldwork consists of extensive participant observations, interviews, and surveys. More problem-driven forms of the ethnographic approach can be used to help development practitioners refine their hypotheses about what drives specific behaviors, as well as to monitor newly emerging behaviors. In Denmark, for example, a ban on indoor smoking shifted smokers to the areas just outside the doors of buildings. This posed a problem for Copenhagen Airport, since the secondhand smoke could easily find its way back into the building through doors and air vents. Simply creating a no-smoking zone around entrances did not help. Careful "fieldwork," however, in which the habits of those smoking at the airport were closely observed and mapped, was instrumental in finding solutions that cut smoking near entrances by more than 50 percent. Since smokers tended to come from inside the building and reach for their cigarettes as they were exiting the building, stickers with an icon of a lit cigarette and the distance to the smoking zone were placed on the floors right before the doors. Benches and trash cans, which tended to attract smokers, were placed farther from airport entrances in zones especially designated for smoking (iNudgeyou 2014). Along with "thick description" like this, another useful way to characterize decision-making contexts is the "Reality Check" (box 11.1).

More quantitative methods, such as surveys, can also be informative at this stage of the intervention

cycle. A number of measurement techniques can help reduce *courtesy bias* (where respondents provide answers they think the questioner wants to hear) and measure psychological patterns that respondents themselves may not be aware of (box 11.2).

Finally, there may be nothing as illuminating as the technique of *dogfooding*, discussed in chapter 10. In this practice, company employees themselves use a product they have designed to work out its kinks before releasing it to the marketplace. Policy designers could try to sign up for their own programs or access existing services to diagnose problems firsthand.

Designing an intervention

Once key obstacles have been identified, the task becomes designing an intervention that incorporates these insights. Sometimes the diagnosis phase of an intervention may reveal multiple obstacles but not their relative importance, and each of these would imply different designs for tackling the larger problem at hand.

Consider again the example of home water chlorination. Table 11.1 lists a number of different obstacles that could interfere with home water treatment and the corresponding interventions that could overcome them. An intervention designed for someone who knows the benefits of chlorine and can afford to purchase it but simply forgets to would look somewhat different from an intervention designed for someone

who would use the product only if she saw someone in her peer group using it.

Table 11.2 presents a list of designs and related interventions that have been experimentally evaluated to identify effective interventions across a wide class of problems (Richburg-Hayes and others 2014). In light of this growing body of work, it has been argued that a science of design is emerging in which the

Box 11.1 Taking the perspective of program beneficiaries through the Reality Check approach

The everyday experiences, awareness, and aspirations of people living in poverty are often unmeasured and may in fact be dynamic. This challenges development professionals to keep in touch and up to date. An immersion program called the Reality Check approach has been used by donors, governments, and nongovernmental organizations (NGOs) to understand how poor people make decisions. Social science researchers live for several days and nights with a poor family, not as an important visitor but as an ordinary person, aiming to observe and build relationships, trust, and respect. This qualitative approach has uncovered important findings that might have been missed with more quantitative surveys. For example, in Bangladesh and Nepal, government health providers felt pressured every day to provide free medicine to people who they knew were not ill but who were selling it to others or who wanted it for their livestock. In northern Ghana, researchers learned that at certain times of year, the heat made it unreasonable to expect people to get inside a mosquito net.

Source: www.reality-check-approach.com.

Box 11.2 Measurement techniques that can help uncover psychological and social obstacles

Techniques for eliciting sensitive information

- *Introduce personal distance.* Sometimes, answers are best elicited through questions that are asked indirectly. For instance, rather than asking an official whether he has ever accepted a bribe, the researcher can ask whether a person in his position typically accepts bribes. Eliciting information through vignettes or hypothetical situations about fictional people allows respondents to think about a situation in a way that is more emotionally removed from their personal concerns but that tends to reveal social expectations.
- *Allow a cover of randomness.* For instance, when asked a sensitive question that should have a yes/no answer, a respondent can be asked to privately flip a coin and say yes if it comes up heads or answer truthfully if it comes up tails. This can allow the person to answer truthfully and still allow the researcher to learn about the share of the population that engages in a potentially shameful behavior, even if she would not know about the behavior of any given individual. List experiments (Blair and Imai 2012; Droitcour and others 2011; Holbrook and Krosnick 2009; Karlan and Zinman 2012) are another method for measuring the share of a population that engages in a taboo behavior or holds an opinion that may not be freely admitted. Respondents are randomly

assigned one of two questions and asked to report the number of items that they agree with or that apply to them. The lists differ solely in the presence of the sensitive item or topic.

Measuring attitudes and social norms

- *Implicit association tests.* These tests measure automatic associations between concepts (such as the home or a career) and attributes (male and female) (Greenwald, McGhee, and Schwartz 1998; Banaji 2001; Beaman and others 2009; Banaji and Greenwald 2013). They are easy to administer and can be adapted for nonliterate populations. Demonstration tests can be found at www.implicit.harvard.edu.
- *Identifying social norms.* Survey questions in household surveys or ethnographic work can uncover perceptions about expected and prescribed behaviors. For example, questions like “Out of 10 of your neighbors, how many exclusively breastfeed their children?” can help reveal what people expect others to be doing. Questions like “If you decided to exclusively breastfeed your child, would you worry about anyone disapproving?” can help reveal the relevant network to which the social norm applies.

psychological and social sciences can play a key role (Datta and Mullainathan 2014).

Many of the quantitative and qualitative methods useful for diagnosing obstacles can also assist in the design phase—particularly in narrowing down options that could be tested at a larger scale. Two experiences from Zambia demonstrate this approach. A “mama kit” is a package provided to an expectant mother that contains all the materials she would need to ensure the clean and safe delivery of her child. The kits are typically used to encourage delivery in a health facility. Semi-structured interviews with women and a survey of local wholesale prices helped determine the kit contents that mothers would find desirable and that would be feasible to provide. This up-front qualitative work to optimize the content of the mama kit paid off. Ultimately, a randomized controlled trial found that the mama kits increased facility delivery rates by 44 percent (IDinsight 2014a).

Similarly, the Zambian government quickly experimented with different frequencies for household visits by community health workers to ensure that subsidized antimalarial bed nets were actually being used (IDinsight 2014b). Households that received bed nets through fixed-point distribution sites were ran-

domly divided into five groups that received a visit from a community health worker at different intervals after the distribution of the nets (1–3 days, 5–7 days, 10–12 days, 15–17 days, and six weeks later). Self-installation and retention rates were then compared across the five groups. These household visits revealed that bed nets were hung by recipients within the first 10 days; that nets that were not hung after 10 days were unlikely to be hung at all; and that retention was stable for the two months or so following distribution. These results provided the government a clear path to designing an optimal visit frequency, and it crafted guidelines specifying the optimal time to visit households and hang up the remaining bed nets as 10 days after distribution.

Mechanism experiments are another useful technique for narrowing down candidate policies for experimentation. Consider how such an experiment could be used to design a strategy for tackling the problem of obesity in low-income neighborhoods (Ludwig, Kling, and Mullainathan 2011). Suppose that policy makers were concerned about “food deserts”: that is, neighborhoods where there is plenty of food but none of it is healthy. One possible policy option would be to experiment with offering incentives for green

Table 11.1. Different obstacles may require different intervention design (Case study: increasing home water chlorination)

Design of intervention	Free bottles delivered at home	Discount coupon redeemable at local shop	Detailed instructions	Improved storage	Persuasion messages	Using promoters from social network	Chlorine dispenser at point of collection
Potential obstacles							
People do not understand how to use chlorine.							
Procrastination may cause individuals to postpone visits to the store where the chlorine is sold.							
People are not motivated to use chlorine because the effect on health is delayed.							
People forget to chlorinate the water.							
People are affected by what others in the community do.							
Product may be too expensive.							
Some people are not convinced about the importance of clean water.							

Source: WDR 2015 team.

grocers to locate in these areas. However, this would be an extremely costly intervention. An alternative experimental design would involve sampling low-income families and randomly selecting some of them to receive free weekly home delivery of fresh fruits and vegetables. This would be a much cheaper experiment and would provide valuable information before trying a more expensive variant. If, for example, people do not

consume any of the free produce, it is worth asking if they would take a more active step and purchase fruits and vegetables at a local store, even if the prices were heavily subsidized. If people did consume the produce but did not lose weight, then policy makers should perhaps not focus on the problem of food deserts as a priority in solving the problem of obesity in low-income neighborhoods.

Table 11.2 Experimental evidence is accumulating on the effectiveness of many psychologically and socially informed designs

Type	Strength of the evidence	Examples
Reminders	73 papers, appearing in 6 domains	A regular text-message reminder to save money increased savings balances by 6 percent (Karlán and others 2010).
Social influence	69 papers, appearing in all 8 domains	Homeowners received mailers that compared their electricity consumption with that of neighbors and rated their household as great, good, or below average. This led to a reduction in power consumption equivalent to what would have happened if energy prices had been raised 11–20 percent (Allcott 2011).
Feedback	60 papers, appearing in 5 domains	A field experiment provided individualized feedback about participation in a curbside recycling program. Households that were receiving feedback increased their participation by 7 percentage points, while participation among the control group members did not increase at all (Schultz 1999).
Channel and hassle factors	43 papers, appearing in 8 domains	Providing personalized assistance in completing the Free Application for Federal Student Aid (FAFSA) led to a 29 percent increase in two consecutive years of college enrollment among high school seniors in the program group of a randomized controlled trial, relative to the control group (Bettinger and others 2012).
Micro-incentives	41 papers, appearing in 5 domains	Small incentives to read books can have a stronger effect on grades than incentives to get high grades (Fryer Jr. 2010).
Identity cues and identity priming	31 papers, appearing in 5 domains	When a picture of a woman appeared on a math test, female students were reminded to recall their gender and performed worse on the test (Shih, Pittinsky, and Ambady 1999).
Social proof	26 papers, appearing in 5 domains	Phone calls to voters with a “high turnout” message—emphasizing how many people were voting and that the number was likely to increase—were more effective at increasing voter turnout than a “low turnout” message, which emphasized that election turnout was low last time and likely to be lower this time (Gerber and Rogers 2009).
Physical environment cues	25 papers, appearing in 5 domains	Individuals poured and consumed more juice when using short, wide glasses than when using tall, slender glasses. Cafeterias can increase fruit consumption by increasing the visibility of the fruit with more prominent displays or by making fruit easier to reach than unhealthful alternatives (Wansink and van Ittersum 2003).
Anchoring	24 papers, appearing in 3 domains	In New York City, credit card systems in taxis automatically suggested a 30, 25, or 20 percent tip. This caused passengers to think of 20 percent as the low tip—even though it was double the previous average. Since the installation of the credit card systems, average tips have risen to 22 percent (Grynbaum 2009).
Default rules and automation	18 papers, appearing in 7 domains	Automatically enrolling people in savings plans dramatically increased participation and retention (Thaler and Benartzi 2004).
Loss aversion	12 papers, appearing in 7 domains	In a randomized controlled experiment, half the sample received a free mug and half did not. The groups were then given the option of selling the mug or buying a mug, respectively, if a determined price was acceptable to them. Those who had received a free mug were willing to sell only at a price that was twice the amount the potential buyers were willing to pay (Kahneman, Knetsch, and Thaler 1990).
Public/private commitments	11 papers, appearing in 4 domains	When people promised to perform a task, they often completed it. People imagine themselves to be consistent and will go to lengths to keep up this appearance in public and private (Bryan, Karlán, and Nelson 2010).

Source: Richburg-Hayes and others 2014.

Note: The eight domains covered were charitable giving, consumer finance, energy and the environment, health, marketing, nutrition, voting, and workplace productivity.

Experimenting during implementation

Sometimes practitioners might not have the luxury of time for all the possible qualitative and quantitative work before implementation. Immediate action may be required. In such cases, it will still be important to embed experimentation during the implementation phase. Experimentation during the implementation process can still test psychological and social predictions and optimize impact within a particular intervention cycle. Moreover, while using evidence from elsewhere may be very useful at the preparation stage, it will not replace generating and using evidence from within the very policy intervention as it is being carried out.

One way to test the importance of implementation details, for example, would be to experiment with different modes of implementation. In 2009, the Kenyan government announced a nationwide contract teacher program that would eventually employ 18,000 teachers. In the pilot area, some schools were randomly chosen to receive contract teachers as part of the government program, while others received a contract teacher under the coordination of a local NGO. The evaluation showed how the implementation by the NGO improved students' test scores across diverse contexts, while government implementation had no effect at all (Bold and others 2013).

The series of experiments on commitment devices for farmers discussed earlier also illustrates how experimental implementation can be used iteratively to learn how to adapt policies before scaling them up.

A first set of field experiments in Kenya showed that investment in fertilizer is surprisingly low despite high returns (Duflo, Kremer, and Robinson 2007, 2008, 2011). Diagnosis suggested that several factors, some psychological and social and some market related, could help explain this puzzle: credit constraints, information constraints, absent-mindedness, and intention-action divides. A second set of experiments tested these proposed theories by implementing several different interventions simultaneously and found that interventions that provided a way for farmers to commit to fertilizer purchases (by paying for them when they had cash on hand) were the most successful. Similar commitment products were tested in Malawi with tobacco producers with large positive effects (Brune and others 2013). The findings were then taken to scale and evaluated by the World Bank in Rwanda in the context of a government intervention with a typical population of subsistence farmers (Kondylis, Jones, and Stein 2013).

As these examples show, a more adaptive, empirically agile approach to the intervention cycle can help identify effective ways to improve development outcomes. Has anyone succeeded in systematically implementing this more psychological and socially informed and experimental approach at a scale beyond field experiments with NGOs? The Behavioural Insights Team in the United Kingdom has dedicated itself to bringing psychological and social insights into government policy and service delivery and tests policy alternatives through experimentation (Haynes, Goldacre, and Torgerson 2012) (box 11.3).

Box 11.3 Using psychological and social insights and active experimentation in the United Kingdom

The Behavioural Insights Team (BIT, also known as the “Nudge Unit”) was created in 2010 with the objective of applying insights from academic research in behavioral economics and psychology to public policy and services. It was created at a time of economic and financial crisis and resource scarcity, when psychological and socially informed interventions seemed a viable alternative to legislation.

BIT uses a four-part methodology to identify what works and can be scaled up and what does not: (1) define the desired outcome; (2) use ethnography to understand better how individuals experience the service or situation in question; (3) build new interventions to improve outcomes; and (4) test and try out the interventions, often using randomized controlled trials.

The unit tried to harness the power of social norms to encourage timely tax payments. They tested various messages in letters sent to taxpayers, which either invoked no social norm or contained messages like “9 out of 10 people in [Britain/your postcode/your town] pay their

tax on time.” Citing social norms that referred to others in the taxpayer’s own town led to a 15 percentage point increase in the fraction of taxpayers responding with payment in the following three months (BIT 2012).

In another experiment, team members from BIT embedded themselves in an unemployment center to see what obstacles the unemployed faced in moving off unemployment benefits and into a job. They identified a cumbersome process that involved considerable paperwork and that failed to motivate job seekers. They then designed a pilot program that asked job seekers to make commitments for future job search activities (as opposed to reporting on past activities) and to identify their personal strengths. These changes increased transitions away from benefits by nearly 20 percent (Bennhold 2013).

Until January 2014, BIT was funded by the public. It is now a company owned by its employees, the U.K. government, and Nesta (the leading innovation charity in the United Kingdom).

Conclusion: Learning and adapting

As these and countless other examples throughout the Report have demonstrated, finding effective solutions requires continual research and development (R&D). Although time and resource constraints might interfere with efforts to adopt more systematic diagnoses and experimental implementation, the biggest challenge may be overcoming the psychological and social obstacles within development organizations themselves. Measures are needed to ensure that development practitioners account for their own automatic thinking, mental models, and the social influences on their own choices. To do so, they may need to rethink the process of research and development.

First, R&D is not meant to yield immediate profits or immediate improvements. It delivers uncertain benefits in the future. Time-pressed and risk-averse organizations in search of immediate but certain results might thus underinvest in R&D. They may require commitment devices or risk-mitigating measures that can help them set aside the time and resources required for adequate diagnosis and experimental implementation. Over the years, development practitioners have become familiar with the risks related to financing and political economy and to technical uncertainty. But they need to pay more attention to another set of risks: those associated with the development and implementation of new products, services, and modes of delivery. What matters are not just the high-level policies that governments and development actors adopt but also how those policies are implemented and delivered. Just as a science of designing development interventions may be emerging, so too might an art and science of service delivery in development.

Second, R&D entails failure. Tendencies to continue paying sunk costs or to pay attention only to evidence that confirms their own biases (confirmation bias) can prevent development practitioners from admitting to and learning from failures. However, it is often through the process of experimenting, failing, and learning from those failures that effective, evidence-based diagnoses and intervention strategies emerge.

Creating the mechanisms for accommodating the optimal levels of diagnosis, risk taking, and failure is an organizational challenge. Ideally, development practitioners would be accountable for the quality of the learning and experimentation strategy all along the intervention cycle rather than just for compliance with the plans defined before the start of the intervention—a situation that cripples innovation, hampers midcourse corrections, and stirs fears of failure.

The findings in this Report bring another very large and complex source of uncertainty to development projects: the role of psychological and social factors in the decision making and behavior of end users, implementers, and development practitioners themselves.

To account for the fact that development practitioners themselves face cognitive constraints, abide by social norms, and use mental models in their work, development organizations may need to change their incentive structure, budget processes, and institutional culture.

This uncertainty is not insurmountable for development practice. Indeed, one purpose of this Report has been to synthesize some of the most compelling scientific research on the topic. It is hoped that this Report can inspire development practitioners who are ready to take up the challenge.

References

- Abdul Latif Jameel Poverty Action Lab. 2012. "Cleaner Water at the Source." *J-PAL Policy Briefcase* (September). <http://www.povertyactionlab.org/publication/cleaner-water-source>.
- Ahuja, Amrita, Michael Kremer, and Alix Peterson Zwane. 2010. "Providing Safe Water: Evidence from Randomized Evaluations." *Annual Review of Resource Economics* 2 (1): 237–56.
- Allcott, Hunt. 2011. "Social Norms and Energy Conservation." *Journal of Public Economics* 95 (9): 1082–95.
- Ashraf, Nava, Oriana Bandiera, and B. Kelsey Jack. Forthcoming. "No Margin, No Mission? A Field Experiment on Incentives for Public Service Delivery." *Journal of Public Economics*. <http://dx.doi.org/10.1016/j.jpubeco.2014.06.014>.
- Banaji, Mahzarin R. 2001. "Implicit Attitudes Can Be Measured." In *The Nature of Remembering: Essays in Honor of Robert G. Crowder*, edited by James S. Nairne, Henry L. Roediger III, Ian Neath, and Aimee M. Surprenant, chap. 7. Washington, DC: American Psychological Association.
- Banaji, Mahzarin R., and Anthony G. Greenwald. 2013. *Blindspot: Hidden Biases of Good People*. New York: Delacorte.

- Beaman, Lori, Raghavendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?" *Quarterly Journal of Economics* 124 (4): 1497–1540.
- Bennhold, Katrin. 2013. "Britain's Ministry of Nudges." *New York Times*, December 7. <http://www.nytimes.com/2013/12/08/business/international/britains-ministry-of-nudges.html?pagewanted=all>.
- Bettinger, Eric P., Bridget Terry Long, Philip Oreopoulos, and Lisa Sanbonmatsu. 2012. "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment." *Quarterly Journal of Economics* 127 (3): 1205–42.
- BIT (Behavioural Insights Team). 2012. *Applying Behavioural Insights to Reduce Fraud, Error and Debt*. London: Cabinet Office, Behavioural Insights Team.
- Blair, Graeme, and Kosuke Imai. 2012. "Statistical Analysis of List Experiments." *Political Analysis* 20 (1): 47–77.
- Bold, Tessa, Mwangi Kimenyi, Germano Mwabu, Alice Ng'ang'a, and Justin Sandefur. 2013. "Scaling Up What Works: Experimental Evidence on External Validity in Kenyan Education." Working Paper 321, Center for Global Development, Washington, DC.
- Brune, Lasse, Xavier Giné, Jessica Goldberg, and Dean Yang. 2013. "Commitments to Save: A Field Experiment in Rural Malawi." Policy Research Working Paper 5748, World Bank, Washington, DC.
- Bryan, Gharad, Dean Karlan, and Scott Nelson. 2010. "Commitment Devices." *Annual Review of Economics* 2 (1): 671–98.
- CFED and ideas42. 2013. "Small Changes, Real Impact: Applying Behavioral Economics in Asset-Building Programs." <http://www.ideas42.org/publication/view/small-changes-real-impact-applying-behavioral-economics-in-asset-building-programs/>.
- Datta, Saugato, and Sendhil Mullainathan. 2014. "Behavioral Design: A New Approach to Development Policy." *Review of Income and Wealth* 60 (1): 7–35.
- Droitcour, Judith, Rachel A. Caspar, Michael L. Hubbard, and Trena M. Ezzati. 2011. "The Item Count Technique as a Method of Indirect Questioning: A Review of Its Development and a Case Study Application." In *Measurement Errors in Surveys*, edited by P. B. Beimer, R. M. Groves, L. E. Lyberg, N. A. Mathiowetz, and S. Sudman, 185–210. Hoboken, NJ: John Wiley & Sons.
- Duflo, Esther, and Michael Kremer. 2005. "Use of Randomization in the Evaluation of Development Effectiveness." In *Evaluating Development Effectiveness*, Vol. 7 of World Bank Series on Evaluation and Development, edited by Osvaldo N. Feinstein, George Keith Pitman, and Gregory K. Ingram. New Brunswick, NJ: Transaction Publishers.
- Duflo, Esther, Michael Kremer, and Jonathan Robinson. 2007. "Why Don't Farmers Use Fertilizer? Experimental Evidence from Kenya." Working Paper, Massachusetts Institute of Technology and Harvard University, Cambridge, MA.
- . 2008. "How High Are Rates of Return to Fertilizer? Evidence from Field Experiments in Kenya." *American Economic Review* 98 (2): 482–88.
- . 2011. "Nudging Farmers to Use Fertilizer: Theory and Experimental Evidence from Kenya." *American Economic Review* 101 (6): 2350–90.
- Fryer, Jr., Roland G. 2010. "Financial Incentives and Student Achievement: Evidence from Randomized Trials." Working Paper 15898, National Bureau of Economic Research, Cambridge, MA.
- Gerber, Alan S., and Todd Rogers. 2009. "Descriptive Social Norms and Motivation to Vote: Everybody's Voting and So Should You." *Journal of Politics* 71 (1): 178–91.
- Glennster, Rachel, and Kudzai Takavarasha. 2013. *Running Randomized Evaluations: A Practical Guide*. Princeton, NJ: Princeton University Press.
- Greenwald, Anthony G., Debbie E. McGhee, and Jordan L. K. Schwartz. 1998. "Measuring Individual Differences in Implicit Cognition: The Implicit Association Test." *Journal of Personality and Social Psychology* 74 (6): 1464–80.
- Grynbaum, Michael. 2009. "New York's Cabbies Like Credit Cards? Go Figure." *New York Times*, November 7, A1.
- Haynes, Laura, Ben Goldacre, and David Torgerson. 2012. "Test, Learn, Adapt: Developing Public Policy with Randomised Controlled Trials." Policy Paper, Cabinet Office, Behavioural Insights Team, London.
- Holbrook, Allyson L., and Jon A. Krosnick. 2009. "Social Desirability Bias in Voter Turnout Reports: Tests Using the Item Count Technique." *Public Opinion Quarterly* 74 (1): 37–67.
- IDinsight. 2014a. "Measuring the Impact of Mama Kits on Facility Service Delivery Rates in Rural Chadize and Serenje Districts in Zambia." Technical Report for the Government of Zambia. Available at <http://idinsight.org/wp-content/uploads/2014/10/Mama-Kits-Report-Aug-2014.pdf>.
- IDinsight. 2014b. "Measuring Community-Level Point ITN Distribution Dynamics and the Impact of CHW Hang-Up in Rural Rufunsa District in Zambia." Technical Report for the Government of Zambia. Available at <http://idinsight.org/wp-content/uploads/2014/10/ITN-in-progress-report-October-2014.pdf>.
- iNudgeyou. 2014. "When Prescription Works Better than Proscription." Blog, February 10. <http://inudgeyou.com/when-prescription-works-better-than-proscription/>.
- Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. 1990. "Experimental Tests of the Endowment Effect and the Coase Theorem." *Journal of Political Economy* 98 (6): 1325–48.
- Karlan, Dean, Margaret McConnell, Sendhil Mullainathan, and Jonathan Zinman. 2010. "Getting to the Top of Mind: How Reminders Increase Saving." Working Paper 16205, National Bureau of Economic Research, Cambridge, MA.
- Karlan, Dean, and Jonathan Zinman. 2012. "List Randomization for Sensitive Behavior: An Application for Measuring Use of Loan Proceeds." *Journal of Development Economics* 98(1): 71–75.

- Kondylis, Florence, Maria Jones, and Daniel Stein. 2013. "Rwanda: Program of Impact Evaluations in Agriculture." Development Impact Evaluation Initiative (DIME) Concept Note, March, World Bank, Washington, DC. https://www.gafspfund.org/sites/gafspfund.org/files/Documents/LWH%20Impact%20Evaluation%20Concept%20Note_final.pdf.
- Kremer, Michael, Jessica Leino, Edward Miguel, and Alix Peterson Zwane. 2011. "Spring Cleaning: Rural Water Impacts, Valuation, and Property Rights Institutions." *Quarterly Journal of Economics* 126 (1): 145–205.
- Ludwig, Jens, Jeffrey R. Kling, and Sendhil Mullainathan. 2011. "Mechanism Experiments and Policy Evaluations." *Journal of Economic Perspectives* 25 (3): 17–38.
- Pop-Eleches, Cristian, Harsha Thirumurthy, James Habyarimana, Joshua Graff Zivin, Markus Goldstein, Damien de Walque, Leslie MacKeen, Jessica Haberer, John Sidle, and Duncan Ngare. 2011. "Mobile Phone Technologies Improve Adherence to Antiretroviral Treatment in Resource-Limited Settings: A Randomized Controlled Trial of Text Message Reminders." *AIDS* 25 (6): 825–34.
- Pritchett, Lant, Salimah Samji, and Jeffrey Hammer. 2013. "It's All About MeE: Using Structured Experiential Learning ('e') to Crawl the Design Space." Working Paper 322, Center for Global Development, Washington, DC.
- Richburg-Hayes, Lashawn, Caitlin Anzelone, Nadine Dechausay, Saugato Datta, Alexandra Fiorillo, Louis Potok, Matthew Darling, and John Balz. 2014. "Behavioral Economics and Social Policy: Designing Innovative Solutions to Programs Supported by the Administration for Children and Families." OPRE Report No. 2014 16a, Office of Planning, Research, and Evaluation (OPRE), U.S. Department of Health and Human Services, Washington, DC.
- Schultz, P. Wesley. 1999. "Changing Behavior with Normative Feedback Interventions: A Field Experiment on Curbside Recycling." *Basic and Applied Social Psychology* 21 (1): 25–36.
- Shih, Margaret, Todd L. Pittinsky, and Nalini Ambady. 1999. "Stereotype Susceptibility: Identity Salience and Shifts in Quantitative Performance." *Psychological Science* 10 (1): 80–83.
- Thaler, Richard H., and Shlomo Benartzi. 2004. "Save More Tomorrow™: Using Behavioral Economics to Increase Employee Saving." *Journal of Political Economy* 112 (S1): S164–S87.
- Wansink, Brian, and Koert van Ittersum. 2003. "Bottoms Up! The Influence of Elongation on Pouring and Consumption Volume." *Journal of Consumer Research* 30 (3): 455–63.

Why should governments shape individual choices?

All people—rich and poor alike—sometimes make choices that do not promote their own well-being. Although mistakes can arise even after careful deliberation, people are especially prone to make choices that do not reflect their long-term interests when they think automatically. Automatic thinking means not bringing to bear full knowledge about the dimensions and consequences of choices. People may also get stuck in habits, succumb to inertia, and repeatedly procrastinate despite intentions to do otherwise. Mental models filter the information that people receive and pay attention to and shape their interpretations. Social pressures and social norms can function like taxes or subsidies on behavior, making some choices easier and others harder (Sunstein 1996); when internalized, social norms shape cognitions, emotions, and even physiological reactions.

Using psychological and social insights to promote freedom and well-being

This Report provides evidence that these phenomena are widespread and significantly affect choices, behaviors, well-being, and important development outcomes. What should development actors—whether development professionals, nongovernmental organizations, governments, or international agencies—do with this knowledge? There are three compelling reasons to use this knowledge to promote both freedom and well-being.

First, doing so helps people obtain their own goals. Reminders to save money or take medicine help people who are otherwise caught up in life achieve objectives that they themselves have set. Commitment contracts, which markets underprovide, can reinforce decisions to adopt beneficial behaviors. Matching the timing of social transfers to the timing of charges for school enrollment, or making it easier to buy fertilizer at harvest time when cash is at hand, helps overcome intention-to-action divides for people who may be forgetful or possess insufficient willpower (that is to say, all of us). Many development policies that operate at the boundary of economics and psychology can be understood in these terms. John Stuart Mill, the great champion of personal liberty, acknowledged a legitimate role for government in providing both protection and information. He put it this way:

[It] is a proper office of public authority to guard against accidents. If either a public officer or

anyone else saw a person attempting to cross a bridge which has been ascertained to be unsafe, and there were no time to warn him of his danger, they might seize him and turn him back, without any real infringement of his liberty; for liberty consists in doing what one desires, and he does not desire to fall into the river. (Mill 1859, 95)

Just as that man did not desire to fall into the river, most of us do not want to be forgetful, to procrastinate, or to miss out on important opportunities.

Second, because decision making is often based on only the most accessible and salient information and is also influenced by subtle social pressures and received mental models, individuals' preferences and immediate aims do not always advance their own interests. Individuals might choose differently, in ways more consistent with their highest aspirations, if they had more time and scope for reflection. The assumption that individuals always make choices that promote their own interests—often a fundamental benchmark for policy analysis—is misguided. But if decision makers do at times require assistance, what guidelines are to be used for the policy interventions aimed at shaping choice? Development actors should focus on the most important freedoms. In the development context, these include freedom from poverty, disease, and oppression.

Although older accounts described liberty, as Mill does above, as “doing what one desires,” and argued that the only legitimate limitations on desire involve interpersonal harm, more contemporary accounts distinguish between desires of greater and lesser significance. The freedoms to express one's thoughts and feelings in speech and to live a long and healthy life are highly valued. By contrast, the “freedom” to forget to sign up for a savings plan is less important. Most of us do not prize the freedom to purchase a genuinely dangerous medicine from a pharmacy and prefer that government place at least some limits on the kinds of medicine we can buy.

The philosopher Charles Taylor (1985) compares two countries. One has limited freedom of conscience. The other ensures freedom of conscience but has many, many more traffic lights. The country with all the traffic lights, in sheer quantitative terms, restricts many more choices, but most would agree that people live more freely in it. The example demonstrates that it matters *which* choices are constrained and *which* are

encouraged; and most people agree that when governments shape crucial choices, such as those involving the escape from poverty, they are casting development as a kind of freedom (Sen 1999) and making a trade-off that is appropriate.

Third, socially reinforced practices can block choices that enhance agency and promote well-being and prevent individuals from even conceiving of certain courses of action, as when discrimination and inequality sometimes lead people, understandably, to adopt low aspirations. This Report argues that social interdependence and shared mental models affect significant choices, sometimes creating traps for communities and individuals, such as low trust, ethnic prejudice, and gender discrimination. The social practice of female genital cutting is one example; tax compliance, corruption, road safety, outdoor defecation, and environmental conservation also hinge on interdependent choice. These are situations in which public action targeting shared mental models, social norms, and other collective goods, both physical and symbolic, may change outcomes in ways that make some better off but others worse off. In these situations, government action on behalf of agency can be justified, as well. Although development actors have legitimate differences concerning some of these issues and place different weights on individual freedoms and collective goals, widely shared and ratified human rights constitute a guiding principle for addressing these trade-offs.

An additional justification for government action

The standard justifications for government action in market economies are monopolies, externalities, public goods, asymmetric information, redistribution, and macroeconomic stabilization. This Report adds another. Governments should act when inadequate engagement, situational framing, and social practices undermine agency and create or perpetuate poverty. As noted, these efforts should themselves be guided by a healthy respect for individual dignity and welfare—for the freedom of individuals to articulate and implement their own vision of a good life and for a respect for human rights.

In this approach, the identification of market failures remains a useful criterion for public action in markets in which one can reasonably assume that behavior is indicative of individual preferences. However, one cannot assume that this is always or even mostly the case, particularly in nonmarket settings. Policy makers themselves, moreover, are subject to cognitive errors, including confirmation bias and the use of possibly inappropriate mental models (as discussed in chapter 10). As a consequence, they should search for and rely on sound evidence that their interventions have their intended effects and allow the public to review and scrutinize their policies and interventions, especially

those that aim to shape individual choice. Moreover, some of the recent findings reviewed in this Report warrant less government intervention, not more—sometimes local social norms can resolve collective action problems more effectively than regulation and taxation can.

In most instances, governments are only one among many players who seek to influence the choices that people make. Moneylenders and banks frame the complexity of the loans they offer. Firms tempt individuals with tasty but unhealthy foods and easy money. Elites of all types enforce informal rules and shape public opinion in ways that benefit themselves as a group. Any number of interested parties exploit people's tendency to think automatically (Akerlof and Shiller, forthcoming).

Governments should act when inadequate engagement, situational framing, and social practices undermine agency and create or perpetuate poverty.

With these other forces at work, government should not play the role of a neutral referee. When it is widely understood that private actors can and should pursue their self-interest, private sector encroachment on agency is to be anticipated. It will be uncommon for the influences on decision making to be evenly balanced. In that context, governments that do not restrain or counterbalance concerted efforts to influence choice, such as deceptive framing and misleading advertising, may be seen not only to permit but even to encourage them. John Stuart Mill was also receptive to government intervention when third parties with vested interests, such as liquor houses, were the ones providing individuals with information because, as he put it, “sellers have a pecuniary interest in promoting excess.” Governmental inaction does not necessarily leave space for individual freedom; rather, government inaction may amount to an indifference to the loss of freedom.

References

- Akerlof, G. A., and R. Shiller. Forthcoming. “Phishing for Phools.” Unpublished manuscript.
- Mill, J. S. 1859. “On Liberty.” Indianapolis: Hackett.
- Sen, Amartya K. 1999. *Development as Freedom*. New York: Knopf.
- Sunstein, C. R. 1996. “Social Norms and Social Roles.” *Columbia Law Review* 96 (4): 903–68.
- Taylor, C. 1985. *Philosophy and the Human Sciences*. Vol. 2 of *Philosophical Papers*. Cambridge, U.K.: Cambridge University Press.

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- 116 trees
- 52 million Btu of total energy
- 9,988 pounds of net greenhouse gases
- 54,169 gallons of wastewater
- 3,627 pounds of solid waste



MIND, SOCIETY, AND BEHAVIOR

Development economics and policy are due for a redesign. In the past few decades, research from across the natural and social sciences has provided stunning insight into the way people think and make decisions. Whereas the first generation of development policy was based on the assumption that humans make decisions deliberately and independently, and on the basis of consistent and self-interested preferences, recent research shows that decision making rarely proceeds this way. People *think automatically*: when deciding, they usually draw on what comes to mind effortlessly. People also *think socially*: social norms guide much of behavior, and many people prefer to cooperate as long as others are doing their share. And people *think with mental models*: what they perceive and how they interpret it depend on concepts and world-views drawn from their societies and from shared histories.

The *World Development Report 2015* offers a concrete look at how these insights apply to development policy. It shows how a richer view of human behavior can help achieve development goals in many areas, including early childhood development, household finance, productivity, health, and climate change. It also shows how a more subtle view of human behavior provides new tools for interventions. Making even minor adjustments to a decision-making context, designing interventions based on an understanding of social preferences, and exposing individuals to new experiences and ways of thinking may enable people to improve their lives.

The Report opens exciting new avenues for development work. It shows that poverty is not simply a state of material deprivation, but also a “tax” on cognitive resources that affects the quality of decision making. It emphasizes that all humans, including experts and policy makers, are subject to psychological and social influences on thinking, and that development organizations could benefit from procedures to improve their own deliberations and decision making. It demonstrates the need for more discovery, learning, and adaptation in policy design and implementation. The new approach to development economics has immense promise. Its scope of application is vast. This Report introduces an important new agenda for the development community.

