

“Small Miracles”—Using behavioral insights to improve development policy:

*World Development Report 2015**

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Abstract

One of the most fruitful advances in modern economics has been the introduction of psychological realism into the model of “economic man.” The World Bank’s *World Development Report 2015* (WDR) organizes the evidence about how humans actually think and decide into a coherent framework useful for designing development policy. This paper elaborates the three principles of human thinking that constitute the report’s framework: thinking automatically, thinking socially, and thinking with mental models. It shows how insights regarding individual decision making yield new understandings of economic outcomes and create scope for new types of policy interventions. Expanding the development toolbox with interventions based on an enriched understanding of human behavior has the potential to create social changes that are “miracles” from the perspective of traditional economics.

“Small Miracles”—Using behavioral insights to improve development policy:

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Behavioral economics policies are beautiful because they are small and concrete but powerful. They remind us that when policies are rooted in actual human behavior and specific day-to-day circumstances, even governments can produce small miracles.

Brooks, *New York Times*, December 12, 2014, A29

The rational choice framework dominates much modern economic thinking. But that framework cannot explain the striking effects of the policies discussed in the World Bank’s latest *World Development Report*. In his review of the report in the *New York Times*, David Brooks celebrates the behavioral approach to development because it creates opportunities for policy interventions that are “small miracles” from the perspective of traditional economics. Brooks’ review focuses on the known small policy successes of behavioral economics, but the report is meant to do more than showcase small wins. It also aims to demonstrate that behavioral insights yield entirely new understandings of the causes of economic underdevelopment and social exclusion that create scope for new interventions to shape “big” development outcomes. Advancing this work, which is still at an early stage, is a key aim of the *World Development Report* (WDR).

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This essay describes the goals and one of the key contributions of the WDR – an analytical framework for understanding human decision making. Whereas the WDR centered on successful interventions in the developing world, , this paper gives special attention to the sociocultural roots of underdevelopment and the deep consequences of social, psychological and cultural influences on decision making. It shows how small changes in the choice environment can alter behavior in ways that can have real consequences for both individuals’ lives and societal outcomes. It thus shows how behaviorally-informed interventions may produce both small miracles and big changes in society.

A brief history of behavioral economics

A focus on the psychological, social, and cultural characteristics of economic man has been long in the making. For many years, psychologists, sociologists, and other social scientists questioned the dominant economic paradigm based on **rational and self-interested** actors with fixed preferences. Gradually, armed with experimental methods and new tools for measuring decision making, behavioral economists made inroads into mainstream economics by demonstrating that people are often psychological rather than logical and that their preferences are malleable rather than fixed. The inroads inspired changes in finance, game theory, and macroeconomics (Akerlof 2002; Camerer 2003; Camerer, Loewenstein, and Rabin 2004). Some of Adam Smith’s ideas about human nature that were rejected at the onset of the neoclassical revolution have now become widely endorsed (Ashraf, Camerer, and Loewenstein 2005). Economics has thus come full circle—from *homo sapiens* to *homo economicus* and, within the behavioral approaches, back to *homo sapiens* (Thaler 2000).

Yet most definitions of behavioral economics have emphasized what people cannot do. Humans have bounded processing power and so might not respond to true probabilities. They have bounded attention and so might not respond to true costs and benefits. They have bounded willpower and so might not act on their intentions. By focusing on what was missing from the standard theoretical framework of idealized rationality rather than on the factors that do drive decision making, behavioral economics insights remained tightly tethered to the rational actor framework. Since they did not point to alternative foundational elements of decision making, they provided limited direction to development practitioners interested in creating new instruments to improve development outcomes.

A new approach – three principles of thinking

The *World Development Report 2015* moves behavioral approaches center stage. It develops three principles of thinking and decision making by synthesizing evidence from across the social and natural sciences – including psychology, sociology, anthropology, political science, neuroscience, and cognitive science. The principles are:

Thinking automatically. Most human thinking is automatic, not deliberative. It is based on what effortlessly comes to mind. Changing what most easily comes to mind can thus be a powerful means to change behavior.

Thinking socially. Human thinking is socially conditioned. What others are doing and expecting of others intimately shapes an individual's own preferences. Enhancing the visibility of others' cooperative efforts, introducing change initiatives at the group rather than the individual level, and creating new social identities or changing the salience of an aspect of a person's social identity can shift judgments and preferences.

Thinking with mental models. Thinking uses mental models, which are internal representations that individuals create to interpret the environment (Denzau and North 1994; North 1994). Examples of mental models are categories, identities, default assumptions, and automatic causal narratives. Many are useful, but some are not. What people take to be common sense may be shaped by the narrow political and economic institutions to which they have been exposed. Exposure to different interpretive schemes and new role models may change mental models and thereby make possible sustained changes in behavior.

The three principles create a coherent framework encompassing psychological, social, and cultural influences on thinking that fall outside the rational actor framework. By presenting alternatives to standard economic assumptions about decision making and illustrating the applicability of the principles to areas including health, savings, productivity, child development, and climate change, the report demonstrates the broad relevance of behavioral insights for the entire development landscape and the importance of engaging with them in policymaking.

A central message of the WDR is that the causes of underdevelopment are not limited to the core factors in the standard economic framework—poor technology and resources, distorted

incentives, and information problems. Psychological, social, and cultural factors are also core factors: limited self-control and psychological biases in judgment cause people to make systematic mistakes in judging their opportunities. Social identities, social networks, and social norms affect effort, honesty, and willingness to try new behaviors. Although people generally believe that they respond objectively to a situation, culture affects what they attend to and how they interpret the situation. A consequence is that development policy can work both *with* and *around* psychological, social, and cultural drivers of behavior: It can work *with* them by harnessing them to promote development. It can work *around* them with techniques that refocus attention. The new approach to policy making does not replace traditional development tools; it supplements and expands them.

The following section elaborates the three principles of thinking. It provides concrete examples of each principle's influence on individual choice and shows how the existence of these influences may contribute to broad-scale social outcomes of concern to policymakers, including low savings, low educational attainment, and gender inequality.

Principle 1. Thinking automatically

Standard economics is based on the idea that agents process information in a costless and unbiased way. In fact, careful thought is exhausting and is often avoided. Much of human thinking is based on what comes to mind effortlessly and on the use of simple rules of thumb and heuristics. Automatic thinking—intuitive, associative, and impressionistic—is the “secret author of many of the choices and judgments you make,” the psychologist Daniel Kahneman writes in *Thinking, Fast and Slow*. For his work on automatic thinking, he was awarded the Nobel Prize in economics in 2002. A central implication of his work is that individuals do not make only random mistakes of judgment. Instead, automatic thinking leads to systematic biases in judgment (Tversky and Kahneman 1974, 1983; Kahneman 2003). The next few paragraphs walk through a concrete example of automatic thinking and show how two biases arising from automatic thinking affect important economic decisions and create a need for psychologically-informed policy.

Anchoring

A math exercise demonstrates how automatic thinking can radically shape the judgments individuals arrive at. Consider asking one set of people to estimate in five seconds the product

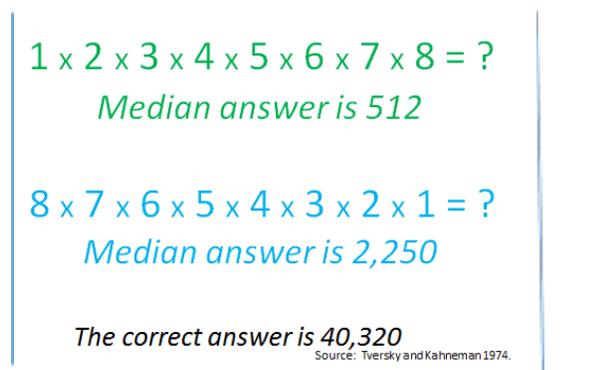
$$1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$$

and asking another set of people to estimate the product

$$8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1.$$

Tversky and Kahneman (1974) posed the questions to high school students. As shown in figure 1, the first group made a median estimate of 512, which was one-fifth as large as the second group's median estimate of 2,250. The correct answer is 40,320. The starting value “anchors” the estimation process such that different starting points yield different estimates; the adjustments that individuals make to modify the initial value as they reach for a final answer are typically insufficient. The cognitive bias, *anchoring*, affects judgment and has been widely demonstrated.

Figure 1. “Anchoring” a math problem with a high versus low number affects individuals’ estimates of the answer



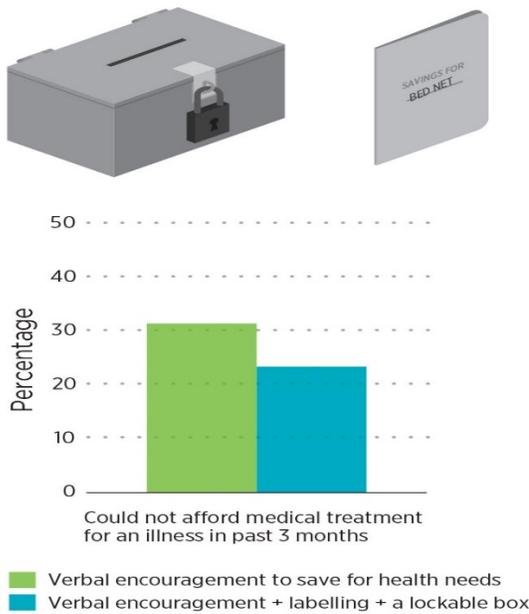
Mental accounting

The economic model assumes that money is fungible. Yet researchers find that categorizing and labelling ‘pots’ of money for specific goals affects individuals’ willingness to use the sums for other purposes. The consequences of ‘mental accounting’ for development behaviors can be significant. For instance, consider savings for health expenses. Researchers estimate that over 60 percent of under-five mortality— most of it in low-income countries— could be averted if households invested in readily available preventative health products (Jones

and others 2003). To find out why people don't save more, Dupas and Robinson (2013) ran an experiment in Kenya in a region with a high incidence of malaria. All subjects in the experiment, who were mostly women, were given information about the value of saving more for health needs. A random subset of the subjects were also given a safe box with a deposit slit at the top, similar to a piggy bank, and a passbook in which to designate a savings goal and record their savings deposits. The subjects kept the box, the key to open it, and the passbook, but did not have any formal obligations to make deposits or limit withdrawals. Nonetheless, the intervention had large effects.

Providing the safe box and passbook increased savings for preventative health care by 66 percent compared to the control group. It also increased households' ability to pay for emergency health needs. Twelve months after the distribution of the safe boxes, the subjects were asked, "Was there a time in the last three months when your household needed a specific treatment, but you didn't have enough to purchase it?" Compared to the control group, those who had been given the safe boxes were significantly less likely to lack the funds to pay for medical treatment; see Figure 2.

Figure 2. Facilitating mental accounting promotes savings for health in Kenya



Source: Dupas and Robinson 2013

The evidence suggests that the safe box and passbook were effective not because they increased the security of savings, but because they made the intention to save for health more salient. This mitigated problems of self-control and inattention. As one participant said, “It is easier to say no to money requests and to resist spending on luxuries because my savings are in the box for a specific goal.” By facilitating the mental allocation of resources to a specific use, the intervention helped subjects harness the power of mental accounting (Thaler 1990). The intervention is an example of a *labeling effect*, in which assigning something to a category influences how it is perceived. Under the standard rational actor model, this intervention should have had no effect: money is fungible.

A decision format and a rule-of-thumb

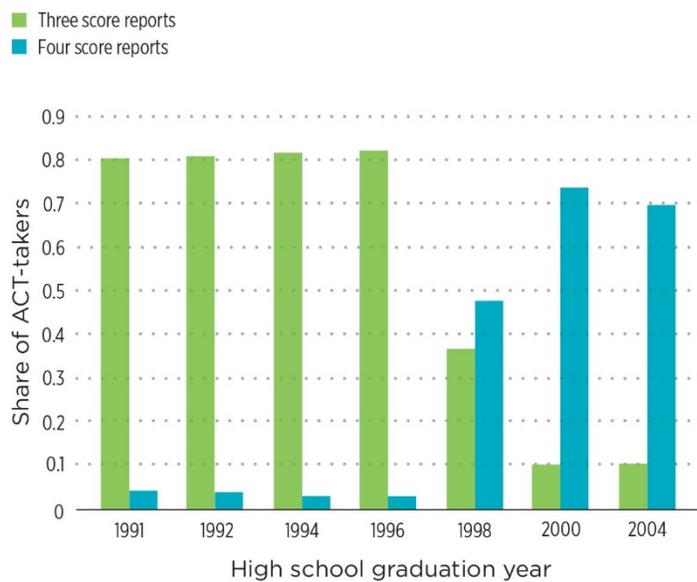
Thinking automatically is a universal trait. It is not a problem of only poor countries or only poor people. The next example illustrates the power of a decision format to change the behavior of people in a rich country. In the example, a substantively irrelevant decision-making format affects the number of colleges that students apply to, with large effects on the estimated lifetime earnings of students from poor families.

Many colleges in the United States require that applicants take a college readiness exam called the ACT. Before 1998, the ACT administration allowed students to send free score reports to three colleges and charged \$6 for each additional report. Most students took the three-score report rule as a guideline for how many colleges to apply to. As figure 3 shows, over 80 percent of ACT-test takers sent their scores to only three colleges; less than 10 percent sent their scores to four colleges. In 1998, the ACT rule changed for about half the students, and it changed for all students after 1998. The new rule allowed students to send free score reports to four colleges. The new rule caused most students to send reports to four colleges. The more colleges that students from low-income families apply to, the more they reach for quality schools. Some were accepted by the more prestigious schools and attended them. The new rule increased lifetime expected earnings of students from low-income families by an estimated \$10,000 (Pallais forthcoming).

The change in the ACT decision format turned out to be a surprising and powerful means of improving the number and quality of colleges to which high school students applied. The

change in the decision format also affected the number of score reports sent out by children in high-income families, which is consistent with the view that the choice did not reflect a deliberative decision. The change in the ACT decision format changed the rule-of-thumb that students latched onto to decide how many colleges to apply to. The change would make virtually no difference under the rational choice framework that economists traditionally use.

Figure 3. Changing the rule for sending test scores to colleges changed the number of score reports sent



Source: Pallais, forthcoming.

Broad applications of automatic thinking

The *accessibility* of different features of a situation affects automatic thinking (Kahneman 2003). In the preceding examples, seemingly unimportant features of the context of decision making—the sequence of the numbers in 8 factorial, a safe box and labeled passbook, the number of free score reports in the ACT testing service—affected mental accessibility and therefore judgment. As these examples show, changing which mental contents come to mind can be a powerful means to change judgment and behavior. Table 1 summarizes a few examples from the WDR in which low-cost interventions improved the quality of decision making by making key situational features more mentally accessible or by making funds available just when

they were needed, rather than well before a decision had to be made. The examples are “small miracles” within the rational choice framework.

Table 1. Policies that work by changing automatic thinking or the timing of transfers

Problem	Solution
Too little adherence to antiretroviral treatment by AIDs patients in Kenya	Send patients a weekly <i>reminder</i> , stating “This is your reminder,” through a low-cost message service on cell phones. Patients who received a weekly reminder increased adherence to the drug regime by 13 percentage points.
Too little enrollment in post-secondary schools in Colombia	Reduce the bimonthly conditional cash transfer paid to parents of students who regularly attend school and distribute the saved funds in a lump sum upon high school graduation. The policy increased enrollment in post-secondary institutions by 49 percentage points. The <i>change in timing</i> meant parents did not need to save the money for a long period of time and could instead use it shortly after receipt to make enrollment payments.
Too little teacher effort in the Chicago public schools	Pay teachers a bonus at the beginning of the school year, which they will lose if students do not meet a threshold level of achievement by the end of the school year. The policy increased teacher effort and student performance, whereas a policy of paying teachers the bonus at the end of the year conditional on student performance did not increase effort or performance. The psychological <i>aversion to loss</i> made the bonus in the former case more salient than in the latter case.
Too much borrowing in the United States from high-cost “payday lenders” by those who cannot obtain a credit card	Provide an <i>anchor</i> . The envelope in which borrowers receive their cash compares the dollar costs of the payday loan with the dollar cost of borrowing the same amount on a credit card. Borrowers who received the envelope with the cost of the loan 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 with only a calendar and the due date of the loans.

Source: Pop-Eleches and others 2011; Barrera-Osoria and others 2011; Fryer and others 2012; Bertrand and Morse 2011.

Principle 2. Thinking socially

The fundamental tenet of ‘thinking socially’ is that individuals are rarely as independent of others in their decision making as the standard economic model assumes. The neoclassical actor determines his interests on his own and is a self-regarding and selfish individual. Moreover, his interests remain fixed across different social settings. However, real humans are deeply social animals who think and act as members of groups and communities, who learn from and imitate relevant “others,” and who favor social patterns of reciprocity, fairness, and norm adherence—sometimes even when the effects of those patterns are detrimental to individual well-being. Recent evidence also shows that people are more altruistic and more willing to cooperate than the standard economic model assumes as long as other people are behaving fairly and are cooperating (Fehr and Gächter 2000 and see WDR chapter 2).

Social identities and identity dynamics

A key goal of the WDR was to showcase novel interventions that have had demonstrable impact in the developing world. One consequence of this focus is that some concepts did not receive the attention they might deserve in a behavioral approach to development economics. *Social identity* is one such concept. While the chapters briefly discussed identities, the WDR gave short shrift to the *dynamics* of identity processes and the important role that psychologists, sociologists, and anthropologists believe they may play in influencing social and economic outcomes.

Identities are the “senses of self” that individuals derive from perceived group memberships. They are categories that carry social meanings and that are closely linked with particular sets of behavioral norms. Everyone possesses multiple identities –a person might take on the social roles of parent, child, employee, or member of a religious or ethnic group at different times. Context influences which identities are salient to an individual at a given moment. In part because people are automatic thinkers with limited cognitive bandwidth (principle 1), and in part because people are social animals with an innate tendency to adjust to the social parameters of their environments (principle 2), people do not process all details of a situation and all possible courses of action. They tend to see only those that their brains, using

automatic and social thinking, have determined are relevant—and this can depend on which identity is activated.

The chameleon-like ability to automatically shift identities helps people adapt easily to the diverse roles they play in life. But a consequence is that when an identity associated with a stigmatized gender, class, caste, race, ethnicity, or profession in a society is activated, people can fail to recognize and seize opportunities that could benefit them. They may engage in individually or socially harmful actions, or become the target of others' prejudice and exclusionary behaviors. Social identities influence how individuals view a situation and also how others regard the individual and decide to treat him; the concept of social identity helps anchor the reciprocal influences between self and society that can generate self-reinforcing and vicious feedback cycles. In the terminology of economics, social identities may be a means by which *people get trapped in negative equilibria*.

Individual identity acts are micro-phenomena: in the examples below, a banker over-reports his earnings, a judge assesses the validity of a co-ethnic's legal claim in the wake of conflict, and a student scales back effort when reminded of a marginal social group she belongs to. When such acts occur by enough people in an organization, over a long enough period of time in a society, or repeatedly over an educational career, the cumulative effect may be a dishonest business culture, persistent ethnic tensions, and systematically poor educational outcomes for students from particular social groups.

Professional identities and organizational cultures

A compelling example of the influence of identity on behavior comes from the financial industry. Drawing on concerns that a banking culture that tolerates dishonest behavior is to blame for recent scandals, researchers hypothesized that reminding bank employees of their professional identity would cause them to act more dishonestly than they otherwise would (Cohn and others 2014). Some 128 employees from a large international bank were recruited to perform a coin-tossing task with real earnings. Subjects were randomly assigned to either a treatment condition that made their professional identity salient or a control condition that did not. Before beginning the coin-tossing task, subjects completed a short online survey. Those in the treatment group answered questions that “primed” or “cued” their professional identity (such

as “What is your function at this bank?”), while those in the control group answered questions unrelated to their profession. Then everyone was asked to toss a coin 10 times and report the results online. Subjects were told in advance whether heads or tails was the “winning” result for each toss, and that each winning toss was worth \$20. Individuals therefore had the potential to earn \$200. However, subjects were also told that they would be paid only if their earnings from the game were equal to or higher than those from a random player from a pilot study; in this way, researchers aimed to mimic the competitive environment of the banking industry, and increased the incentive to cheat. The structure of the game provided anonymity to subjects, but enabled researchers to measure dishonesty by comparing the fraction of “winning” tosses that the subjects claimed to the expected distribution of winning tosses under honest reporting.

What happened? Employees were significantly more dishonest when their professional identity of bank employee was made salient. A subsequent task provided additional evidence by showing that primed subjects were actually thinking differently than their unprimed peers: when asked to turn word fragments into meaningful words, primed subjects were more likely to generate bank-related words—for instance, turning the word fragment “_ _ oker” into “broker” as opposed to “smoker”—than those whose professional identities were not made salient. The results suggest that the professional identity of banker is associated with norms of dishonesty, and that dishonest behavior across many employees can create an environment in which fraud becomes part of the taken-for-granted banking culture. The culture reinforces the acceptability of dishonest behavior, making individuals more likely to commit fraud, and so on, in a self-reinforcing cycle.

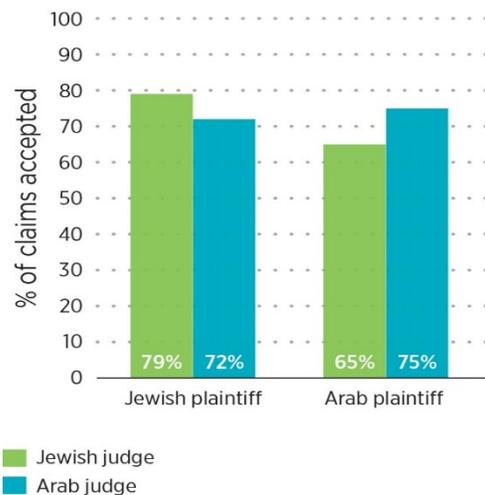
Ethnic identities and ethnic conflict

Social identities affect not only how we see a situation, but also how others regard and therefore treat us. Social psychologists theorize that humans have an intrinsic need to maintain positive self-esteem, and that this need can cause people to favor in-group members and denigrate out-group members (Tajfel and others, 1971). The resulting identity dynamics can contribute to prejudice, exclusion, and conflict.

Consider an example from the legal system. Judges are often thought (and trained) to be among the most neutral of arbiters. Yet in Israeli small claims courts, where cases are randomly assigned to Arab or Jewish judges, data show that judges were 17–20 percent more likely to

uphold a claim when the plaintiff was from their same ethnic group—in other words, when the judge and plaintiff shared a social identity (Shayo and Zussman 2011). Moreover, judicial bias increased with ethnic conflict: the greater the intensity of terrorism in the vicinity of the court in the year preceding the trial, the more judges favored litigants from their own ethnic group (see Figure 4). Perhaps most sobering of all is a subsequent analysis showing that judicial bias persisted even after a period of intense violence had subsided (Shayo and Zussman 2014). The result suggests that ethnic conflicts create legacies that are hard to overcome.

Figure 4. Judges in Israeli small claims courts favor litigants from their own ethnic group



Source: Shayo and Zussman 2011

Particularly interesting is the finding that legacies seem to become a part of the social fabric of society. Exploiting the fact that judges change courts over time, researchers investigated how violence in the vicinity of the courts, as opposed to violence that judges encountered personally, played into judicial bias. They found that violence around the court was more important than personal exposure for explaining bias. This finding suggests identity dynamics in which conflict makes ethnicity socially salient even for individuals who do not experience the conflict first-hand. In a model investigating the consequences of such dynamics, Sambanis and Shayo (2013) highlight the possibility of vicious cycles in which identity-related acts are endogenously determined and cumulate over time to create a persistent state of ethnic tension in

society.¹ Not only does identification intensify conflict; conflict also breeds social identification.

Racial, social class, and caste identities and educational achievement

Why do some social groups exhibit persistent underachievement in education? Economists generally turn to unequal resources and lower expected wages to explain education gaps among different groups in society. However, sociologists and economists have proposed that identities are a key determinant of the demand for education (Coleman 1961; Akerlof and Kranton 2010). Humans want to feel that they ‘fit in’ in social situations, and this preference means that students who feel they do not belong in school may reduce their effort and participation accordingly, irrespective of opportunities to participate and the expected monetary benefits of doing so.

For instance, when African-American students in the United States were asked to answer a demographic question about their race before beginning a test, their performance declined relative to peers who were not reminded of their identity (Steele and Aronson 1995). And like the bankers discussed above, students “primed” with a racial question were more likely to complete word fragments in ways relevant to an African-American identity, providing evidence that the priming question activated race-related mental constructs. Primed students were also more likely to create words reflecting self-doubt about competence and ability: for instance by turning the fragment “_ _ unk” into “flunk.” Hoff and Pandey (2006, 2014) produced similar results in India, showing that although high-caste and low-caste schoolboys performed equally well in a maze-solving task when caste was not salient, publicly revealing their castes in mixed groups created a significant caste gap in performance.

Students’ social identities may also affect how others, including teachers, treat them. In a classic study, university students watched a short video of a fourth-grade student named Hannah

¹ An analysis of immigrants in France suggests similar cycles of identification and prejudice in which immigrants expect systematic discrimination and therefore identify with their home rather than the native culture. This practice allows established natives to continue distinguishing themselves from immigrants, and reinforces their distaste for immigrants. The result is an equilibrium in which immigrants remain unassimilated and economically excluded (Adida, Laitin and Valfort 2014).

portrayed either as a poor child living in an urban area (low socioeconomic class) or a wealthy child in a suburban setting (high socioeconomic class) (Darley and Gross 1983). The evaluators judged Hannah’s academic abilities similarly regardless of whether they saw her portrayed as a low- or high-class child. However, when students watched one of the “class” videos followed by a second video showing Hannah’s performance on an oral test in which she answered some questions correctly and others incorrectly, things changed: those who had first seen Hannah in the wealthy setting believed her to have high ability and recalled that she got most questions correct, whereas those who had first seen her in the poor setting believed her to have low ability and recalled that she answered many questions incorrectly. Researchers explained this result by suggesting that the university students formed initial hypotheses about students’ abilities upon watching the “class video”, but were able to ‘overcome’ them when no performance information was available. In contrast, even objectively ambiguous performance data about Hannah’s ability caused the experimental subjects to falsely confirm these initial hypotheses, resulting in biased assessments of Hannah’s ability. The study shows how subconscious processes may play into unequal schooling experiences for student from different social backgrounds.

A more modern means of measuring bias exists in Implicit Association Tests (IATs), which assess the speeds at which subjects match attributes (such as “good” and “bad”) to concepts or identities (such as “female” and “male”). Response times are faster for pairings between concepts and attributes that are closely associated in subjects’ minds. Differences in matching speeds are thought to reveal “implicit biases” that underlie automatic thinking. Researchers used IATs to examine the bias of Dutch teachers. They found that although teachers’ self-reported measures of prejudiced attitudes were unrelated to students’ achievement, the implicit measures of teacher prejudice—thought to predict behavior arising from automatic thinking (principle 1)— explained differing ethnic achievement gaps across classrooms (van den Bergh and others 2010). This finding supports the idea that teacher expectations can enlarge social inequalities in educational attainment.²

Two distinct identity dynamics may contribute to poor educational outcomes of marginalized groups. In the first, students aware of a stigmatized identity exhibit lower performance, possibly as a result of anxiety that taxes their cognitive functioning or

² More generally, biased perceptions can change behavior in ways that sustain the biases as “equilibrium fictions” (Hoff and Stiglitz 2010).

disengagement stemming from a lack of belonging, or both. Their resulting poor performance reinforces their perception of inadequacy, and this in turn further increases anxiety and withdrawal which in turn further reduces performance, creating a vicious downward cycle of decreasing performance and disengagement (Cohen et al. 2009). In the second identity dynamic, teachers respond to students' negative social identities with low expectations and prejudice that may lead to fewer resources – both material ones such as textbooks and nonmaterial resources such as encouragement– supplied to affected students. If both identity dynamics are operating, stigmatized identities may be a more important aspect of educational underachievement than is commonly acknowledged.

Interventions based on social identities

Can interventions based on an awareness of social identity effects shift behavior? Several studies suggest that they can.³

“Self-affirmation” exercises in which people with stigmatized social identities focus briefly on their personal values or experiences can have surprising effects. For instance, in a randomized, double-blind experiment, students in the United States completed a few 10-minute writing assignments over the course of a year in which they wrote a brief paragraph about values that they selected as being most important to them (intervention condition) or values that were less important to them but might be important to someone else (control condition) (Cohen and others 2006, 2009). African Americans who completed the values affirmation earned higher GPAs than their non-affirmed peers and continued to do so even two years after the intervention. Students who had the lowest performance at the beginning of the experiment benefitted the most. Researchers argued that the intervention interrupted the recursive cycle in which anxiety, disengagement, and poor performance reinforce one another.

In-class value affirmations have also helped students with low socioeconomic backgrounds. First-generation college undergraduates who, like the minority students above, wrote about values that they selected as most important to them as opposed to values that they selected as important to others improved their course grades and were more likely to continue taking a sequence of biology classes than non-affirmed peers. The intervention cut the

³ See also the review in Hoff (2015).

achievement gap between the first-generation students and their advantaged peers by 50% (Harackiewicz et al. 2014). Other intriguing evidence for the trajectory-changing effects of affirmation interventions comes from a study conducted at an inner-city soup kitchen which found that low-income individuals who completed an oral affirmation exhibited better executive control and more interest in social benefits programs than non-affirmed individuals (Hall, Zhao, and Shafir 2014). These studies suggest that brief interventions targeting key psychological processes may have large and long-term effects if they interrupt a damaging self-reinforcing cycle or set in motion a beneficial one.

Whereas identities associated with durable individual characteristics such as race and social background cannot easily be altered, other identities are more malleable. In Liberia, a group-based cognitive behavioral program helped poor young men with criminal histories adopt new “socially aligned” identities. The program was rooted in the idea that the men were social outcasts who understood norms of appropriate behavior but didn’t consider themselves “subject to these norms, or worthy of inclusion into the larger social group” (Blattman, Jamison and Sheridan 2014). In daily sessions for eight weeks, facilitators encouraged men to consider themselves as a member of the group subject to the norms -- to see that behaviors associated with one set of circumstances (such as war-time) were unacceptable under another (such as peace-time). They encouraged the men to adopt new behaviors (such as cleanliness and managing anger without violence) that signaled to themselves and others that they were operating within societal norms, to engage in society in planned and unaccustomed ways, and to develop new skills associated with planning and goal-setting. The therapy program was more effective than a cash transfer at changing behavior (Blattman, Jamison, and Sheridan 2014).

Interventions can also attempt to shift the norms associated with existing identities. For instance, some experts and regulators have proposed that the financial industry would benefit from the development of a professional oath, analogous to the Hippocratic Oath for physicians, which encourages honest banking practices. Ethics training and reminders at key decision points during work routines may also help bring bankers’ decision making and the banking business culture in line with social obligations (Cohn and others 2014).

The Hippocratic Oath is by no means a panacea for good outcomes in the medical profession. However, enlisting social pressure may be an effective means of increasing compliance with existing norms. When doctors are visited by other doctors who remind them of

best practices and encourage them to improve their performance, the doctors who are visited do so (Jamtvedt and others 2007; Brock, Lange, and Leonard, forthcoming). Since most people wish to adhere to the norms of their group, giving people more insight into how others are behaving and what others expect from them can be an effective means of changing behavior. In other words, “marketing” socially desirable norms is a means of harnessing social motivations to improve development outcomes (see WDR, chapter 2).

Finally, identity acts can occur outside of conscious awareness and against the wishes of those who commit them. Since hidden biases are often widespread and go unrecognized by even self-reflective, well-intentioned individuals, some believe they may be more pernicious than overt forms of prejudice. In Silicon Valley, where concern for women’s participation and equality runs high, Google is aiming to fight the “deep-set cultural biases...that pervade the tech business” (Manjoo, 2014). One of the tools they are employing is Implicit Association Tests, described earlier, that illuminate hidden biases. The hope is that increasing individuals’ awareness of their own “automatic biases” may help them avoid prejudiced behaviors. Such tools might also help development practitioners recognize and attend to hidden biases regarding the populations they seek to help.

Principle 3. Thinking with mental models

The rational choice framework assumes that individuals respond objectively to stimuli. But in fact automatic thinking draws uncritically on preexisting beliefs to construct mental representations. Individuals may thus ignore information that violates their assumptions and may automatically fill in missing information based on their prior beliefs. These biases can lead people to “see” things that are not actually there, and to apply causal thinking to situations that have no inherent causal meaning.

A classic experiment by the psychologists Heider and Simmel (1944) demonstrates the tendency of humans to assign motive and intention in situations when they are unwarranted. Viewers are shown a brief film in which there is

a large triangle, a small triangle, and a circle moving around a shape that looks like a

house with an open door. Viewers see an aggressive large triangle bullying a smaller triangle, a terrified circle, and the circle and the small triangle joining forces to defeat the bully. The perception of intention and emotion is irresistible; only people afflicted by autism do not experience it. *All this is entirely in your mind, of course* (Kahneman 2011, 76–77, italics added).

The triangles and the circle are not really agents, but are perceived as agents because of the mental models that people use to interpret their experiences.

Power creates legitimacy

Mental models may have an impact on societal rigidity and social change. For instance, weak constraints on a ruling group are a potent cause of low average income in a population. This pattern tends to persist over time. Why? The dominant explanation in the rational choice framework is that the inequality of wealth leads to the adoption of rules that tend to preserve the initial inequality of wealth. In this explanation, institutions matter only to the degree that they establish and enforce rules. However, sociologists and anthropologists argue that institutions also play a “schematizing role.” They shape the categories and concepts that people use and what they believe to be the natural order of things. In this sense, institutions are a way of seeing the world (Douglas 1986; Fourcade 2011), and so individuals’ past experiences affect their future expectations and evaluations.

A study of clientelism in the Indian state of Maharashtra suggests that a mental model may play a role in making oppressive institutions legitimate (Anderson, François, and Kotwal forthcoming). All villages in this state have formal democratic structures but differ, by historical accident, in the extent of the land owned by the traditional elite caste. In villages where the traditional elite owns the majority of land, village leaders tend not to take advantage of pro-poor programs offered by the national government; such programs are 75–100 percent less available in those villages than in others. However, surveys indicate that the poor (the low caste) view the situation as acceptable and even quite satisfactory. They are 14 percent more likely to trust the large landholders in villages in which the government is dominated by the traditional elite than they are in villages not dominated by the traditional elite. It seems that in the villages dominated by the traditional elite, individuals expect little from the dominant class as a whole, get more or

less what they expect, and so consider themselves fairly treated. “Legitimacy follows power,” but for a reason that has to do with ways of seeing the world, and not only with incentives.⁴

The culture of honor affects the efficiency of coordination

In many environments, coordination problems naturally occur. Consider the example discussed by Schelling (1960), in which two individuals must independently decide where to try to meet the other in New York City when no meeting point has been established in advance. The players gain utility only if they choose the same location. In this example, multiple Nash equilibria exist since all that matters is that players make the same choice. The problem is, where will the players locate given that they must act independently? There are many equilibria and it is necessary to bring in social and psychological elements to understand which equilibrium is likely to emerge as a convention over time.

Brooks, Hoff, and Pandey (2015) ran an experiment to better understand the obstacles to efficient coordination in villages in north India. They recruited 122 men in representative samples of high- and low-caste men from seven villages in north India to play a coordination game for 10 periods in an experiment that lasted four hours. In the game, a player has an anonymous partner in another location with whom he plays for five periods, and then he is assigned another anonymous partner to play with for five periods.

Figure 5 shows the period game. It is symmetric, and so the figure shows the payoffs of only one of the players. Each player receives a small endowment each period, and the payoffs are expressed in terms of returns on the endowment. A has a binary choice: go it alone or try to cooperate. By trying to cooperate, a player earns a high return on his endowment (the gross returns equal 15 US cents) if his partner also tries to cooperate, but loses half his endowment if his partner chooses to go it alone. We call this payoff *the loser’s payoff*. There are two Pareto-ranked Nash equilibria: both players try to cooperate, or both go it alone.

⁴ See Acemoglu, Reed, and Robinson (2013) for a related example.

Figure 5. Payoffs to the column player expressed as returns on the period endowment

		Player's choice	
		Go it alone	Try to cooperate
Partner's choice	Go it alone	17% gain	50% loss <i>(the loser's payoff)</i>
	Try to cooperate	17% gain	70% gain

Source: Brooks, Hoff, and Pandey 2015

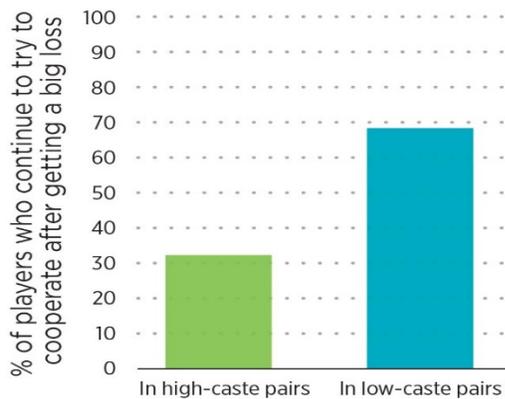
Note: This game is symmetric. For simplicity, the chart shows the payoffs only to the column player.

Could players establish a convention of cooperation and thereby obtain the 70% return on their endowment each period? The high-caste players generally could not, but the low-caste players generally could. For example, 73 percent of low-low caste pairs played the efficient, cooperative equilibrium in the final (fifth) period of the partnership, compared to 50 percent of low-high caste pairs, and only 32 percent of high-high caste pairs. Caste status is correlated with many other individual characteristics, and one might suspect that it is covariates of caste rather than caste culture itself that is driving the divergence in outcomes. However, we observe measures of the subjects' wealth and education, and once we control for caste status in regression analysis, these covariates are statistically insignificant.

What impeded the high-caste players from achieving the Pareto efficient equilibrium of the period game? The evidence from the game and from surveys of attitudes to vignettes points to the high caste's culture of honor as the cause. The culture may have given to the loser's payoff the meaning of an insult. In the culture of honor, any slight to one's well-being tends to be viewed as an insult that must be avenged, regardless of whether the insult was intended or not.

Under this view, the loser’s payoff would be interpreted as a wrong to be punished.⁵ The only means a player has to punish the wrong is not to cooperate in the next period. Figure 6 shows that high-caste players with high-caste partners are much less likely than low-caste players with low-caste partners to continue to take the cooperative action after obtaining the loser’s payoff.

Figure 6. Compared to high-caste players, low-caste players are more likely to continue to try to cooperate after receiving the loser’s payoff



Source: Brooks, Hoff, and Pandey 2015

“Punishing” – withdrawing cooperation in one period—can cause high-caste partners to become insulted and will cause even non-insulted players to try less often for cooperation, which increases the likelihood of miscoordination, leading to greater perceived insults. Thus an unraveling of an expectation that each player will cooperate can ensue. The meaning given to the loser’s payoff by the high caste makes it difficult for high-caste pairs to come to expect that their partner will try for cooperation.

In the early American South, a culture of honor held by the elite obliged members of the high classes to respond to an insult by dueling. Laws that made dueling illegal were generally ineffective because they operated outside the elite’s system of social meanings and thus failed to

⁵ A similar culture of honor is held by men in the US South, but not by men in the US North. In an experiment with university students, Nisbett and Cohen (1996) expose Northern and Southern men to the same insult and find significantly more aggressive responses from the Southerners. On average, the Southern but not the Northern subjects experienced surges in levels of cortisol and testosterone.

provide sufficient social grounds for a gentleman to decline a duel. A different approach used the law to change the social meaning of dueling (Lessig 1995). It barred duelers from holding public office which, like dueling, was an important social “duty” for members of the elite. By rendering dueling a behavior that made a gentleman unable to hold public office, the law created a conflict of duty within the social elite’s system of meaning, weakening the social appropriateness of challenging a person to a duel or accepting the challenge. A man could appeal to his social duty, rather than just his self-interest, to avoid a duel and could thereby retain his honor. The example shows how law can be used to regulate not only the objective costs and benefits of actions but also their social meanings, which over time may have the effect of changing mental models.

Creating opportunities for people to have, or to witness, new experiences can be a means of directly challenging mental models. The change in the mental model can promote welfare and development. For example, advertisers may induce people to use products they do not actually need, or to adopt new behaviors that provide no objective benefits, simply by presenting images that create associations between a product and a social identity or self-concept. For example, the Marlboro man created an association between rugged masculinity and smoking Marlboro cigarettes. Development practitioners change mental models, too. Indeed, this is a central focus of behavioral development economics. Development practitioners can use the power of law to create systematic opportunities for communities to experience new social patterns. For example, in India, the government decreed through a constitutional amendment that one-third of the village governments in each state of India must have a female leader. The villages were selected by lottery. An impact evaluation in one Indian state, West Bengal, finds that exposure to women leaders ended males’ prejudice against them and increased parents’ aspirations for their daughters (Beaman and others 2009, 2012). Even after the reservations ended in a village, more women in the village ran for office and won elections. The mandated legal change spurred changes in villagers’ mental models regarding the social role and capabilities of women, and thereby increased their opportunities and aspirations.

The exposure to female political leaders in Indian villages produced another change: it greatly increased both the reporting of crimes against women and police responsiveness to such crimes in India (Iyer, Mishra, and Topalova 2012). The increases occurred even though female village leaders had no legal jurisdiction on these matters. The new responsiveness to women’s

concerns appears, instead, to reflect a cultural shift that changed women's perceptions of the costs—psychic and otherwise—of reporting crimes committed against them and police officers' perceptions of the appropriateness of acting on crimes against women.

A similar chain of events occurred in Pakistan. The government uses a lottery to allocate visas to applicants who seek to participate in the Hajj. At the Hajj, Muslims from over 100 countries gather in Mecca, communally performing rituals. Men and women interact relatively freely, and whites and blacks interact on relatively equal terms. Malcolm X wrote after his pilgrimage, "What I have seen, and experienced, has forced me to rearrange much of my thought-patterns" (X 1965, 346). Utilizing the random choice of Pakistani lottery winners, Clingingsmith, Khwaja, and Kremer (2009) show that participation in the Hajj changed attitudes. Despite the fact that pilgrims' social roles did not change when they returned home, the experience led them to express greater acceptance of female education and employment, a more positive view of women's abilities, and greater concern about crimes against women in Pakistan. The effects were larger for those travelling in smaller groups, as predicted by the theory that the effects depend on psychological engagement, which the smaller-sized groups facilitated.

The two previous studies are about exposure to real people who are exemplars of a different 'ways of being' —women leaders or liberal Muslims. But even exposure to fictional characters in soap operas can change mental models. Exposure to soap operas that depicted urban families in which women had greater autonomy than actual village women reduced the acceptability of wife-beating, reduced son preference, and increased women's autonomy in India (Jensen and Oster 2009). Exposure to soap operas that depicted women with few or no children led to a decline in fertility in Brazil (La Ferrara, Chong, and Duryea 2012). The effect was stronger if the respondent was within four years of the age of the leading female character in at least one soap opera that aired, consistent with the idea that the mechanism through which the change occurred was psychological engagement that led individuals to reconsider taken-for-granted fertility behaviors. The decline was comparable to an increase of two years in women's education. For women aged 35–44, the decline was an 11 percent decrease in the mean probability of giving birth.

Conclusion

A criticism of behavioral economics is that its insights have remained scattered and are often summarized by a series of ‘nots’ about behavior – humans do not have unlimited information-processing powers, they do not have unlimited attention, and they do not have perfect willpower to act on their intentions. The WDR untethers behavioral insights from the standard economic model by organizing insights from across disciplines into a coherent framework, building up a new edifice for understanding decision making. It lays out three broad principles of human thinking: most of our thinking is automatic rather than deliberative; it is socially conditioned; and it is shaped by mental models drawn from limited sets of experiences and surroundings. The broad policy implication of the WDR is that widening the tools of development practitioners can help us make progress on many development objectives. Development practitioners should focus not only on correcting distorted incentives and fixing problems of information (the implication of traditional economic models), but also on improving the quality of individuals’ judgments and decisions (the implication of behavioral economics).

All frameworks lead us to ask some questions and steer us away from others. The WDR aims to help the development community ask new questions about the causes of underdevelopment and to reconceptualize (to broaden) the menu of policy responses. The nature of human thinking has been investigated in behavioral economics, psychology, sociology, cognitive science, and anthropology. Drawing on these fields, the WDR provides a new framework for the subfield of behavioral development economics, with the hope of advancing the design of development interventions capable of producing both small and large miracles.

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.
- 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.
- Akerlof, George A. 2002. "Behavioral Macroeconomics and Macroeconomic Behavior." *American Economic Review* 92 (3): 411–33.
- Akerlof, George A. and Rachel Kranton. 2010. *Identity Economics*. Princeton: Princeton University Press
- Anderson, Siwan, Patrick François, and Ashok Kotwal. Forthcoming. "Clientelism in Indian Villages." *American Economic Review*.
- Ashraf, Nava, Colin F. Camerer, and George Loewenstein. 2005. "Adam Smith, Behavioral Economist." *Journal of Economic Perspectives* 19 (3): 131–45.
- 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.
- Beaman, Lori, Raghavendra Chattopadhyay, Esther Duflo, Rohini Pande, and Petia Topalova. 2009. "Powerful Women: Does Exposure Reduce Bias?" *The Quarterly Journal of Economics* 124 (4): 1497–540.
- 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.
- Bertrand, Marianne, and Adair Morse. 2011. "Information Disclosure, Cognitive Biases, and Payday Borrowing." *The Journal of Finance* 66 (6): 1865–93.
- 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.

- Brock, Michelle J., Andreas Lange, and Kenneth L. Leonard. "Generosity and Prosocial Behavior in Health Care Provision: Evidence from the Laboratory and Field." *Journal of Human Resources*, forthcoming.
- Brooks, Benjamin, Karla Hoff, and Pryanka Pandey. 2015. "Culture and Coordination," University of Chicago, manuscript.
- Brooks, David. 2014. "In Promise of Small Miracles." *The New York Times*, December 12, A29.
- Camerer, Colin 2003. *Behavioral Game Theory*, New York: Russell Sage Foundation and Princeton NJ: Princeton University Press.
- Camerer, Colin, George Loewenstein, and Matthew Rabin, eds. 2004. *Advances in Behavioral Economics*. Princeton University Press.
- Clingingsmith, David, Asim Ijaz Khwaja, and Michael R. Kremer. 2009. "Estimating the Impact of the Hajj: Religion and Tolerance in Islam's Global Gathering." *Quarterly Journal of Economics* 124 (3): 1133–70.
- Cohen Geoffrey L., Julio Garcia, Nancy Apfel, and Allison Master. 2006. "Reducing the Racial Achievement Gap: A Social-Psychological Intervention." *Science* 313: 1307-1310
- Cohen, Geoffrey L., Julio Garcia, Valerie Purdie-Vaughns, Nancy Apfel, and Patricia Brzustosk. 2009. "Recursive Processes in Self-Affirmation: Intervening to Close the Minority Achievement Gap." *Science* 324: 400-403
- Cohn, Alain, Ernst Fehr, Michel Andre Marechal. 2014. "Business culture and dishonesty in the banking industry." *Nature* 516: 86-89
- Coleman, James. 1961. *The Adolescent Society*. Glencoe, Illinois: Free Press
- Darley, John M., and Paget H. Gross. 1983. "A Hypothesis-Confirming Bias in Labeling Effects." *Journal of Personality and Social Psychology* 44: 20–33.
- Denzau, Arthur T., and Douglass C. North. 1994. "Shared Mental Models: Ideologies and Institutions." *Kyklos* 7 (1): 3–31.
- Douglas, Mary. 1986. *How Institutions Think*. Syracuse: Syracuse University Press.
- 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.
- Fehr, Ernst, and Simon Gächter. 2000. "Cooperation and Punishment in Public Goods Experiments." *American Economic Review*, 90(4): 980-994.

- Fourcade, Marianne. 2011. "Cents and Sensibility: Economic Values and the Nature of Nature." *American Journal of Sociology* 116 (6): 1721–77.
- 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.
- Hall, Crystal C., Jiaying Zhao and Eldar Shafir. 2014. "Self-Affirmation Among the Poor: Cognitive and Behavioral Implications." *Psychological Science* 25: 619
- Harackiewicz, Judith M., Elizabeth A. Canning, Yoi Tibbetts, Cynthia J. Giffen, Seth S. Blair, Douglas I Rouse, and Janet S. Hyde. 2014. "Closing the social class achievement gap for first-generation students in undergraduate biology." *Journal of Educational Psychology* 106(2): 375-389
- Heider, Fritz, and Marianne Simmel. 1944. "An Experimental Study of Apparent Behavior." *American Journal of Psychology* 57 (2): 243–59.
- Hoff, Karla. 2015. "Behavioral Economics and Social Exclusion." In: *Proceedings of the Roundtable on Shared Prosperity*, International Economic Association, ed. Kaushik Basu, forthcoming.
- Hoff, Karla, and Priyanka Pandey. 2006. "Discrimination, Social Identity, and Durable Inequalities." *American Economic Review*, 96(2): 206-211.
- Hoff, Karla, and Priyanka Pandey. 2014. "Making Up People—The Effect of Identity on Performance in a Modernizing Society." *Journal of Development Economics* 106:118-31.
- Hoff, Karla and Joseph E. Stiglitz. 2010. "Equilibrium Fictions: A Cognitive Approach to Societal Rigidity," *American Economic Review, Papers & Proceedings*, 100, 141-146.
- Iyer, Lakshmi, Prachi Mishra, and Petia Topalova. 2012. "The Power of Political Voice: Political Representation and Crimes against Women in India." *American Economic Journal: Applied Economics* 4 (4): 165–93.
- 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>.
- Jensen, Robert, and Emily Oster. "The Power of TV: Cable Television and Women's Status in India." 2009. *The Quarterly Journal of Economics* 124 (3): 1057–94.
- Jones, Gareth, Richard W. Steketee, Robert E. Black, Zulfiqar A. Bhutta, Saul S. Morris, and the

- Bellagio Child Survival Study Group. 2003. "How Many Child Deaths Can We Prevent This Year?" *Lancet* 362 (9377): 65–71.
- Kahneman, Daniel. 2003. "Maps of Bounded Rationality: Psychology for Behavioral Economics." *American Economic Review* 93 (5): 1449–75.
- . 2011. *Thinking, Fast and Slow*. Farrar, Straus and Giroux.
- 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.
- Manjoo, Farhad. 2014. "Exposing Hidden Bias at Google." *The New York Times* September 25, B1.
- Nisbett, Richard E and Dov Cohen, *Culture of honor: The psychology of violence in the South*, Colorado: Westview Press, 1996.
- North, Douglass C. 1994. "Economic Performance through Time." *American Economic Review* 84: 359–68.
- 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 Ntare. 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.
- Sambanis, Nicholas, and Moses Shayo. 2013. "Social Identification and Ethnic Conflict." *American Political Science Review* 107(2): 294-325
- Schelling, Thomas C. 1960. *The Strategy of Conflict*. Cambridge: MA. Harvard University Press.
- Shayo, Moses and Asaf Zussman. 2011. "Judicial in-Group Bias in the Shadow of Terrorism." *Quarterly Journal of Economics* 126: 1447-1484
- Shayo, Moses and Asaf Zussman. 2014. "Conflict and the Persistence of Ethnic Bias." Unpublished paper.
- 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.

- Tajfel Henri, Michael G. Billig, Robert P. Bundy, and Claude Flament. 1971. "Social Categorization and Intergroup Behavior." *European Journal of Social Psychology* 1(2): 149–78.
- Thaler, Richard H. 1990. "Anomalies: Saving, Fungibility, and Mental Accounts." *Journal of Economic Perspectives* 4 (1): 193–205
- Thaler, Richard. 2000. "From *homo economicus* to *homo sapiens*." *Journal of Economic Perspectives* 14 (1): 133–41.
- Tversky, Amos, and Daniel Kahneman. 1974. "Judgment under Uncertainty: Heuristics and Biases." *Science* 185: 1124–31.
- , 1983. "Extensional versus Intuitive Reasoning: The Conjunction Fallacy in Probabilistic Reasoning." *Psychological Review* 90: 293–315.
- van den Bergh, Linda, Eddie Denessen, Lisette Hornstra, Marinus Voeten, and Rob W. Holland. 2010. "The Implicit Prejudiced Attitudes of Teachers: Relations to Teacher Expectations and the Ethnic Achievement Gap." 47(2): 497-527
- X, Malcolm, with Alex Haley. 1965. *The Autobiography of Malcolm X*. New York: Grove Press.