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THE GLOBE

Rx: Human Nature

How behavioral economics is promoting better health around the world ***by Nava Ashraf***

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PHOTOGRAPHY: GARETH BENTLEY

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How behavioral economics is promoting better health around the world

by Nava Ashraf

Over the past decade, governments and institutions the world over have spent roughly $9 billion annually to combat public health scourges such as HIV/AIDS, malaria, and waterborne illnesses. Yet more than 13 million people die each year, mostly in developing countries, from medical conditions for which effective prevention or treatment exists. Why?

The common response is to point to the barriers to health care created by its cost and uneven availability. To be sure, the challenges of large-scale coordination and logistics do play a role, particularly in countries with poor infrastructure and governance. But improving access to—and the use of—essential health products and services will take more than addressing proximity and price.

My lab and field research in Africa, Latin America, and Southeast Asia, and that of other development and behavioral economists around the world, points to another key factor in the health care equation: human nature. Behavioral economics has shown us that we don't always act in our own best interests, no matter where we live. This is as true of health decisions as it is of economic ones. An array of biases, limits on cognition, and motivations leads people from all walks of life to make suboptimal health choices.

The good news, as this article will show, is that human nature can also be a source of solutions. By understanding the cog-

nitive processes underlying our health choices and applying the tools of behavioral economics, it's possible to design products and programs that encourage good health decisions and long-term behavior change.

Imagine a young mother who continues to have unwanted pregnancies even though free contraception is readily available at a nearby clinic. Why doesn't she avail herself of it? There are many possible reasons that have nothing to do with availability, as it's commonly understood. Contraception may be frowned on in her community for religious reasons, or perhaps her husband wants a large family and forbids its use. She may also be worried about a lack of privacy at the clinic.

Finding innovative ways to overcome such barriers requires a fundamental shift in how program designers and providers think about health care. It starts by prioritizing the end user, a novel approach in a sector where institution-level, top-down decision making is the norm. The conventional model of health care delivery assumes a one-way transaction in which practitioners provide care and patients consume it, with "health" as the outcome. But of course health isn't something that can be handed to people; it's a state that they must produce themselves by interacting with a health care system. According to this view, providers and recipients co-create health.

Designing effective health programs therefore requires more than providing accessible, affordable care; it requires understanding what makes both providers and end users tick. What motivates them? What do they value? What are the trade-offs they make in choosing one course of action over another?

What Makes Us Tick

In my research on health program design, I've seen dozens of biases and constraints on cognition. Two in particular stand out for their prevalence, impact, and responsiveness to manipulation: present bias and limited attention.

Present bias describes our tendency to overvalue the present and discount the future. Put simply, a benefit seems more valuable to us in the present than we imagine it will be in the future, and a cost seems greater today than we imagine it will be tomorrow. As a result, people frequently make choices that contradict what their future selves would want. Think of a person who is aware of the risks of smoking and is trying to quit but gives in and has a cigarette. The benefit of the cigarette in the present seems high, while the cost in the future seems low. Of course, the smoker's future self would disagree.

Limited attention refers to the constraints on the amount of information we can process at one time and our susceptibility to cognitive overload. Because attention is a scarce resource that is easily depleted, we rely on reminders, mental shortcuts, and habits to simplify our moment-to-moment decision making and free up our limited mental processing power.

In affluent countries, the many necessities of daily life don't compete for attention. As the economists Abhijit Banerjee and Esther Duflo note in their book *Poor Economics,* in the developed world water is purified and piped in, sewage is whisked away, and most people don't worry about where their next meal will come from. Attention is freed from these and myriad concerns that require demanding daily consideration among the poor. Thus the limits of attention and the risk of cognitive overload can have particularly dire consequences for them: A parent who is focused on ensuring that there will be water and kerosene for the family by nightfall might overlook the early symptoms of a child's illness.

The same is true for present bias. Resisting its pull requires well-stocked reserves of attention and willpower, resources that are often depleted among those whose daily lives require endless and difficult self-control choices: Do I buy sugar for the family or pay school fees? Do I splurge on fast food or put money aside for a health emergency?

Nudges for Health

A deep understanding of biases and limitations has been put to use to improve health decision making and drive behavior change in both developed and emerging economies. The incentives, behavioral nudges, and other tools of psychology used by health program designers work because they make good health decisions easier—and poor ones more difficult. Three have proved particularly effective in addressing present bias and limited attention: commitment devices, material incentives, and defaults.

The best programs applying these tools do more than promote a onetime behavior change. Rather, they create new habits, replacing an undesirable behavior with a beneficial one. This is why understanding the end user—what she values and why she makes the decisions she does—is so important to successful program design.

Commitment devices. Commitment devices are contracts or other arrangements that formalize a person's pledge to achieve an objective. Often, it's a difficult personal goal, such as saving money or losing weight. These devices enlist several behavioral economic principles to counteract the effects of present bias.

Xavier Giné and colleagues designed a commitment device to help smokers quit and tested it in a randomized, controlled trial in the Philippines. Smokers in the program were offered a savings account in which they made deposits that could not be

The psychological tools used by health program designers make good decisions easier—and poor ones more difficult.

Selecting for Altruistic Capital

In 2010 the government of Zambia launched a program to create a new cadre of the civil service: community health assistants. A key question was how to recruit assistants who had a desire to care for others and would remain devoted to their communities.

We worked with Oriana Bandiera, a professor at the London School of Economics, and Scott Lee, a doctoral student at Harvard Business School, to design an experiment with the Ministry of Health to see if recruitment messages emphasizing different missions would attract distinct sorts of candidates—and whether an appeal to service would bring in recruits who would stick with the job.

We advertised in 48 districts across the country. In half of them, the ads invited applicants to "Advance your career." In the other half, they appealed to applicants to "Serve your community," thus tapping what I call their *altruistic capital:* the desire to serve that exists to some degree in all of us. The ads, which were otherwise identical, have indeed attracted two distinct cohorts. Early results show that the career-advancement campaign has drawn a more technically knowledgeable and qualified group than the community-service campaign. However, the candidates recruited through the service campaign have demonstrated greater reliability; they were more likely to fulfill all application requirements and to show up for interviews. The recruits have just returned to their communities after a year of training, allowing us now to begin evaluating differences in retention and performance. If those who are more attracted by the desire to serve turn out to be superior performers, health care organizations may want to balance their emphasis on technical skill with explicit efforts to recruit people with large stores of altruistic capital.

withdrawn for six months; at that time, if they passed a urine test for nicotine (showing that they'd indeed quit) they got their money back. If they failed, the money was donated to charity. The study showed that smokers in the commitment group were more likely to have quit than those in the control group. They also turned out to be more likely to pass a surprise nicotine test six months later.

Some programs that use commitment devices leverage one bias to counteract another. To help people comply with tuberculosis treatment, for example, BRAC (formerly known as the Bangladesh Rural Advancement Committee) had patients put up a bond at the beginning of treatment that wasn't returned until the treatment was completed. This program took advantage of the bias known as loss aversion—people's tendency to prefer avoiding losses to acquiring gains—to strengthen participants' commitment and neutralize present bias.

Commitment devices can also leverage the sunk-cost bias, which drives us to make current choices that justify past ones. For example, if you've already paid for a movie ticket, you'll feel compelled to use it whether or not you really want to go to the movies. This effect was likely at work in a study Aprajit Mahajan and Alessandro Tarozzi conducted in rural India on efforts to reduce the spread of malaria. Participants either prepaid for the retreatment of their bed nets with insecticides or paid at the time of retreatment. Households that opted for prepayment were significantly more likely to have their bed nets retreated and had higher rates of long-term use.

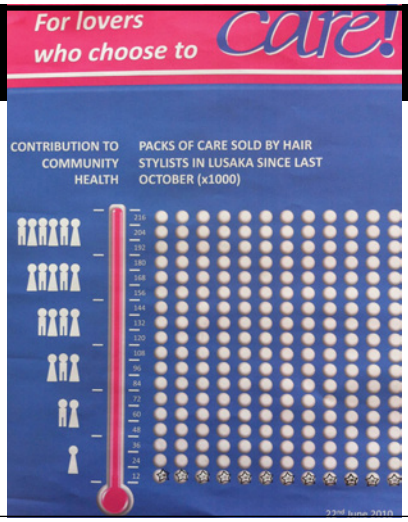
Material incentives. Though it seems like common sense that paying someone to perform a task or achieve a goal yields the desired behaviors, it doesn't always; as we shall see, when the motive is to help others, financial incentives can have a limited effect. In some cases—blood donation and charitable giving, for example—rewards can actually inhibit the desired behavior by implying that a donor's motive is mercenary rather than altruistic.

However, incentives—even small ones—specifically designed to combat present bias can be very effective and have proved valuable in global health. Present bias, as discussed, makes costs and rewards in the moment seem more powerful than those in the future. This is just the sort of feeling that could discourage a mother from making a time-consuming trip to have her child vaccinated. But incentives can counterbalance a present cost, neutralizing it and making a future reward seem more compelling.

A recent study showed just how powerful small incentives—a bag of lentils, in this case—can be. In India, immunization rates are often abysmally low in rural areas even when public health facilities offer free immunizations. Abhijit Banerjee and collaborators divided 134 villages in rural Udaipur into three groups: one that received no intervention (control villages), one in which regular, well-publicized immunization clinics were held, and one in which, in addition to the clinics, parents received a kilogram of lentils (worth about a dollar) when they brought a child in for vaccination. The researchers chose lentils over cash as an incentive because they represented a reward that people could use in their homes immediately. At the trial's end, the rate of full immunization of one- to three-year-olds was 6% in control villages, 17% in villages with just the clinics, and 38% in villages with the lentil incentive. While making immunizations easily available did help, neutralizing present bias had a bigger impact by far.

Monetary incentives can have powerful effects even after they are discontinued. Economists Gary Charness and Uri Gneezy found that when you pay people to go to the gym (thereby helping to equalize the present and future benefits) they are more likely to go, as would be expected, but also more likely to stick with it, even after the payments end. By making each trip to the

Money Isn't the Best Motivator



gym feel less costly, incentives can lead to the formation of new habits.

Defaults. In their 2008 book *Nudge,* Richard Thaler and Cass Sunstein described how carefully designed default options can prod people to make good (or, at least, desired) decisions. This is a familiar idea in business, where defaults guide people in everything from software installation to enrollment in retirement plans. But "choice architecture" applies equally to public health, where nudges can have a dramatic impact on decisions. An influential 2003 online experiment by Eric Johnson and Daniel Goldstein, for example, showed that when organ donation was the default option on drivers' licenses (that is, drivers who didn't want to be donors had to explicitly opt out), 82% agreed to be donors. When the default option was *not* to be a donor—and so drivers had to opt in—just 42% made that choice. This default effect is pronounced in people's real-world decisions: The researchers found that in Germany, where citizens must opt in to be organ donors, just 12% do so; next door in Austria, where organ donation is the default, the donor rate is nearly 100%.

Defaults work in part by addressing the problem of limited attention and cognitive overload; they simplify and guide decision making by making it easier to choose one action (the default) and harder to choose another. Particularly when the demands of garnering the basic necessities of life compete for attention, defaults can have a potent impact.

Consider how they have been leveraged to help people decontaminate their household water. In Kenya, as in many developing economies, waterborne diseases such as cholera cause widespread illness, particularly among children. Although chlorine tablets are distributed by NGOs and others, and many people understand that the tablets can disinfect their water and protect against disease, usage rates are often low. What are the barriers? Cost is probably not the central problem: Even when the tablets are free, usage remains at a relatively low level. Instead, convenience seems to be the biggest barrier—and this is where defaults come in.

Routinely purifying your water requires that scarce resource, attention. Make it the easy and obvious option, and usage rates ought to go up. That's exactly what Michael Kremer and colleagues found in a series of randomized, controlled studies they conducted in western Kenya. Along with other interventions, the team provided free chlorine as a concentrated liquid through prominently displayed dispensers at local water sources. Although not a true default, this approach employed the features—convenience, simplicity, and ease—that make defaults so effective. The dispensers provided a visual reminder at the moment of collection and made it easy to add the right dose of chlorine—simply place the jug under the dispenser and turn the lever. This, along with promotion by community members and other messaging, increased chlorine use by 53%.

Prosocial Motivations

Behavioral tools, especially those that tap our prosocial motivations, can also be used to influence providers. Prosocial motivations include our internally focused desire for approval and our externally focused desire to help others. Both can be leveraged to improve health care, but the latter, for obvious reasons, is particularly relevant on the provider side. For example, health care professionals are famously forgetful about washing their hands every time they see a patient. But a study in a North Carolina hospital showed that reminding practitioners that hand hygiene protects *patients* from disease was much more effective at inducing them to wash than reminders that hygiene protects the practitioners themselves.

Acting on their prosocial motivation to protect patients augmented stores of what I call *altruistic capital,* our inner reservoir of desire to be of service. Altruistic capital can be increased and depleted. Most people are motivated to fill the reservoir. Health delivery programs that help providers do that, therefore, can be effective—in fact, more

When adding chlorine to drinking water becomes the easy, convenient, and obvious choice, usage rates go up.

PHOTOGRAPHY (LEFT): GARETH BENTLEY

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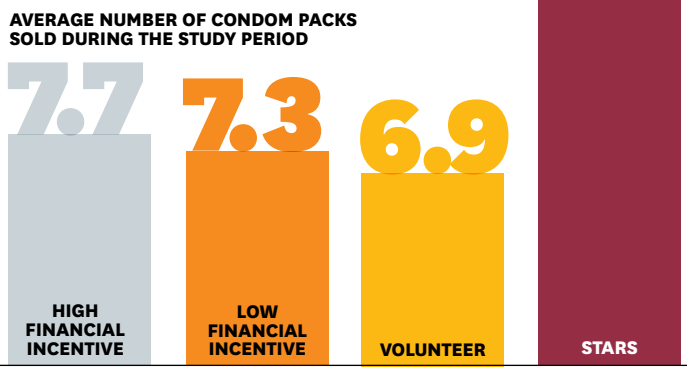
Selected hairdressers in Lusaka, Zambia, displayed posters in their shops featuring a "thermometer" and stars representing the packs of condoms they had sold. These hairdressers sold twice as many condoms as those who received financial rewards for selling condoms or no incentives at all. This demonstrates the power of leveraging providers' social motivations—their desire to serve their communities and to be recognized for doing so—to improve community health.



so than programs that simply pay them. Indeed, there is tremendous potential to use nonfinancial incentives in health program design, particularly those that tap providers' desire to contribute and thus top off their stores of altruistic capital. This is not to say that we should offer nonfinancial incentives instead of paying people for their work, but we can design incentives that amplify altruistic motivations. (For more, see the sidebar "Selecting for Altruistic Capital.")

Colleagues and I put this idea to the test in a recent study conducted with Population Services International in Lusaka, Zambia. In Lusaka (as in many communities the world over) salons and barbershops are ubiquitous gathering places, where stylists have their female clients' trust and can speak to them openly. For that reason, PSI believed that salons could be a good channel for condom distribution and communication about HIV/AIDS. Our question: What types of incentives would best motivate hairdressers to sell condoms?

Our study randomly assigned more than 1,000 hairdressers in 200 areas to one of four groups: control, whose members were offered the opportunity to promote condoms as volunteers; low financial reward; high financial reward; and "social recognition," whose members earned stars on a thermometer poster in their shops representing condoms sold and, therefore, lives saved through HIV prevention. The more sales, the more stars and, visibly, the greater the hairdressers' contribution to the well-being of their community (see the exhibit "Money Isn't the Best Motivator"). At the study's end, the hairdressers with the thermometers had sold twice as many condoms as those in any other group. Appealing to their desire to do good, and to be seen doing good, was more powerful than any financial reward.

Research into Action

Creating effective health programs requires rigorous experimental design that reveals what drives those who co-create health. In my research, I use an iterative process involving three stages: diagnose, design, and deliver. This approach can be adapted by anyone seeking to apply the principles of behavioral economics to health program design.

Diagnose. Start by defining the health challenge you seek to address. Frame the problem as a question: Why aren't people using mosquito nets? Why don't they sterilize their water? Why are women having unwanted pregnancies? Then develop hypotheses about the reasons for the problem. Practical reasons related to the cost, convenience, and availability of interventions will quickly suggest themselves. But it's as important to identify cognitive and behavioral barriers. This requires uncovering people's true motivations through interviews and focus groups with all parties, not just "patients" or "end users." Such up-front qualitative work can be labor intensive and time-consuming. But it will save time and effort in the end by ensuring that your program answers the right questions.

Public health surveys show that about half of all pregnancies in Zambia are unwanted. These unwanted and perhaps unplanned pregnancies can be both a personal trial and a serious health threat: The country has one of the highest rates of maternal death in childbirth in the world, partly because women often have many closely spaced births. In another study I led in Lusaka, which explored the reasons for unwanted pregnancies and identified ways to help women better control family size, we asked women about contraceptive availability, clinic wait times, costs, and other practical matters that informed their choices. We learned that some women were hiding contraceptives in the household laundry or in maize containers, and, as we probed deeper, it became clear that husbands and wives often had very different notions about ideal family size. What's more, some husbands explicitly forbade their wives to use contraceptives. It appeared that availability was often less of a barrier than a desire not to disappoint or anger husbands, so we hypothesized that tackling the problem of unwanted pregnancies would be as much about addressing dynamics inside the home as it would be about providing contraception.

Design. The next step is to design experiments to test your hypotheses. Any experiment that seeks to measure the effects of an intervention tells you little if there is no control group for comparison. But although randomized, controlled trials are common practice in many disciplines, this gold-standard study design is still less prevalent in global development research than it should be.

In Zambia, armed with the hypothesis that husbands' influence could be as important as contraceptive availability in

women's use of birth control, we designed an experiment to test and illuminate the effect. We recruited 1,800 women from low-income Lusaka neighborhoods who were served by a large government clinic and randomized them into a control and a treatment group. The women in the treatment group were then randomly assigned to receive vouchers, either alone or in the presence of their husbands, that could be redeemed for free and immediate injections of contraception at the clinic or for other forms of birth control. Women in the control group were not offered vouchers but were surveyed toward the end of the study period. We were interested in three main outcomes: Did the women use the vouchers, what kind of contraceptive did they choose, and what was the program's impact on pregnancy?

With that information—and a host of other qualitative and quantitative data gathered during the two-year experiment—we hoped to understand the women's personal cost/benefit analysis so that we could design a more-effective and enduring program.

Deliver. Conducting a carefully designed trial both reveals the accuracy of your hypotheses and suggests effective interventions and new questions. In medicine, such a trial might yield a definitive conclusion: Drug A is superior to drug B. In health program development, answers are rarely so cut-and-dried; instead, experiments must be pursued iteratively as results give rise to new or more-refined questions. Each iteration leads to improved "delivery"—programs that address a health challenge more and more effectively.

At the end of our initial two-year study in Lusaka, we found that women who received free access were more likely to get contraception than those in the control group, but only those who received the voucher *alone,* as opposed to with their husbands, had fewer unwanted pregnancies—a 57% reduction, in fact. This suggests that giving women access to contraceptives that they can conceal and use in private is a key to reducing unwanted pregnancies.

One fruitful line of research is looking at whether teaching men about the health dangers of tightly spaced pregnancies will encourage them to change their views about family size.

However, our surveys and qualitative work found that Zambian women who were hiding their use of contraceptives from their husbands were conflicted and unhappy about it. Yes, they were having fewer children, but at an emotional cost. Simply providing women with contraceptives in private was an effective but less than ideal solution. We are using this finding to inform new studies to understand why husbands want larger families than their wives do and what interventions could align their preferences. One fruitful line of research is looking at whether teaching men about the health dangers of tightly spaced pregnancies will encourage them to change their views about family size.

Understanding people's motivations in the co-creation of health can yield major payoffs for small investments. Bags of lentils costing just a dollar each were highly effective in inducing people to get vaccinated; posters proved more compelling than payments in inspiring hairdressers' public health work. It would be shortsighted to overlook simple, inexpensive, and powerful behavioral interventions that can help close the gaps in the global health system.

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