

BACKGROUND PAPER TO THE 2015 WORLD DEVELOPMENT REPORT

# “Small Miracles”—Behavioral Insights to Improve Development Policy

World Development Report 2015

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Development Economics

Office of the Senior Vice President and Chief Economist

February 2015

## 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 Development Report 2015* organizes the evidence about how humans actually think and make decisions into a coherent framework useful for designing development policy. This paper elaborates on the three principles of human thinking that constitute the report’s intellectual framework: Human

thinking is dual process—automatic as well as deliberative (*thinking automatically*); it is conditioned by social context and the salience of social identities (*thinking socially*); and it is shaped by mental models that are socially constructed (*thinking with mental models*). Behavioral insights create scope for policy interventions that produce “miracles” from the perspective of traditional economics.

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This paper—prepared as a background paper to the World Bank’s *World Development Report 2015: Mind, Society, and Behavior*—is a product of the Development Economics Vice Presidency. It is part of a larger effort by the World Bank to provide open access to its research and make a contribution to development policy discussions around the world. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at [allisone@uw.edu](mailto:allisone@uw.edu) and [khoff@worldbank.org](mailto:khoff@worldbank.org).

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# “Small Miracles”—Behavioral Insights to Improve Development Policy:

## *World Development Report 2015\**

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Keywords: Behavioral economics, Psychology, Sociology, Schemas, World Bank  
JEL Codes: D03, O20, Z13

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

Rational actor models dominate much modern economic thinking. But rational choice theory cannot explain the striking effects of the policies discussed in the World Bank’s latest *World Development Report* (World Bank Group 2015). 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 produce “small miracles” from the perspective of traditional economics. Brooks’ review focuses on the proven small policy successes of behavioral economics, but the report is meant to do more than showcase small wins. It also aims to show that behavioral insights yield entirely new understandings of the causes of economic underdevelopment and social exclusion, which create scope for new interventions to promote “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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\*Forthcoming in the Proceedings of the 17<sup>th</sup> World Congress of the International Economics Association, Amman, Jordan, edited by Joseph E. Stiglitz. The authors are grateful to the entire team of the *World Development Report 2015*. These are the views of the authors and do not reflect those of the World Bank, its Executive Directors, or the countries they represent.

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This essay elaborates on a key contribution of the WDR – an analytical framework for understanding human decision making. Whereas the WDR centered on successful interventions in the developing world, this paper pays special attention to the sociocultural roots of underdevelopment and the deep consequences of psychological, social, 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 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 *homo economicus* 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 information-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 generating lists of mistakes and biases that people make, behavioral economics insights remained tightly tethered to the rational actor framework. Since behavioral economics did not emphasize alternative foundational elements that drive decision making, it provided limited direction to 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 others to do intimately shapes an individual's own preferences. Enhancing the salience of others' cooperative efforts can thus shift preferences. Introducing change initiatives at the group rather than the individual level and cueing an aspect of social identity can also shift preferences.

*Thinking with mental models.* Thinking uses mental models to interpret the environment (Denzau and North 1994; North 1994). Examples are categories, identities, default assumptions, and automatic causal narratives. Many are widely shared social constructions (*cultural schemas*). Most are useful, but some are not. What people take to be common sense may be shaped by the political and economic institutions to which they have been exposed. Exposure to different interpretive ideas and role models may change mental models and so make possible sustained changes in behavior.

The three principles encompass psychological, social, and cultural influences on thinking that fall outside rational actor models. By presenting alternatives to standard economic assumptions about decision making and illustrating their applicability to areas including health, savings, productivity, child development, and climate change, the report demonstrates the broad relevance of behavioral insights and the importance of engaging with them in policy-making.

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 problems of information. Psychological, social, and cultural factors are also core factors. 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 sections elaborate on the three principles of thinking.

### **Principle 1. Thinking automatically**

The rational actor in standard economics has remarkable abilities: he processes information costlessly and without bias. 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 (2011) writes in *Thinking, Fast and Slow*. For his work on automatic thinking, he was awarded the Nobel Prize in Economic Sciences in 2002. He demonstrated that automatic thinking leads to systematic biases in judgment (Tversky and Kahneman 1974, 1983; Kahneman 2003). The next paragraphs present an example of automatic thinking and gives examples of two biases that a need for psychologically informed economic 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

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

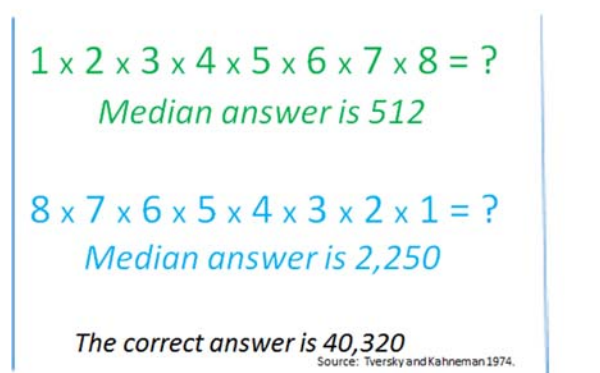
and asking another set of people to estimate the product

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

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, and the second group made a 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, called *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*

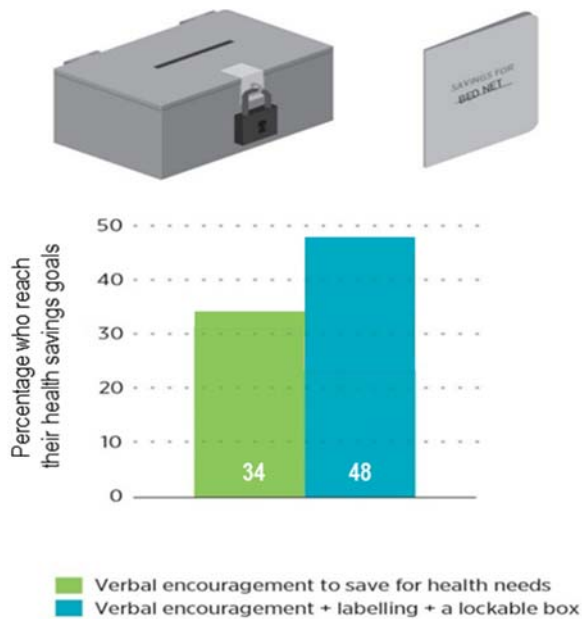
In rational actor models, money is fungible: money that is raised for one purpose can easily be used for another. Yet researchers find that categorizing ‘pots’ of money for specific goals affects individuals’ willingness to use the sums for other purposes. The consequences of ‘mental accounting’ for 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 do not 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 given three additional things: (1) a lockable box with a deposit slit at the top, similar to a piggy bank, (2) a key to open it, and (3) a passbook in which to designate a savings goal and record savings deposits. The subjects did not have any formal obligations to make deposits or to limit withdrawals. Nonetheless, the intervention had large effects.

Providing the lockable 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. Compared to the control group, those who had been given the lockable boxes were 41 percent more likely to reach their health savings goals; see figure 2.

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



Source: Dupas and Robinson 2013

The evidence suggests that the lockable box and passbook were effective not because they increased the security of savings, but because they made more salient the intention to save for health. 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.

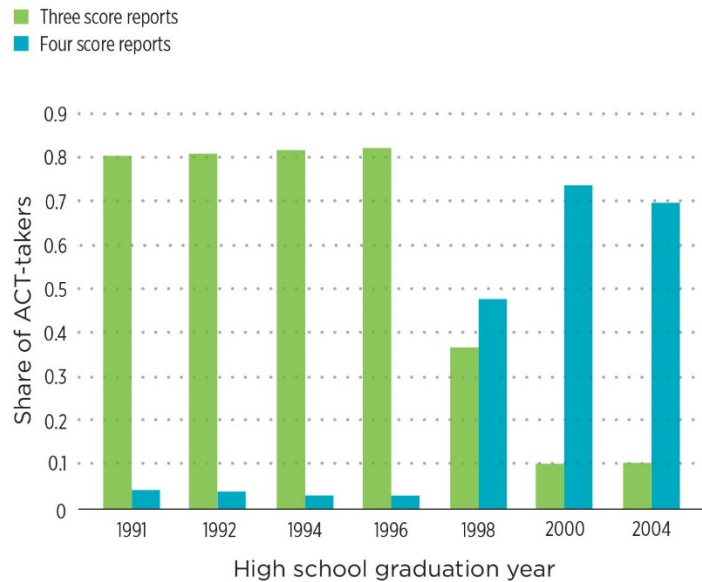
### *A decision format*

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. It has 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 the 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 powerful means of improving the number and quality of colleges to which high school students applied. The change in the decision format affected the number of score reports sent out by children in high-income families as well as in low-income families, which is consistent with the view that the choice did not reflect actual deliberation. The change in the ACT decision format for sending score reports 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 a rational actor model.

**Figure 3. Changing the rule for sending test scores to colleges radically 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, Thaler and Sunstein 2008). As the preceding examples show, seemingly inconsequential features of the context of decision making—(1) the sequencing of the factors in a multiplication problem, (2) the gift of a lock box and passbook, (3) the number of free rather than \$6 score reports offered by a pre-college testing service—affect the judgments people make. *Changing the ideas that costlessly come to mind generally changes behavior.* Table 1 summarizes examples presented in the WDR (especially chapter 1) in which seemingly inconsequential interventions changed behavior and increased welfare. The examples are “small miracles” within the rational choice framework.

**Table 1. Policies that work by changing automatic thinking**

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 that rewards parents of students with good school attendance, and distribute the funds lump sum at the time of the students’ high school graduation. This policy increased enrollment in post-secondary institutions by 49 percentage points. The <i>change in timing</i> meant parents did not need to think about saving the money 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 <i>beginning</i> of the school year, which they will lose if their students do not meet a threshold achievement level at the end of the school year. This policy increased teacher effort and student performance, whereas a policy of paying teachers the bonus at the <i>end</i> of the school 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	<i>Anchor</i> the costs of borrowing funds. An anchor can be provided on the envelope in which individuals receive borrowed funds. The envelope can show the dollar costs of the payday loan compared with the dollar cost of borrowing that amount on a credit card. Borrowers who received envelopes with the anchor were 11 percent less likely to borrow from payday lenders in the next four months compared to the group that did not.

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 generally assumed to be selfish. His preferences remain fixed across social settings. However, real humans are deeply social animals. They think and act as members of communities, imitate others, and may favor social patterns of reciprocity, fairness, and norm adherence even when following the patterns lowers their monetary payoffs. Recent evidence shows that many people are more altruistic and cooperative than the standard economic model assumes, as long as other people are behaving fairly and cooperatively (Fehr and Gächter 2000 and WDR chapter 2).

### *Social identities and identity dynamics*

A key goal of the WDR is 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 would 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 role that psychologists, sociologists, and anthropologists believe the dynamics play in 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 are closely linked with particular sets of behavioral norms. Everyone possesses multiple social identities –a person might take on the social roles of parent, child, employee, and member of a religious or ethnic group at different times. The context at a given time influences which identities are salient to an individual. 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 their social environment (principle 2), people do not process all details of a situation and all possible courses of action. Instead, they tend to see only those details and courses of action that automatic and social thinking suggests are relevant—and this can depend on which identity is activated.

The chameleon-like ability to shift identities helps people adapt to the diverse roles they play in life. But a consequence is that when an identity of an individual that is associated with a stigmatized gender, class, caste, race, ethnicity, or profession is activated, he may fail to recognize and seize opportunities that would benefit him. He may engage in individually or socially harmful actions, or become the target of others' prejudice and exclusionary behaviors. Social identities influence how an individual views a situation and also how others regard and 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 can trap people in negative equilibria.

Individual identity acts are micro-phenomena. In the examples provided below, a banker over-reports his earnings; a judge misjudges 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 or over a long enough period of time or repeatedly over an educational career, the cumulative effect may be a macro-phenomenon: a dishonest business culture, persistent ethnic tensions, and 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 could be worth \$20. Individuals therefore had the potential to earn \$200. Subjects were also told that they would be paid only if the number of their winning tosses was at least as great as the number for a random player from the pilot study. In this way, researchers aimed to mimic the competitive environment of the banking industry. The structure of the game provided anonymity to the 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 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.

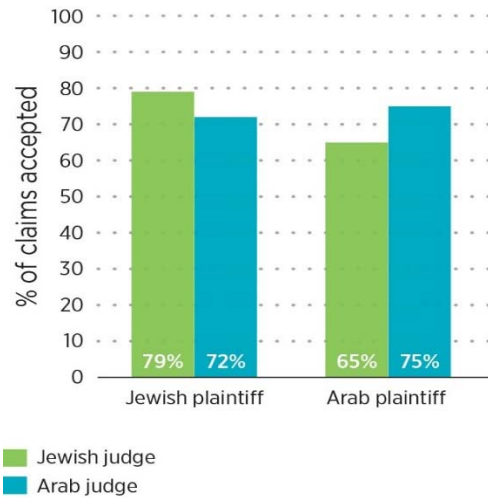
### *Ethnic identities and ethnic conflict*

Social identities affect not only how individuals see a situation, but also how others treat them. 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 small claims courts in Israel, where cases are randomly assigned to Arab or Jewish judges, judges were 17–20 percent more likely to uphold a claim when the judge and plaintiff shared a social identity (Arab or Jewish) (Shayo and Zussman 2011). 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 is that judicial bias persisted even after intense violence had subsided (Shayo and Zussman 2014). The results suggest 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 compared to violence that judges encountered personally, played into judicial bias. 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 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.<sup>1</sup> Not only does identification intensify conflict; conflict also breeds social identification.

<sup>1</sup> 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).



Why do some social groups exhibit persistent underachievement in education?

Economists generally focus on unequal resources and lower expected wages to explain education gaps between groups in society. However, sociologists and some economists have proposed that identities are a key determinant of the demand for education (Coleman 1961; Akerlof and Kranton 2010). Humans want to feel in most social situations that they ‘fit in.’ As a result, students who feel they do not belong in school may reduce their effort and participation, irrespective of the opportunities to participate and the expected monetary benefits of doing so.

The effects of identity on performance in school may reflect not choices but instead self-confidence. When African American students 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 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 subjects to falsely confirm their initial hypotheses, resulting in biased assessments of Hannah's ability. The study shows how subconscious processes (using automatic thinking—principle 1) may play into unequal schooling experiences for student from different social backgrounds.

A modern means of measuring bias is the Implicit Association Test (IAT), which assesses 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 their 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.<sup>2</sup>

Two distinct identity dynamics may impair the educational outcomes of marginalized groups. In the first, students aware of a stigmatized identity exhibit lower performance, possibly as a result of (1) anxiety that taxes their cognitive functioning, (2) disengagement stemming from a lack of belonging, or both. The resulting poor performance reinforces the 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 them to supply the students with fewer resources – both material (such as textbooks) and nonmaterial (such as encouragement). If both identity dynamics are operating, stigmatized identities may be

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<sup>2</sup> More generally, biased perceptions can change behavior in ways that sustain the biases as "equilibrium fictions" (Hoff and Stiglitz 2010).

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.<sup>3</sup>

“Self-affirmation” exercises in which people with stigmatized 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 (the intervention condition) or values that were less important to them but might be important to someone else (the 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 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 that 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, long-term effects if they interrupt a damaging self-reinforcing cycle or set in motion a beneficial one.

Interventions can also shift identities related to crime. In Liberia, a group-based

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<sup>3</sup> See also the review in Hoff (2015).

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 did not 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 in a number of ways: first, to adopt behaviors (such as cleanliness and managing anger without violence) that signaled to themselves and others that they were operating within societal norms; and second, to develop skills associated with planning and goal-setting. The therapy program was more effective than a cash transfer at changing behavior.

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, that 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 despite good intentions. Since biases are often widespread and go unrecognized by even self-reflective 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). A tool that

they are employing are Implicit Association Tests, described earlier, to 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**

Rational actor models assume that individuals respond objectively to stimuli. But in thinking automatically, individuals draw uncritically on mental models to construct mental representations. "Thinking with mental models" is the third principle of decision-making emphasized in the WDR. It may lead individuals to ignore information that violates their assumptions and to automatically fill in missing information based on prior beliefs. People may "see" things that are not actually there and 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 help explain societal rigidity and social change. A powerful cause of development traps are weak constraints on a ruling group. Why do such constraints tend to persist over time? In the rational choice framework, the dominant explanation is that high

inequality of wealth leads to the adoption of rules that preserve the initial inequality of wealth.<sup>4</sup> 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 intuitions and what people believe to be the natural order of things. In this sense, institutions are a way of seeing the world (Douglas 1986; Fourcade 2011).

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 manage to control village governance and use it against the interests of the poor majority. Pro-poor programs offered by the national government of India are 75–100 percent less available in villages in which the traditional elite owns the majority of land than in those in which it does not. However, surveys indicate that the poor in the elite-dominated villages 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 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” in part because power shapes the way people see the world.<sup>5</sup>

### *The culture of honor affects the efficiency of coordination*

Coordination problems occur in every society. Consider the well-known example discussed by Schelling (1960): Two individuals independently decide where to try to meet in New York City when no meeting point has been established in advance. The players gain utility only if they choose the same location. Multiple equilibria exist since all that matters is that players make the same choice. It is necessary to bring in sociological and psychological

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<sup>4</sup> The dominant contributors are Engerman and Sokoloff and Acemoglu and colleagues. References and a review are in Hoff 2003.

<sup>5</sup> See Acemoglu, Reed, and Robinson (2013) for a related example.

elements to understand which equilibrium is likely to emerge as a convention over time.

Coordination is a key factor in the emergence of institutions. Brooks, Hoff, and Pandey (2015) ran an experiment to better understand the obstacles to efficient coordination in repeated interactions in villages in north India. They recruited 122 men in representative samples of high- and low-caste men from seven villages. In the experimental sessions, which lasted four hours, an individual played the game with one partner, who was in a different location, for 5 periods; and then he was assigned a second partner to play with for 5 periods. The partners were anonymous, but the caste status of each partner was communicated to the player. A messenger ran between the locations to communicate the decisions of the partners to each other. The messengers represented the decisions and payoffs visually in a box held by each partner, so that it would be easy for a player to see the full history of play.

Figure 5 shows the period game. A player has a binary choice: go it alone or try to cooperate. If a player tries to cooperate, he earns a 70% return on his endowment (15 US cents) if his partner also tries to cooperate, but loses half his endowment if his partner chooses to go it alone. Call the loss *the loser's payoff*. There are two Pareto-ranked Nash equilibria: both players try to cooperate, or both go it alone. Since the game is symmetric, it suffices to show in the figure the payoffs of only one of the players.

**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 and expresses the payoffs as a percentage gain on the player's endowment in the period gam.

Will players establish a convention of cooperation and thereby obtain the 70% return each period? High-caste pairs usually did not, but the low-caste pairs usually did. 73 percent of low caste pairs played the efficient equilibrium in the final (fifth) period of a partnership, compared to 50 percent of mixed (low-high) caste pairs, and only 32 percent of high caste pairs.

Caste status is correlated with many individual characteristics, and one might suspect that it is covariates of caste rather than caste culture that is driving the divergence in outcomes. However, the study observes measures of the subjects' wealth and education. Once caste status is controlled for in regression analysis, the covariates are statistically insignificant.

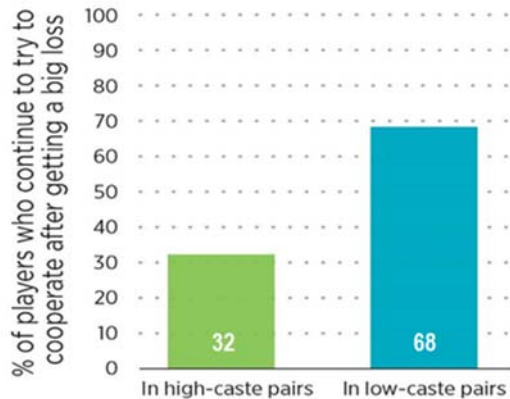
Why do the high-caste pairs fail to form the Pareto efficient convention? The evidence from the game and from surveys of attitudes to vignettes points to the high caste's culture of honor as the cause. The culture may have given the loser's payoff the meaning of an insult. In the culture of honor, any 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: *cross me and I'll punish you*. Under this view, the loser's payoff would be interpreted as a wrong to be punished.<sup>6</sup> 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. "Punishing" – withdrawing cooperation in one period—can insult high-caste partners and cause even low-caste players to try less often for cooperation. Thus any expectation that each player will try to cooperate can unravel.

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<sup>6</sup> A similar culture of honor is held by men in the US South, but not by men in the US North. 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.



**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

In the early American South, a culture of honor held by the elite obliged them 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 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 monetary costs and benefits of actions but also their social meanings.

Creating opportunities for people to have, or to witness, new experiences can also be a means of changing mental models. This is well-known to advertisers. Advertisers can induce people to use products they do not need, or to adopt behaviors that provide no objective benefits, simply by creating 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. 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, found that exposure to women leaders ended males' prejudice against women in leadership roles 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 (see WDR, chapter 3).

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 exposure even to fictional characters 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 list of errors, biases and ‘nots’ about behavior – humans do not have unlimited information-processing powers, they do not have unlimited attention, and they do not have the willpower to act on all 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 human thinking is automatic rather than deliberative; it is socially conditioned; and it is shaped by socially constructed mental models drawn from limited sets of experiences and surroundings. The broad policy implication is that widening the tools of development practitioners can help them achieve many development objectives. 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 individuals to ask some questions, while steering them away from others. The WDR aims to help the development community ask new questions about the causes of underdevelopment and to reconceptualize (and broaden) the menu of policy responses. The nature of human thinking has been investigated in behavioral economics, psychology, sociology, cognitive science, anthropology, and neuroscience. 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 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 the Efficiency of Coordination: Experiments with High- and Low-Caste Men in Rural India," 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. 2003. "Paths of Institutional Development: A View from Economic History," *World Bank Research Observer* 18(2), 2003, 2205-226.
- Hoff, Karla. 2015. "Behavioral Economics and Social Exclusion: Can Interventions Overcome Prejudice?" In: *Proceedings of the Roundtable on Shared Prosperity*, 2014 International Economic Association Conference, 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*, 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.
- LaFerrara, Eliana, Alberto Chong, and Suzanne Duryea. 2012. "Soap Operas and Fertility: Evidence from Brazil." *American Economic Journal: Applied Economics* 4 (4): 1–31.
- Lessig, Lawrence. 1995. "The Regulation of Social Meaning." *The University of Chicago Law Review* 62(3), 943-1045.
- 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 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.
- 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 H. 2000. "From *homo economicus* to *homo sapiens*." *Journal of Economic Perspectives* 14 (1): 133–41.
- Thaler, Richard H. and Cass R. Sunstein. 2008. *Nudge: Improving Decisions about Health, Wealth, and Happiness*. Yale University Press.
- 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
- World Bank Group. 2015. *World Development Report 2015: Mind, Society, and Behavior*. Washington, DC: World Bank.
- X, Malcolm, with Alex Haley. 1965. *The Autobiography of Malcolm X*. New York: Grove Press.