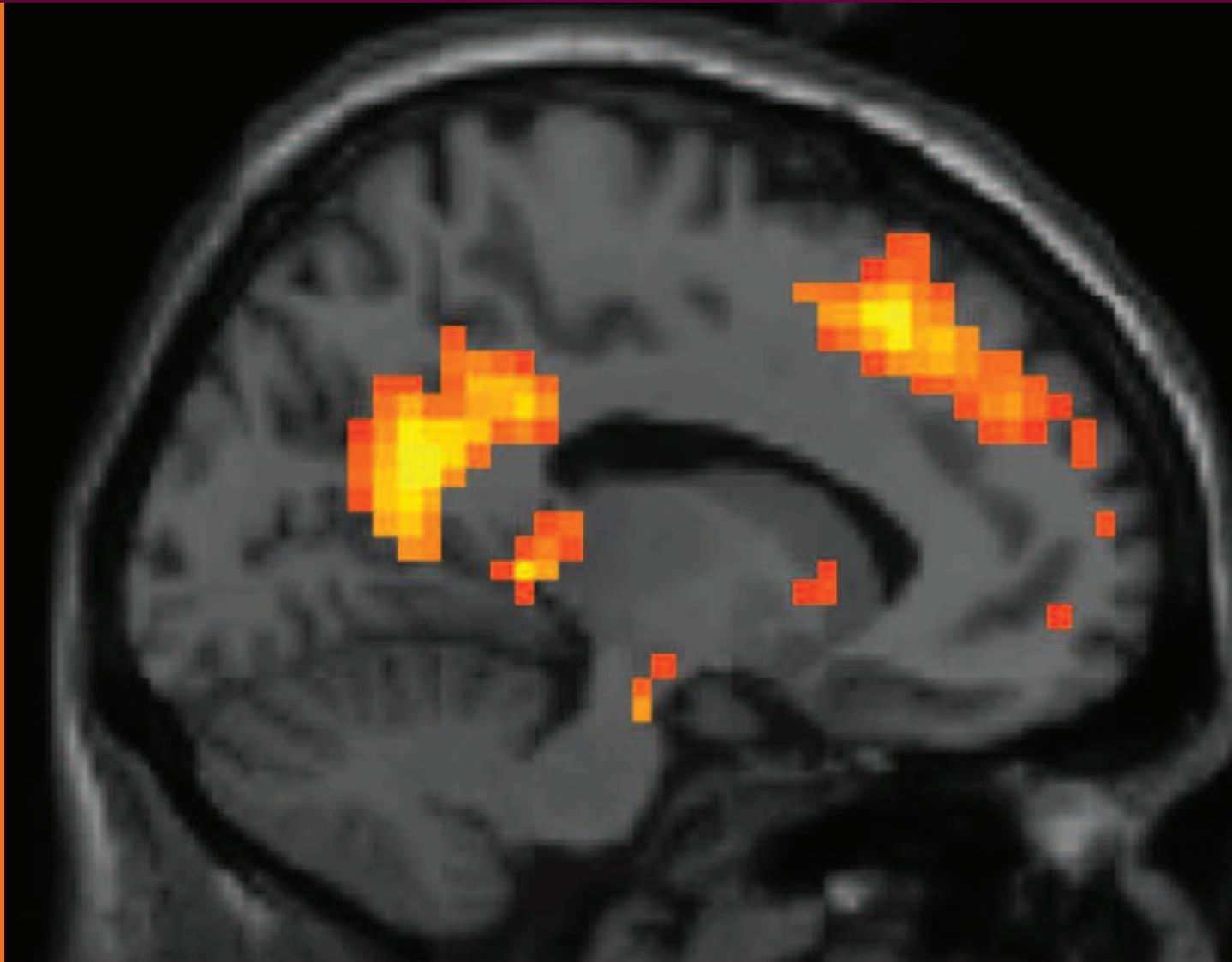


The Scientific Basis of Influence and Reciprocity: A Symposium



June 12, 2007
Washington, D.C.

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Sponsored by:
Association of American Medical Colleges
Baylor College of Medicine, Department of Neuroscience and
Computational Psychiatry Unit

Cover: Increasing familiarity or preference for visual stimuli reveals Blood Oxygen Level Dependent responses in regions of the ventral valuation network (VFN). These are key regions for studying the influence of favors on decision-making.

Image courtesy Read Montague, Human Neuroimaging Laboratory, Computational Psychiatry Unit, Department of Neuroscience, Baylor College of Medicine

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David Korn, M.D.
Susan H. Ehringhaus, J.D.
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Introduction

An effective and principled partnership between academic medical centers and various health industries is critical to capture the fruits of biomedical research and ensure that the best scientific evidence is deployed toward advancing the prevention, diagnosis, and treatment of disease. However, given the fundamental differences between the missions, fiduciary obligations, and cultural norms of academic medical centers and those of commercial enterprises, it is inevitable that potential conflicts of interest will arise in the course of their interactions. To ensure that their relationship remains principled and capable of withstanding intense public scrutiny, academic medical centers and industry must be aware of these conflicts and manage them scrupulously.

At present, the core educational, and (to a much lesser but increasing extent) the research missions of academic medicine are markedly dependent on industry support. Such dependency is worrisome. The real or perceived biases that can result from these relationships challenge the integrity and independence of medical education, research, and patient care, as well as the public's confidence in the trustworthiness of academic medicine.

That industry support of medical education can indeed influence the objectivity and integrity of academic teaching, learning, research, and practice is supported by the medical literature and by a growing body of neurobiological and psychosocial evidence related to the effects of gifts on recipients' choices and decisions. The concerns validated by this emerging scientific evidence engender public skepticism, not only regarding the commitment of medical schools and teaching hospitals to their primary public purposes, but also regarding the shared commitment of academia and industry to promote the public's interest by fostering the practice of cost-effective, evidence-based medicine.

The Symposium on the Scientific Basis of Influence and Reciprocity was designed to explore the challenges to objectivity that are presented by gifts, favors, and influence. By illuminating the emerging evidence on the underlying neurobiological substrates and processes of influence and reciprocity, we hoped that the Symposium would provide both a scientific foundation and a fresh opportunity for considering how the academic community could more effectively evaluate and manage its relationships with industry. In planning the program, we, along with our colleagues from Baylor College of Medicine, Michael Friedlander and Read Montague, focused on the principal perspectives that have been brought to bear on the derivation and nature of influence and reciprocity—that is, neurobiology, psychology, behavioral economics, and public policy. We were fortunate to be able to engage as speakers leading academic scholars who are at the forefront of those fields. A panel of distinguished members from the academic medicine and ethics communities was assembled to respond to the findings that were presented by the speakers.

The consistency of experimental findings from the several scientific approaches described by the speakers at the symposium was remarkable, as were the suggestions offered for addressing the biasing effects of influence and reciprocity on decision making and choice.

1. There are systematic and predictable ways in which people act unethically that are beyond their own awareness.
2. The more leeway honest persons have, the more likely they are, given the opportunity, to behave unethically, but only up to a point that appears to be determined by the person's own self-concept.
3. Increasing awareness of moral standards, or mindfulness, at the time of decision making diminishes the tendency to behave unethically.
4. Self-interest unconsciously biases well-intended people, who give themselves bounded "moral wiggle room" to engage in unethical behavior with an easy conscience.
5. Circumstances that can create conflicts of interest should be eliminated wherever possible in order to decrease temptations and likelihood to act unethically.

From the panel of responders, two key messages emerged. First, the task of convincing physicians, who are selected for their ability to reason, that they are not reliably reasonable is not simple. Second, though people cannot exercise unlimited control of their instinctive behavior, they are capable of imposing some modifications on it. Purposeful structuring of relationships and interactions to diminish potential conflicts of interest reinforces that capability.

The neurobiological and behavioral evidence presented at the symposium suggests that traditional mechanisms for addressing conflicts of interest and ensuring objectivity may not adequately take into account the biological and psychological processes operating in the human brain that can influence judgment and decision making. We believe that the findings presented have special relevance to the environment in which medical schools and teaching hospitals educate and train medical doctors and biomedical scientists. More broadly, the proceedings will help to deepen understanding of financial conflicts of interest in both the academic community and the industries with which the academic community has become ever more deeply engaged. The findings certainly will stimulate further scientific and policy research. Finally, we expect that these new insights will be incorporated into the thinking of academic faculty and administrators, and influence institutional policies and practices aimed at minimizing or eliminating financial conflicts of interest in medical education, research, and practice.

The AAMC gratefully acknowledges the Robert Wood Johnson Foundation and the Pew Charitable Trusts for their generous support of the symposium.

David Korn, M.D.
Susan H. Ehringhaus, J.D.
October 2007

Symposium Background

David Korn, M.D.

*Senior Vice President, Division of Biomedical and Health Sciences Research
Association of American Medical Colleges*

Dr. Korn introduced “The Scientific Basis of Influence and Reciprocity,” which was sponsored by the Association of American Medical Colleges (AAMC) and the Baylor College of Medicine Department of Neuroscience and Computational Psychiatry Unit. He expressed gratitude to Mike Friedlander, the Wilhelmina Robertson Professor and chair of the department, and his departmental colleague, Read Montague, the Brown Foundation Professor and director of the Human Neuroimaging Laboratory, for their “invaluable” help in putting a first-rank symposium together. He also expressed gratitude to the Robert Wood Johnson Foundation and the Pew Charitable Trusts for their generous support of this event.

The speaker stressed that conflicts of interest (COIs) are ubiquitous in many walks of life, and especially so in the “hotly competitive” environment of academic medicine. Most of these COIs are invisible to the public and of no concern to them. Both institutional practices and even the scientific method itself, with its emphasis on adequate disclosure and independent reproducibility, have evolved over long periods of time to keep many potential COIs in check. But financial COIs, he said, are a very different matter: they are well understood by the public and have become a matter of increasing concern to them. This type of COI can undermine the credibility, integrity, and trustworthiness on which rests the privileged status of academic medicine in contemporary society. In the view of AAMC, universities, and especially their academic medical centers, have struck a “grand bargain” with society. The perception and expectations of society are beautifully captured in the language of the Declaration of Principles issued nearly a century ago—in 1915—by the American Association of University Professors (AAUP):

All true universities, whether public or private, are public trusts designed to advance knowledge by safeguarding the free inquiry of impartial teachers and scholars. Their independence is essential because the university provides knowledge not only to its students, but also to the public agency in need of expert guidance and the general society in need of greater knowledge; and . . . these latter clients have a stake in disinterested professional opinion, stated without fear or favor, which the institution is morally required to respect (AAUP, 1954).

Of course, financial COIs are not unique to academic medicine. The past several years have brought exposés of such conflicts in a wide array of industries, all of which are perceived to have violated their fiduciary relationships with their clients. Among these industries has been the pharmaceutical industry, which has seen its reputation (as measured by Harris polls) plummet in the past decade from near the very top to the bottom in public approval, where it now rests uneasily with the tobacco industry.

Financial COIs in academic medicine first came to public attention in the late 1970s and 80s, when a number of episodes of egregious scientific misconduct were linked to financial self-interests on the part of the perpetrators. The linkage was unfortunate because it seems to have engrafted in the public consciousness the notion that all financial conflicts in biomedical research—especially clinical research—are linked to research misconduct. High-profile congressional hearings and high-profile newspaper headlines led Congress to mandate, in the Public Health Reauthorization Act of 1988, federal definition and regulation of financial COIs in sponsored research.

The process of developing this regulation is instructive, since it involved years of difficult negotiation with academia. The final regulation, which was not issued until 1995, exhibits great deference to academic self-governance and places the primary responsibility for managing financial COIs in federally sponsored research on the institutions themselves. Such delegation of responsibility and accountability to the regulated community was certainly an unusual expression of confidence in the community. Dr. Korn wondered whether the same confidence would be shown today.

The speaker observed that the primary concern of the Congress at that time, and the primary focus of the regulation, was to protect the integrity of scientific research and the scientific record. The regulation neither addresses nor contains special provisions directed at human subjects research. However, beginning in the mid-1990s and continuing to this day, the public spotlight turned to the protection of human research participants and the perceived corrosive effect of both individual and institutional financial COIs in assuring that protection. Damning reports were issued by the Government Accounting Office (GAO), the Office of the Inspector General of the Department of Health and Human Services (HHS), and the Congress—one of them trumpeting that the Institutional Review Board (IRB) system was “in jeopardy.” Within a few years followed reports of the deaths of four research volunteers. Perhaps the most widely publicized of these was the death of Jesse Gelsinger, under circumstances in which both individual and institutional financial COIs were alleged to have played a role.

It is now well recognized that problems that may arise from financial COIs in academic medicine are not limited to research, but also extend to medical education and clinical practice. A paper in the *Journal of the American Medical Association* (JAMA) in January 2006, authored by more than a dozen prominent figures in academic medicine (among them the then-president of the AAMC), specifically addressed an array of concerns arising from industry support of medical education, from free meals to educational programs (especially Continuing Medical Education [CME]) and faculty participation in industry speakers’ bureaus) (Brennan et al., 2006). The authors questioned how academic medicine could reconcile its deep and growing dependency on industry support of its core mission of education with its oft-proclaimed commitment to medical professionalism and the teaching and practice of evidence-based medicine.

The AAMC has been troubled by and has attempted to address financial COIs in academic medicine for at least 20 years. Its first publication on the issue, “Guidelines for Dealing with Faculty Conflicts of Commitment and Conflicts of Interest in Research,” was issued in 1990. It was followed by a 1997 report titled “Developing a Code of Ethics in Research: A Guide for Scientific Societies.” In 2001 and 2002, an AAMC Task Force issued two widely recognized and influential reports setting forth principles and recommendations for managing both individual and institutional financial conflicts of interests (AAMC, 2001 and 2002). At present, the Association is engaged in two major projects related to financial COIs. One is a task force that examines industry support of medical education. The other is a collaborative effort with the Association of American Universities in which a joint advisory committee is revisiting the topic of financial COIs in clinical research. The latter project builds on the earlier AAMC Task Force reports and uses the shared experiences of the intervening six years to update, refine, and elaborate the earlier recommendations and guidance.

Dr. Korn expressed the hope that the scientific insights and perspectives presented in the seminar and captured in this monograph will provide a firm scientific foundation for the principles, recommendations, and guidance that will emerge from these two projects in the coming year.

Scientific Background and Introduction of Speakers

Michael Friedlander, Ph.D.
*Wilhelmina Robertson Professor and Chair, Department of Neuroscience
Director of Neuroscience Initiatives, Baylor College of Medicine*

Dr. Friedlander introduced two definitions critical to the symposium:

- *Influence*—a power affecting a person, thing, or course of events, especially one that operates without any direct or apparent effect.
- *Reciprocity*—quality or state of being reciprocal; mutual dependence, action, or influence.

He called attention to the words “without direct or apparent effect,” observing that influence and its effects offer a rich subject that is far from completely understood. In social psychology, “reciprocity” has a more precise definition than the dictionary meaning:

- *Reciprocity in social psychology*—in-kind positive or negative response of individuals towards actions of others.

Dr. Friedlander explained that positive reciprocal actions differ from altruistic ones in that they only follow from the positive actions of others. This differs from social gift giving, which is not undertaken with the hope or expectation of future positive response. In the context of this symposium, the immediate focus is the interaction between physicians and representatives of the pharmaceutical industry. The pharmaceutical industry spends a large sum of money—approximately \$12–15 billion annually—to market its drugs to physicians (Darves, 2003; “Drugmakers’ Gifts,” 2002; Katz, Caplan, & Merz, 2003). It is unlikely that the industry would invest that kind of money in an activity if it did not expect to receive something worthwhile in return.

During training, I was told, when you’re out to dinner with a doctor, “The physician is eating with a friend. You are eating with a client.”

Shahram Ahari (Fugh-Berman and Ahari, 2007)

A recent national survey of 3,167 physicians found that those in family practice estimate that they meet with pharmaceutical representatives an average of 16 times each month. For cardiologists, monthly visits are estimated at 9; for internists, the total is 10 (Campbell, Gruen, & Mountford, 2007). Between 1995 and 2005, the number of drug representatives more than doubled, from 38,000 to 100,000 (Marshall, 2005).

Many practicing physicians feel that their meetings with industry representatives give them useful information they are able to assess dispassionately. When the speaker informally surveyed some of the medical practitioners among his own colleagues, one told him emphatically, “I can separate a marketing pitch from real data.” Some were almost insulted at the implication that such a separation might not be possible. One asked indignantly, “You don’t really think that I would let a

pizza lunch influence my decision-making process for my patients, do you?”
Another asserted:

- “I am an intelligent, compassionate physician who wants the best outcomes for my patients. I would not let an industry representative influence me to do anything that would not be in the best interest of my patients. *I can manage my own brain.*”

Today’s symposium speakers are each engaged in research at a variety of levels that sheds light on this critical issue. When gifts are involved, can the recipient rationally assess the “pitch” that goes with them? Can one indeed fully manage one’s own brain, keeping all decision-making operations at a conscious level, immune from the influence of deeper “obligations” that may result from previous interactions? How does reciprocity develop and manifest in our brains and behavior?

The goal of this event is to set the stage to explore these questions by examining the underlying science (both biological and psychosocial) of how influences work. A considerable base of literature is now available on cognitive behaviors that occur without conscious awareness, “deliberation without intention,” and the influence of “framing” on expressed preferences. It is now possible to eavesdrop on and record the biological events that occur in the brain as information is evaluated and decisions are made.

We are fortunate to have with us today a highly accomplished group of speakers who will address the issues of influence and reciprocity from a variety of perspectives, including those of neurobiology, psychology, behavioral economics, and public policy. They will share the results from a variety of pertinent studies, including many of their own, that show how emerging research is informing our understanding of influence and reciprocity.

During the course of this symposium, the information and insights that are shared among the speakers and respondents should contribute to four major goals:

- 1) To identify, quantify, and understand influence, reciprocity, and conflicts of interest;
- 2) To develop responsible practices to manage and mitigate these conflicts;
- 3) To sustain and enhance the important contributions of industry to biomedical discovery, product development, and education through evidence-based medicine; and
- 4) To earn the public trust and protect the patient.

The symposium speakers will describe a variety of pertinent studies that show how emerging research from their several disciplines informs contemporary understanding of influence and reciprocity. (Biographical sketches for all speakers are presented in Appendix A.)

The Perspective from Neuroscience

Read Montague, Ph.D.

Brown Foundation Professor, Department of Neuroscience

Director of the Computational Psychiatry Unit and the Human Neuroimaging Laboratory, Baylor College of Medicine

Dr. Montague stressed that norms of fairness and exchange are based on deep, rich models of human interactions. Our brains use deep-seated instincts plus actual exchanges with other humans to determine how we choose to interact. Like that of all social creatures, human behavior is influenced by a vast range of perceived favors. These favors would logically be expected to have neural underpinnings, and they do.

Current research uses functional magnetic resonance imaging (fMRI) to determine to what degree, and to what level, favors from others measurably influence our decisions. These “others” may be other humans, other organizations, or the array of proxies from other agents. Standard magnetic resonance imaging techniques exploit density differences of water in different tissues to produce anatomical “snapshots,” while newer, functional MRIs are sensitive to changes in blood flow, allowing researchers to “make a movie” of blood flow changes that signal and localize neural activity. The use of this powerful and noninvasive technology has revolutionized cognitive science, giving scientists the ability to make dynamic physical measurements and relate them to behavioral models.

We currently do not understand the neural basis of how our brain responds to someone who acts on behalf of an organization or person. Using the functional MRI as a tool, researchers are able to ask and begin to answer an important question:

- *To what degree and at what “level of covert subtlety” do favors influence measurable neural responses and behavior?*

Evolution has built very complex mechanisms for reward processing into our brains. Our nervous system has had to solve the challenge of identifying the best actions to obtain food, sex, and other natural rewards required for survival. To do that, our brains employ efficient internal models designed to comparatively evaluate and harvest rewards from our environment.

Although this work is in its early stages, scientists can now identify reward-processing regions of the brains in humans as they perform dynamic decision-making and valuation tasks. This work extends across a range of rewarding dimensions including funny jokes, preferred foods, beautiful faces, desired cars, and so on. Some of the best work employs principled computational models of reward-harvesting taken from the theoretical computer science community. Notably, fMRI has been used in conjunction with social exchange games in which people trade money back and forth. These studies show that reward-processing circuitry in low-level sites in the brain is engaged during social exchanges with other humans.

A Two-Person “Trust” Game: Developing a “Reputation”

A team of researchers recently probed the concept of reciprocity using a two-person “trust” game (King-Casas et al., 2005). One person in each subject pair is the “investor” and the other is the “trustee.” On each round the investor is endowed with \$20 and can send any fraction of that to the trustee. The amount is tripled before the trustee receives it; thus, if the investor gives \$10, this amount is tripled to \$30 before the trustee receives it. Now the trustee must decide how much of this \$30 to send back to the investor. Round over. Each pair of transactions constitutes a round, and each subject pair plays 10 rounds of this pay-repay cycle. Obviously, giving too little or repaying too little does not tend to build cooperation between the players. In this game, the concept of trust is measured as “the fraction of available money a player sends to his or her partner in the absence of external enforcement.”

An increase in the fraction sent in each transaction is considered an increase in trust in the partner; similarly, a decrease is considered a decrease in trust. In its single-round form, this game has been played all over the world and in many different cultures. Universally, players send more money than would be expected based on the standard “rational agent” model of economics. As the game is played, the functional MRI allows researchers to watch the formation of cooperation and the rupture of cooperation when it occurs.

A number of new findings emerged from this study. In a specific brain region (the head of the caudate nucleus in the upper brain stem) of the trustee, the researchers found a signal that predicted whether the trustee was going to increase or decrease the repayment to the investor on the next move. They called this response an “intention to trust” signal because it predicted changes in the *next* repayment of the trustee. Even more remarkably, this “intention-to-trust” signal changed as the players developed “reputations” with one another. In early rounds, the intention-to-trust signal appeared only *after* the investor’s decision was revealed to the trustee, but as the game progressed, the signal shifted to a time *preceding* the revelation of the investor’s decision. The signal began by “reacting” to the outcome of the investor’s decision, but with time ended up “anticipating” the investor’s decision.

The change in the measured neural signal paralleled a behavioral change in the subjects’ ability to guess what their partner was going to send to them. In other words, the change from reacting to anticipating occurred in tandem with the development of reputations between the players. If either party committed the social *faux pas* of keeping too much, changes in the other’s brain were clearly visible in the patterns of brain activity shown on the fMRI. Results suggest that during the experiment an internal “model” is developing in which the trustee has some confidence. The fact that all these behavioral events can be tracked along with associated neural responses shows that the issue of reciprocity can be studied in a scientific manner. The results have implications for understanding the development of reciprocity and influence.

The game demonstrates the human tendency to expect—until proven wrong—that *favors given will be paid back*. In fact, the experiment suggests, but does not prove, that this process has strong automatic components that covertly influence one’s decision to trust someone else. These findings raise the question of how relatively subtle acts of benevolence may generate reciprocal behavioral responses on the part of the recipient—responses that may not reach the level of conscious intention.

Valuing Art: The Influence of Fictional “Sponsors”

Dr. Montague discussed another experiment he carried out with his graduate student Ann Harvey using art. The experiment was designed to probe how benevolent sponsors (in this case, fictional ones) influence decisions and preferences. Participants were placed in a scanner and asked to view paintings. Each painting was presented at a random time and was present for five seconds. No other demands were placed on the subjects—just to “view” the paintings when they were presented. Dr. Montague called this the *passive art experiment*.

After the subjects finished and as they were leaving the scanner room, they were asked if they wanted to participate in a second experiment. In the second experiment, subjects were asked to rate their preference for the paintings. This abstract valuation task clearly had no “right” answer, and there were no incentives to rate any painting more highly than any other; nor was there any expectation of reciprocation based on particular responses. This experiment probed the question of which of the observed passive brain responses predicted the subsequent numerical preference for the painting subjects would reveal after viewing the art. The experiment succeeded in identifying brain responses whose amplitude correlated with the numerical preference rating placed on the painting in the second experiment.

With these data in hand, the team then wondered how the existence of an identified sponsor for the experiment would change a subject’s preference rating for these same paintings and perhaps change their associated brain responses. This work is not yet published, so the description provided here is accurate, but not detailed.

This third experiment probed the question:

- How does sponsorship of the experiment influence behavioral preference and brain responses known to correlate with the valuation of a wide range of dimensions including beauty, money, and food?

Dr. Montague summarized the take-home points. In these experiments, “sponsorship” meant that an agent (here a fictitious company) had contributed the subject reimbursement money used to carry out the experiment. At the beginning of the experiment, each subject is exposed to the company’s logo, this sponsorship information, and the amount of money the company is contributing to subject reimbursement for the experiment. The sponsor’s logo was transiently flashed close to the different paintings. *The mere presence of the sponsoring logo near a painting changed the passive brain responses to that painting and positively influenced the subject’s preference rating for the painting.*



In closing, Dr. Montague stressed that valuation responses in the brain can be measured and characterized using neurobiological models that make it possible to “eavesdrop” on people’s brains. The experiments described show that favors influence choice and brain response in measurable ways. Importantly, these responses, though measurable, are covert rather than conscious. This raises significant questions. How will perceived favors affect

- judgments about one’s own data,
- judgments concerning others’ data, and
- the character and implementation of social policies related to medical treatments?

Questions and Answers

In experiments in which you flash the sponsor’s logo, do you measure the latency response (reaction time)?

- I am pretty sure there were no significant differences in reaction time. This seems to be a “gut reaction.”

Isn’t it possible that “experts” with many knowledge structures available to them on a particular subject have trained themselves to respond differently and will be less influenced by “favors”?

- Current data suggest that we are not descended from pure altruists. Even very mild favors clearly matter and have a subtle—and sometimes glaring—impact on our judgments.

Is there a scale that relates the response to the size of the gift? Can you shed light on the “threshold effect?”

- The art experiment suggested that valuation is affected even if there is no monetary gift at all. It is true that humans have learned to inhibit their biological instincts (for example, people can go on hunger strikes), but these changes in valuation happen beneath the level of consciousness. The moment you touch the valuation system with a gift or favor, things begin to change. We don’t know what might happen if the sponsorship was turned up to the \$1,000 level.

Have you done experiments using sponsors to which subjects have pre existing attitudes?

- Yes. There are experiments in which people say they prefer either Coke or Pepsi, but in fact if they are not told what is in a can (there is no label), they don’t know which is which. In effect, they are buying the label.

Do you know what would happen if you have a pre existing negative attitude to a sponsor and the sponsor then gives you a pen?

- No, I have no idea. But the cultural exchange represented might be much larger than the value of the pen. Other social variables would have to be incorporated. The pen might be a proxy for future expectations.

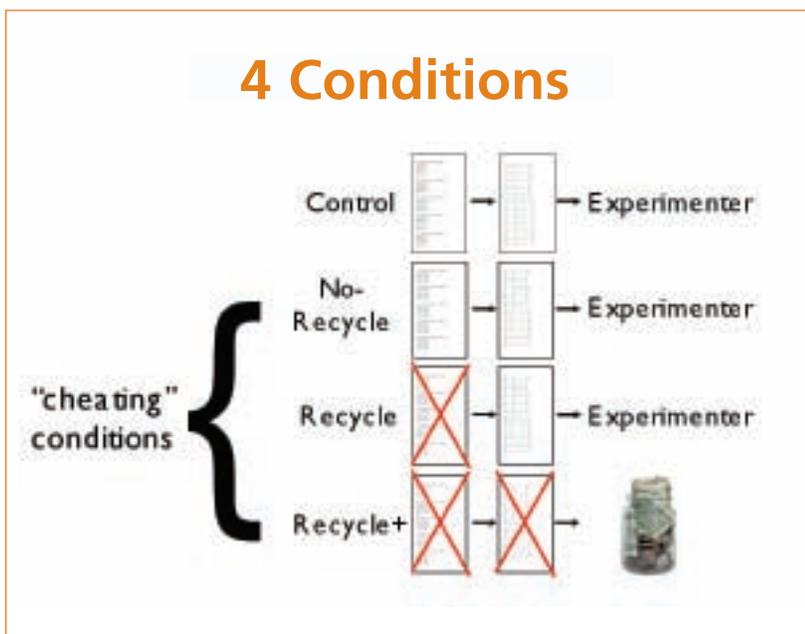
The Psychological Perspective

Dan Ariely, Ph.D.

Alfred P. Sloan Professor of Behavioral Economics, Massachusetts Institute of Technology (MIT), Sloan School of Management

Exploring the issue of why people choose to be honest or dishonest in a given situation, Dr. Ariely contrasted two perspectives:

- **“Economics 101:”** People are rational and selfish. They try to maximize payoffs to achieve external rewards and benefits. The greater the reward, the greater the likelihood that people will be dishonest to achieve that reward.
- **“Psychology 101:”** People have internalized social norms that vary based on cultural factors. These norms are played out in internal rewards and punishments that are intimately related to self-concept. People will be willing to sacrifice external rewards to maintain the *internal* reward of keeping a consistent self-concept.



He described a series of experiments aimed at exploring the motivating forces that shape decision making when a choice must be made between honesty and dishonesty. He pointed out that even in situations when people “only steal a little,” the cumulative effect can be great. For example, Los Angeles County believes it loses about a billion dollars each year in employee theft and fraud. Overall, this category of theft is estimated to cost the U.S. economy \$600 billion annually.

In order to achieve the rewards of cheating without compromising their self-image, people are often able to give themselves the leeway to cheat up to a certain point without having to call themselves dishonest. (“Those weren’t lies, that was just ‘spin’!”) People are thus able to get some financial benefits while continuing to think of themselves as basically honest.

Changing the Probability of “Getting Caught”

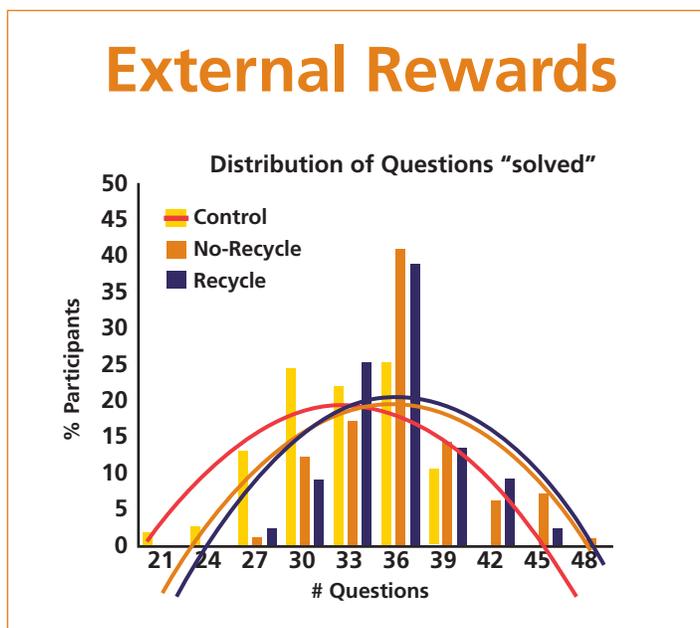
Dr. Ariely described an experiment with college students in which he explored the following question:

- *Will decreasing the probability of being caught cheating affect the magnitude of deception?*

Experimenters used four conditions (as shown in the accompanying graphic on page 13) in which the changing variable was the diminishing likelihood of “getting caught” (Mazar & Ariely, 2006; Mazar, Amir, & Ariely, 2007). In the “control” version of the experiment, students received a test with a series of general knowledge multiple-choice questions (e.g., “How deep is a fathom?”) and a “bubble sheet” for answers. They were told they would be paid 10 cents for each correct answer. After answering the question, they transferred their answers onto an empty answer sheet. The experimenter checked the answers, summed them up, and paid them the amount due. This “no cheating” version provided the benchmark against which the amount of cheating in other conditions could be assessed.

In the “no-recycle” condition, students received a bubble sheet with the correct answers premarked in grey. When the answer they had chosen was incorrect, the students could be honest and mark the circle they had actually chosen or be dishonest and mark the circle that showed the correct answer. They summed up the correct answers and wrote that number at the top of the sheet, handing both the test and the answer sheet to the researcher. In this scenario, students who cheated ran the risk that the researcher might compare the two versions and they would be caught.

The “recycle” condition increased the odds that cheating students would not be caught by allowing the students to shred their original test sheet and take only the answer sheet to the experimenter. The “recycle plus” condition went even further, inviting students to shred both the answer sheet and the original answers. This condition eliminated any interaction with the experimenter; students simply took the money they felt they deserved from a jar.



Researchers also asked a different group of students to predict the number of questions they thought the participants would claim to solve in each of the above circumstances. These students assumed that the easier it became to get away with cheating, the more cheating would occur.

The prediction was wrong. As the graph of External Rewards Results shows, researchers found that students allowed themselves to cheat a little, but no more. One interpretation is that they stayed well below the maximum deception that they might have gotten away with because they wanted to maintain their self-concept as basically honest people and avoid receiving a “negative self-signal.” They cheated a little and benefited from the deception, but something besides the probability of getting caught appeared to limit the extent of the deception.

Changing Beliefs about Average Performance

Researchers also conducted an experiment in which they manipulated participants' beliefs about how other people performed on the same test. The purpose was to test the idea that people would cheat up to whatever level was defined as "socially acceptable" in the belief that their deception would either not be detected or would be socially justified. Experimenters also wondered whether individual self-esteem might motivate people to cheat to avoid appearing "below average."

Researchers manipulated both the possibility of cheating without being caught (as before, a control version in which cheating would likely to be detected vs. the possibility of "recycling" answers and thereby destroying the "evidence") and, in addition, the number of problems students were told "average" people solved. Some were told the average number solved was four; others thought it was eight. Again, they were paid according to the number of correct answers.

Once again, people did cheat to some extent when given the opportunity. However, the level of cheating did not change significantly depending on what they were told was "average." They did not appear to be cheating as much as they could and still appear "normal," nor did they appear to be motivated by issues related to self-esteem (wanting to appear at least as smart as their peers). Once again, people allowed themselves to cheat a little, and no more.

Dr. Ariely summarized the conclusions of the experiments described to this point as follows:

1. People do cheat when they have a chance to do so.
2. People cheat by only a "little bit."
3. People's magnitude of dishonesty is not strictly monotonic in its relation to the magnitude of external rewards.
4. People seem to know that they are overclaiming.
5. Cheating by "just a bit" does not cause people to think of themselves as dishonest.

Increasing Awareness of Moral Standards

- *What happens if people are reminded of moral standards before they perform a task in which cheating is possible? Would the tendency toward honest or dishonest behavior shift or remain constant?*



In this experiment, the first group of participants was asked to write down ten books they read in high school before they did a series of math problems and checked their answers. The second group was asked to list as many of the 10 Commandments as they could recall. Participants were again paid for the number of correct answers on the math problems.

When a third group of students was asked to guess how the experiment would come out, they thought that the number of answers claimed to be correct would go down a little for those asked to recall the Ten Commandments, but not much. They did not think the religious reminder would make much difference.

Again, the prediction proved false. The group of people who simply recalled books read in high school cheated by just one question. But there was no cheating when the Ten Commandments were recalled. The number of commandments students were able to remember made no difference. It was enough to reflect on the commandments to eliminate cheating completely.

Researchers then explored what would happen if participants were asked to sign a simple statement, “I understand that this short survey falls under [the University’s] honor system.” Variables included changes in the likelihood of “getting away with” deception and, in this experiment, the amount of payment, which was either 50 cents per correct answer or \$2 per correct answer. Once again, a group of students, asked to predict the results, thought it likely that the reminder of the honor code might inhibit the tendency to cheat slightly, but not much.

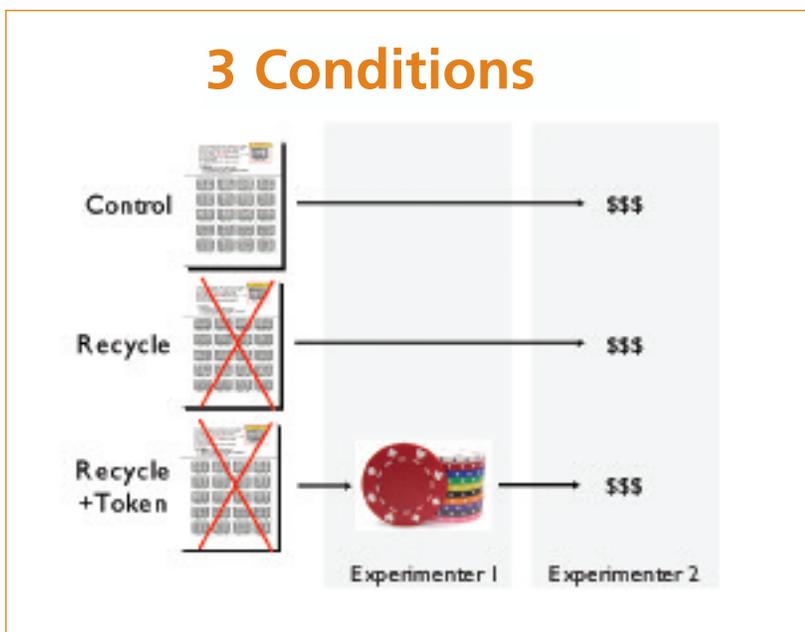
Wrong again. The reminder of the honor code eliminated cheating completely, regardless of the amount of the reward. Curiously, it had exactly the same effect whether the institution in question was the Massachusetts Institute of Technology (MIT), which does not have an honor code, or Princeton, which has a strong honor code and spends a week with freshmen attempting to impart this code as part of the school’s cultural expectations.

Implications of the Use of Tokens: the “Degrees of Freedom”

Dr. Ariely explored the idea that increasing the “degrees of freedom” people have to interpret their behavior in ways consistent with their self-concept will influence the amount of deception. For example, he suggested that it is probably easier for most people to take a pencil from the workplace than to steal from petty cash, using the rationale that the employer “expects” the employee to take little things like pencils. He noted that when he conducted an informal experiment in which he left six-packs of soft drinks in university dormitories, they disappeared rapidly; however, when money was left instead, it remained untouched. Such examples suggest that the more leeway people have to interpret their actions, the more likely they are to be dishonest.

The following experiment tested the impact of the use of tokens on dishonesty, using three conditions. The first was a control condition in which experimenters could check their answers; the second was a “recycle” condition in which they could cheat without being caught; and the third condition was one in which after recycling the test sheet, participants received *tokens* from the experimenter that they then exchanged for money from a second experimenter. Asked to predict results, a separate group of students doubted the use of tokens would make any difference.

In fact, however, the use of tokens *doubled the amount of cheating*. The use of these transitional items, meaningless in themselves, clearly made it much easier for participants to deceive themselves about what they were doing without interference from their sense of morality. Apparently, Dr. Ariely concluded, *the medium is a powerful facilitator of dishonesty*.



Dr. Ariely raised the question of whether this experiment implies that executives who see themselves as manipulating stocks rather than cash are more likely to be dishonest. What people tell themselves about what they are doing clearly matters. Humans are very good at making it easier to cheat if they are given the opportunity to tell themselves a good story about it. Dr. Ariely closed with the example of the Internet site “E-Cheat,” where students are able to purchase papers in the hope of getting better grades than they would by themselves. The site’s motto is: “It’s not cheating, it’s collaborating.”

Questions and Answers

Have you looked at whether or not people's behavior changes depending on the severity of the punishment for cheating?

- In the experiment we described, we did not explore this variable. However, it appeared that people were not doing a cost-benefit analysis as they made their decisions. They simply allowed themselves to cheat “just a little” and no more, no matter what.

Does it matter whose money people think they are taking?

- It does not seem to matter whether people think they are stealing from an individual or an institution (in the case of one experiment, MIT).

It is possible to hypothesize that the desire to protect one's reputation might matter in the decision as to whether to cheat or not. Have you investigated that?

- In one variant on the experiment, half the people were told that the average MIT student solved eight problems, when in reality they only solved four. We wondered whether the respondents would increase the number of responses to make themselves look more in line with the “average,” but they did not. The internal stopping point appeared to be set separately from consideration of what others were capable of doing.

Does it matter if cheating benefits a worthy cause?

- Yes, there is some evidence that people who feel they are cheating to benefit a worthy cause do allow themselves to cheat a bit more.

How does the sense of social norms for cheating influence decision making?

- Social convention is very important. Some actions may not appear unethical because society accepts them as normal. For example, cheating the government appears perfectly fine to many people.

What are the implications of your research for policy making? Currently, the American Medical Association (AMA) policy guidelines allow physicians to receive gifts of less than \$100. This may not be the way to go.

- One approach is to use fewer “tokens” and more direct measures of cost. For example, physicians might prescribe fewer unnecessary tests if they were aware of the cost of each test prescribed. The “Ten commandments” experiment also poses the question, “How can you make people think more routinely about ethical standards”?

The Behavioral Economics Perspective

George Loewenstein, Ph.D.

Herbert A. Simon Professor of Economics and Psychology, Carnegie Mellon University

Dr. Loewenstein began by noting that conflicts of interest involve a clash between professional responsibilities and economic interests; physicians face many such conflicts, notably in connection with prescribing practices and in regard to payments received for referring patients to clinical trials. Behavioral economics applies psychological research findings and insights to economics—something traditional economics is not well equipped to do.

Traditional economics assumes that professionals take the interests of clients into account only because of economic self-interest: damage to one's reputation could affect the "bottom line." This primitive model sees professionalism and economic self-interest acting asymmetrically as motives for behavior. It also assumes that people who confront conflicts of interest are equipped to deal with them rationally—e.g., that patients who are aware that their physician has a conflict of interest will know how to discount the physician's advice.

Behavioral economics challenges these assumptions and insists on a far more complex model of how humans make decisions—one that includes unconscious motives and other factors outside the control of a purely rational process. This model proposes that professionals generally desire to behave in an ethical fashion, but their judgments are often biased by economic interests. Professionals

- seek out information selectively,
- process the information they receive in a biased fashion,
- are easily derailed from good intentions, and
- are unaware of these effects.

According to this model, self-interest and professionalism are not opposing forces to be addressed by judicious "trade-offs." Rather, self-interest pervades or biases people's perceptions of what it means to be professional. Biases are viewed as unconscious—*not* as evidence of deliberate corruption.

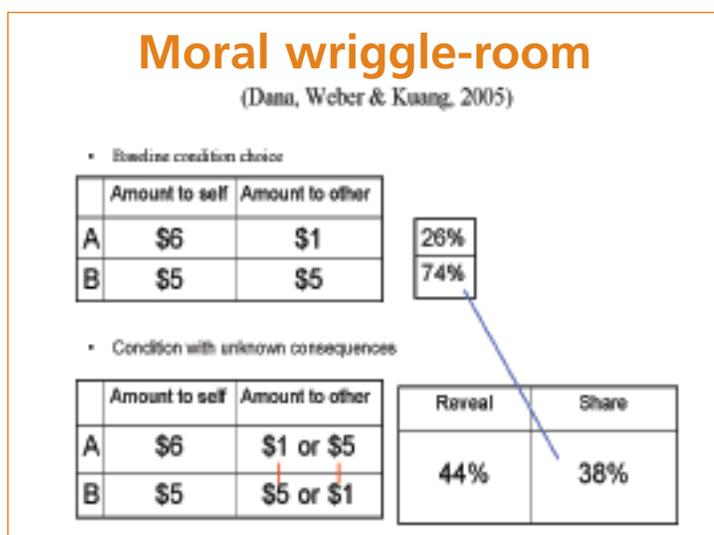
Unconscious Influences on Advice-givers

Dr. Loewenstein cited a number of pertinent studies that inform the behavioral economics model of behavior. Some of these help to explain how the judgments and decisions of even well-intentioned physicians can be biased by self-interest.

He began by citing a study by Ditto and Lopez (2002), in which subjects were told they were being tested for a dangerous enzyme deficiency. A drop of saliva was placed on a test strip, and subjects waited to see if it turned green. Some were told that the strip would turn green if they had the deficiency; others that the strip would turn green if they did *not* have the deficiency. In fact, the strip was just an ordinary piece of paper. Those hoping to see the strip turn green waited much longer than those hoping it would not turn green. The study highlights the selective nature of information seeking: the subjects were looking hardest for

what they *wanted* to see. A similar observed phenomenon is the “ostrich effect”—the tendency to avoid *unfavorable* news. For example, people tend to look up the value of their stock holdings when the market is up, but they are less likely to do so when the market is down (Karlsson, Loewenstein & Seppi, 2006). They enjoy the confirmation that they are doing well.

In an interpersonal context, Dana, Weber and Kuang (2005) showed a human tendency to give ourselves “moral wriggle-room” by selectively seeking out or ignoring information so as to permit unethical behavior with an easy conscience. In the baseline condition shown in the graphic, a “dictator” subject (Player A) was able to choose whether to give \$6 to himself or herself and \$1 to Player B (“the recipient”) or give \$5 to each player. Subjects were told that Player A was going to make this decision for both of them, although Player B was also able to make the same decision “hypothetically.” The choice of payoff was apparent to both players. Under these circumstances, 74 percent of the 19 “dictators” chose to give themselves and their partners equal shares of the available funds. All the recipients, perhaps not surprisingly, believed that if they had been in the position of dictator, they would have chosen the equal split option.



In a second version of the same game, the dictator had to choose once more whether to keep \$5 or \$6; this time, however, the impact of the decision on the other player (the recipient) was randomized. If the dictator chose \$6 for himself or herself, the recipient might get \$1 (very unfair) or \$5 (only a little unfair); if the dictator chose \$5, the same was true; the recipient might get either \$1 or \$5. However, one of the two choices always resulted in the recipient getting \$5 and the other choice resulted in the recipient getting \$1. Moreover, in this second version, before making a choice, the dictators were given the option of revealing the consequences each decision would have for the amount the recipient would receive. If they wished to, therefore, it was trivial for them to ensure that the recipient got the full \$5.

Under these circumstances, 44 percent of the “dictators” *chose not to look* to find out how much the recipient would receive, thereby depriving themselves of the ability to choose the fairest option. As a result, in the condition corresponding to the first version (in which the choice was between \$6 for oneself, \$1 for the recipient, or \$5 for each) only 38 percent, instead of 74 percent, of the recipients ended up with \$5. Dr. Loewenstein concluded that “people are good at *not* looking when they don’t want to see.”

Even when people do look at data, he continued, their interpretation is often warped by a “self-serving bias.” In a 1979 study, Messick and Sentis told pairs of subjects that they would work different numbers of hours on a joint task. In one instance, Person 1 worked 10 hours and Person 2 worked 7 hours; in the second

instance, Person 1 worked 7 hours and Person 2 worked 10 hours. The subject who worked 7 hours always got \$25. When Person 1 worked 10 hours and was asked what she should be paid, the average answer was \$35.24. However, when Person 1 worked only 7 hours and was asked what the person who worked 10 hours should get, the “fair pay” dropped to \$30.29. People often confuse what’s ethical with what’s in their own interest.

Similar findings were obtained by Roth and Murnighan (1982), who designed an experiment in which two subjects bargained over the distribution of 100 lottery tickets. In one version of the experiment, in which the winning ticket netted \$5 to one subject but \$20 to the other, impasse rates were high. Subjects gravitated toward the notion of fairness that benefited themselves, with the \$20 subjects tending to view an equal split of tickets (50 tickets to each) as fair, but the \$5 subjects viewing an equal split of expected value as fair (80 tickets to themselves and 20 tickets to the other subject). Again, people were shown to conflate what is in their own interest with what is ethical.

All of this research suggests that physicians who will personally benefit from recommending a particular drug, treatment, procedure, or clinical trial will have no problem figuring out ways to justify that decision as being in their patients’ interest.

Other research highlights other avenues through which fragile ethical motivation can be undermined. In one experiment, for example, Israeli high school students collected money for charity door to door. Some were paid a 1 percent commission, some received a 10 percent commission, and some received no commission at all. The findings showed that students who received no commission were actually the most successful. Those who received a 1 percent commission were the least successful. However, if they received a 10 percent commission, they were almost as successful as the unpaid volunteers, leading Gneezy and Rustichini (2000) to title their article, “Pay enough or don’t pay at all.” Dr. Loewenstein stressed that while people desire to behave ethically because of what it says about them, they are less motivated when ethical actions will not be perceived as ethical by others.

The Motives and Behavior of Advice Recipients

Dr. Loewenstein argued that the psychological problems that play into conflicts of interest are not limited to advice givers; those receiving advice are also biased in ways that exacerbate the problem. First, although advice recipients may be ready to believe that advice givers in general might be biased by personal interests, they are generally not ready to believe this about professionals, such as physicians with whom they deal personally. This is true because people have the wrong psychological model of conflict of interest; they believe that succumbing to conflicts of interest is a matter of conscious corruption, whereas unconscious bias is a far more serious problem. Holding the wrong intuitive model of conflict of interest, recipients of advice are often not ready to believe that advice givers they deal with personally would mislead them. They may be ready to believe that other physicians could be influenced by COI—but not theirs.

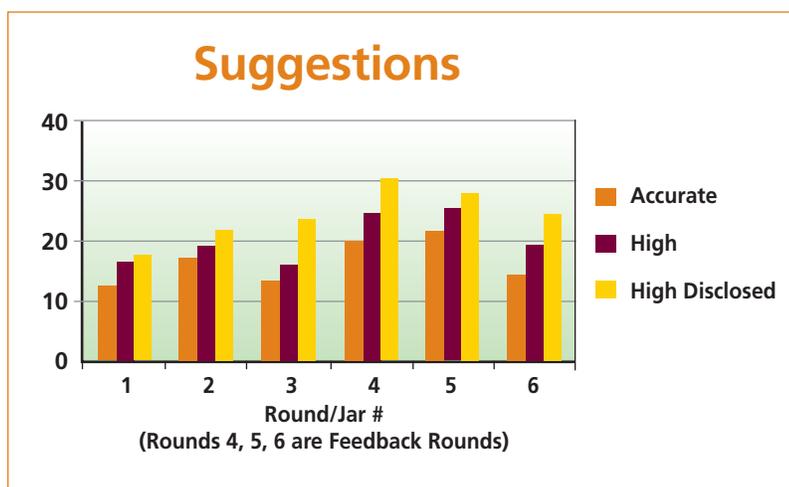
Moreover, even if they are aware of a conflict of interest and are ready to believe that advice they receive could be biased, advice recipients, such as patients, do not know how to adjust their behavior for something as complex as conflicts of interest. And, when people don't know what to do with information, they often ignore it or take it insufficiently into account.

Does Disclosure Work?

Disclosure is the most common response to the presence of COIs. For example, the American Medical Association's code of medical ethics (2005) requires that when physicians refer a patient to a facility in which they have ownership, or when they recommend a patient for a clinical trial that will benefit them financially, they disclose these facts. However, though this theoretically levels the playing field, in fact it does not really eliminate the problem and may make it worse.

Disclosure may give the adviser a "moral license" for strategic exaggeration in the adviser's best interest. ("I told her I had a conflict—now, I can recommend the surgery.") Having disclosed a conflict of interest, moreover, advisers may feel compelled to give advice in an extra-forceful fashion.

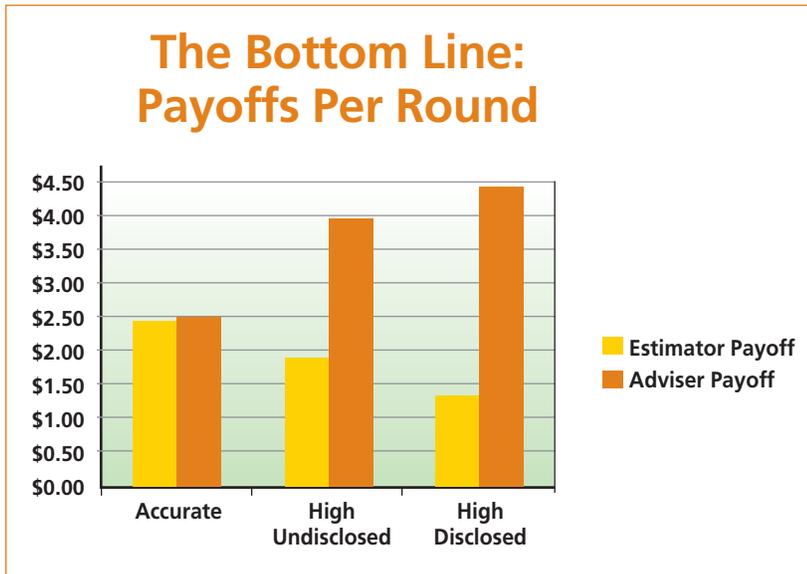
From the advisee's perspective, disclosure may also have a perverse effect. For example, following the disclosure of a COI on the physician's part, a patient may feel it would signal a lack of trust to not follow the physician's advice or to ask for a second opinion, and may therefore be *less* likely to do so. The patient may also respond positively to the disclosure, feeling it indicates the physician's basic honesty and worthiness of trust. Ideally, disclosure should lead to taking advice with "a grain of salt," but in fact this seldom occurs.



Dr. Loewenstein illustrated his contention with the example of a study in which experimental subjects assigned to the role of "estimator" guessed the value of coins in jars and were paid for the accuracy of their estimate (Cain, Loewenstein, & Moore, 2005). While the estimators only saw the jars briefly, from a distance, subjects assigned to the role of "advisers" saw the jars up close and were therefore able to make a much better guess. Advisers provided advice to estimators under three different conditions:

1. *Accurate*: The advisers were paid for estimators' accuracy, so the two had compatible interests in developing an on-target estimate.
2. *High/undisclosed*: The advisers were paid on the basis of how high the estimate was, so they have different interests from the estimators—a COI. However, the conflict of interest was not disclosed; estimators were not informed of advisers' incentive to mislead them.

3. *High/disclosed*: Again, advisers were paid on the basis of how high the estimate is—but in this experimental condition, the estimators were informed of this. (The COI is disclosed and both parties are aware of it.)



As shown in the graphic on the preceding page, advisers actually exaggerated the amount in the jar *even more* when their COI was disclosed, compensating for the loss of trust. Interestingly, however, there was the highest standard deviation in the “high disclosed” circumstance, implying that people do use different models for what constitutes ethical behavior in this morally complex situation.

Also, as shown in the graphic to the left, the effects were disturbing: disclosure of the COI actually turns out to be beneficial for advisers, but the people receiving the advice are much worse off.

Implications of Experimental Findings

Loewenstein stressed the following conclusions:

- Conflicts of interest will inevitably bias physician behavior, however honorable and well-intentioned specific physicians may be. Bias may distort their choices, or they may look for and unconsciously emphasize data that support their personal interests.
- The only viable remedy is to eliminate COIs whenever possible—e.g., eliminate gifts from pharmaceutical companies to physicians. This should include gifts of any size, because even small gifts can result in unconscious bias.

There is a growing crisis of trust in medicine, but on the whole, physicians are still highly trusted and respected. This trust and respect cannot be taken for granted. Once lost, it is far more difficult to *restore* trust than to *maintain* it.

Questions and Answers

In all transactions, we pay for services. How do we avoid the inherent conflicts of interest when people are paid for recommending services that will financially benefit them as providers?

- Dr. Loewenstein responded that the simplest and most straightforward solution, when conflicts cannot be eliminated, would be to encourage increased solicitation of second opinions. Because patients often underestimate the severity of conflicts of interest, it may be helpful to motivate them to seek out second opinions through the introduction of incentives (e.g., reduced copayments) for doing so. Moreover, patients need to be counseled about how to obtain second opinions that are not themselves biased—e.g., by informing the physician that he or she will not be doing the procedure and by seeking second opinions from physicians who are in a different provider network, which reduces the reluctance to second-guess a colleague’s advice.
- A far more radical solution would be to change the way that physicians are compensated. Currently, many physicians are compensated for each procedure they perform, creating a particularly powerful conflict of interest. Academics, in contrast, are generally paid salaries, with salary increases dependent on long-term productivity, and most academics seem to be highly motivated by this arrangement. Dr. Loewenstein proposed that it might make better sense and minimize COIs for physicians if they were also paid fixed salaries with yearly performance reviews. This would certainly be a sea change that would take time, but medicine should move toward this system.

The Public Policy Perspective

Max Bazerman, Ph.D., D.Sc. in Economics (hon)
*Jesse Isidor Straus Professor of Business Administration,
Harvard Business School*

Dr. Bazerman supported Dr. Loewenstein's conclusions and emphasized the importance of understanding "bounded awareness" in decision making. Doctors, like other humans, are not perfect information-processing machines. Like the rest of society, they are well able to ignore what they don't want to see and seek confirmation for what they do want to believe—with no conscious intention to deceive either themselves or anyone else. Dr. Bazerman's presentation builds on this finding and moves toward its implications for public policy.

The speaker illustrated the concept of unconscious bias with an anecdote about a medical decision he faced in his personal life—whether or not to undergo surgery to correct a problem with his hip. He observed that, in general, when he informally consulted surgeons of his acquaintance, they all agreed he should have the surgery. Doctors who were not surgeons uniformly told him, "If it's optional, don't let them touch you." Clearly, he concluded, "Surgeons believe in surgery." People did not approach the decision from a neutral, unbiased perspective.

Dr. Bazerman showed a classic 18-second video used by Ulric Neisser (1979) to illustrate how, by focusing on one task, people may miss very obvious information in their visual world. Symposium attendees, like the participants in Neisser's experiment, were asked to count the number of passes of a basketball between members of two groups. The task is challenging enough that most people have to give it their full attention. Only 21 percent of participants in the original study observed a woman who clearly and unexpectedly walked through the basketball court carrying an open umbrella—though all of them could clearly see her when the video was reshown without the distracting need to concentrate on the counting task. Dr. Bazerman added that Simons and Chabris (1999) have recently replicated this effect with a video in which a person in a gorilla costume walks through a basketball game, thumping his chest. The gorilla is clearly visible for more than five seconds, and about a third of video watchers do notice the gorilla. (Simons offers more such demonstrations on DVDs available at www.viscog.com.) The speaker stressed that the takeaway lesson from such experiments is that there can be important information that we do not notice or do not want to notice.

*It is difficult to get a man to understand
something when his salary depends on his
not understanding it.*

Upton Sinclair

The concept of bounded ethicality (Chugh, Bazerman, & Banaji, 2005) refers to the "systematic and predictable ways in which humans act unethically beyond their own awareness." The speaker underlined this concept as "critically important" to issues involving COIs in the medical profession. There may be a small number of physicians who deliberately make decisions not in their patients' best interest, but far more of them unknowingly engage in "bounded ethicality"—a concept that is larger than COI, but encompasses COIs.

When people are not aware of their biases, many otherwise appropriate policy suggestions and penalties are simply not viable. Implicit discrimination in processing information is far more common than explicit and deliberate bias. People tend to favor their own group and may indirectly harm others without being aware of it. People may more willingly engage in unethical behavior that benefits their family or other groups they belong to. Also, people are likely to overclaim credit for achievements or good ideas in which they had a part and remember fewer that were unsuccessful.

Dr. Bazerman compared the goals, inappropriate goals, and threats to goals that exist in auditing and medicine as follows:

Goals of Auditing and Medicine Compared

	Rough Goal Statement	Definitely NOT a Goal	The Threat of COI to the Goal
<i>Auditing</i>	To provide an independent assessment of the financial condition of firms.	To maximize the profit of four dominant firms.	Auditors have a vested self-interest in keeping the company being audited happy.
<i>Medicine</i>	To provide the best medical advice and treatment possible.	To maximize doctors' earnings.	Key decision makers (e.g., doctors) are rewarded for decisions that depart from their goal.

In the case of auditing, experts warned for years about the potential for exactly the type of debacle that eventually occurred, exemplified by the Enron scandal. In 2000, for example, many scholars testified before the Securities and Exchange Commission (SEC) that the “big five” accounting firms were now almost incapable of impartial financial audits because they were providing consulting services to the same firms they were auditing. Finding problems meant that the accounting firms were likely to lose lucrative consulting business. In addition, personnel involved in the audits often took jobs with the client firm, making “independent” judgment even harder. Despite the fact that psychologists have known for a long time that individuals (even honest ones) with a vested self-interest in certain outcomes are incapable of unbiased judgment, only weak reforms were made following this testimony (largely focused on disclosure). These changes were insufficient to protect many stakeholders from severe and avoidable losses. Hundreds of people must have seen and overlooked important evidence, most of whom were by no means deliberately corrupt. Rather, they were acting in a “bounded” ethical way.

To address the auditing issues just highlighted, Dr. Bazerman challenged participants to decide which policy approach would make the most sense:

- 1) In order to maintain auditor independence, auditors are prohibited from establishing durable long-term cooperative partnerships with their clients, from providing non-audit services to their clients, and from taking jobs with their clients; or,
- 2) Start by creating a variety of incentives that lead auditors to desire to please their clients, and then try to identify a complex set of legislative and professional incentives to counteract the corrupting influences created by the desire to please the client.

Although the first approach is straightforward and sensible, it has so far not been the preferred approach. The speaker then pointed to a number of threats to the goal of ensuring that physicians provide optimal medical advice, including ownership and creation of patents by health delivery organizations; the form of payment (fee for service and self-referrals); incentives to operate or not; and incentives to prescribe the wrong drugs in the wrong quantities, including funding of medical research by doctors who can influence prescriptions, secrecy regarding research on pharmaceuticals (or selective disclosure), gifts, and payments for speaking or providing teaching materials.

He saw the solution to these threats, as in the case of the auditing profession, as “remarkably simple.” The speaker again asked which of two policy strategies was more sensible:

- 1) In order to provide the best possible medical care, doctors are prohibited from establishing relationships that create incentives that depart from providing the best possible care; or
- 2) Start by creating a variety of incentives that lead doctors to provide specific recommendations and treatments that depart from what is optimal for the patient, then try to identify a complex set of legislative and professional incentives to counteract the corrupting influences.

Once again, the speaker suggested that the second option, while clearly the least straightforward and promising, was the one the profession and industry seem to be enacting. Unfortunately, he said, powerful and well-funded lobbyists often succeed in blocking the best solutions from the point of view of public interest.

He endorsed the following recommendations, the first four of which are adapted from Kassirer (2005):

- 1) Gifts from representatives of the pharmaceutical industry to doctors (broadly interpreted) should not be permissible.
- 2) Doctors should not be in the business of, or profit from, marketing specific products.
- 3) Doctors should not have differential incentives to recommend one form of care over another.
- 4) Doctors should not be paid by pharmaceutical firms for lectures.
- 5) Where possible, Decision Support Systems should be used to support doctors in making the best clinical decisions possible (Adler-Milstein, 2007).

The speaker suggested directing attention to helping future doctors understand that *unintentional* corruption is common and there are, in fact, “things going on in their minds they are unaware of.” He also urged that necessary compromises be accompanied by determined strategic planning for real reform in the future, or that such reforms be programmed to begin at a future time.

Responder Panel

David Blumenthal, M.D., M.P.P.
*Director, Institute for Health Policy, Samuel O. Thier Professor of Medicine,
Harvard University*

Dr. Blumenthal saw “huge challenges” in developing policies based on the research presented at the symposium. These included:

- It will be difficult to make people aware of the potential for bias; the idea of unconscious influences on decision making is not intuitive.
- Convincing people who are selected for their ability to reason that they are not reliably reasonable is not going to be easy.
- The idea that one could be worse off with disclosure policies is a “very hard sell.”

To convince physicians that these problems are real, the respondent said, research is needed in which people take what they have observed in college students and apply it to professionals, who believe they are different. In fact, he noted, physicians do inhabit a community with its own set of norms that may influence behavior.

Education and communication could be tried, but might not be effective. It is possible that the “Ten Commandments” approach could be adapted in some way to make physicians less susceptible to bias and influence. Because concerns center on *legal* behaviors, it is necessary to convince professionals that certain behaviors are not in their personal interests over the long term.

Harry Greenberg, M.D.
*Associate Dean for Research, Joseph D. Grant Professor of Medicine and
Microbiology and Immunology, Stanford University School of Medicine*

Dr. Greenberg said he was in the unenviable position of being operationally involved in avoiding COIs and found much “food for thought” in the speakers’ remarks. For him, the biggest message was the concept of “bounded ethicality.” He had not thought of bias as influenced by unconscious factors and would like to see researchers convey this message more strongly.

While Stanford Medical School has eliminated funding of education by the biopharmaceutical industry, it does still allow industry-supported Continuing Medical Education (CME). Listening to the talks today, however, he has begun to wonder if this form of support should be eliminated as well.

The discussion of disclosure was disturbing from the point of view of human subjects research, where disclosure is an essential form of protection. Could the disclosure of potential risks involved in research and other information actually have a negative effect? Dr. Greenberg *would* like to see more pertinent research before drawing such a conclusion.

While the idea of decision-making support systems is very appealing, it is likely that only a minority of patient situations could be related to a proven best practice. For example, in most cases, adequate knowledge to determine the best drug for a particular patient is lacking. Still, more automatic databases and ways to “cue” physicians would be helpful in some areas.

Thomas Murray, Ph.D.

President and Chief Executive Officer, The Hastings Center

Dr. Murray was struck by Dr. Bazerman's emphasis on the fact that many things go on in people's minds of which they are unaware. He felt people needed to be enlightened that this really is the case. At the same time, he found the idea that humans can be affected by such things a "difficult lesson."

Dr. Murray also found Dr. Loewenstein's presentation on disclosure interesting, but wanted more sense of context and more evidence to understand how findings should be generalized and applied. He readily agreed that disclosure does not always have the intended consequences, but he would like to know more about when it would have the desired effect.

From Dr. Montague, the respondent took away the concept that perhaps there are "no true altruists." At the same time, it does seem clear that people do sometimes behave in ways not consistent with their immediate self interest. A person who loves a child feels good when the child does well; there is a "mutualism" that leads to shared satisfaction. It is also apparent that people can, to some extent, inhibit their instincts and take control. People cannot take limitless control, but they can impose some modifications on instinctive behavior.

Although Dr. Ariely's presentation highlighted the fact that some people don't "cheat to the max" because it would harm their self-concept, there are certainly others who wouldn't be deterred and don't care to perceive themselves as ethical. He also supported the idea that gifts are fundamentally about the exchange of goods or services to create a relationship. While a large amount of money would suggest a contract or a business relationship, a small gift conveys the idea that "it's about friendship."

Bruce Psaty, M.D., Ph.D.

Professor of Medicine, Epidemiology, and Health Services, The University of Washington

Dr. Psaty observed that all too often, industry-funded trials choose comparative treatments or doses that are likely to make their products look good—thus addressing marketing concerns rather than important scientific questions. Trials with unfavorable results may not be published, distorting the knowledge base. The respondent suggested that ideally Phase 3 and 4 clinical studies should be designed by independent experts and reviewed by peers.

Disclosures primarily serve to protect the profession from a later revelation—and firestorm—if something that is undisclosed causes, or is perceived to cause, a problem. At the same time, it is not clear how one would or could adjust an interpretation of a study on the basis of conflict information that is disclosed.

A new standard is needed that says equivocally that it is unprofessional to accept gifts from industry. Too many physicians lack self-awareness about conflicts of interest that might affect them. Additional strategies to manage COIs are needed.

David Rothman, Ph.D.

Associate Director, the Prescription Project

*President, Institute on Medicine as a Profession; Professor of Social Medicine,
Columbia College of Physicians and Surgeons*

Dr. Rothman described the work of the Prescription Project, funded by the Pew Charitable Trusts (see www.prescriptionproject.org). Its primary goals are to tighten conflict of interest policies at academic medical centers and professional medical associations. This effort builds on the recommendations of the American Board of Internal Medicine (ABIM) Foundation and the Institute of Medicine as a Profession (IMAP) (Brennan et al., 2006), which are very consistent with the findings here. They call upon organizations to prohibit all gifts and meals from pharmaceutical companies, to build sturdy firewalls around funding for travel and CME activities, and to render the financial relationships between faculty and drug companies far more transparent.

The respondent stressed that left to themselves, physicians will not alter their behavior. On the one hand, they emphasize the educational value of company marketing efforts; on the other, they declare that they take this information with a grain of salt. The obvious contradiction goes unnoticed. This is why change will have to take place at the level of deans, society presidents, or if this fails, state and federal regulators.

Questions from the Audience

Participants were given an opportunity to ask follow-up questions directed at any of the speakers or members of the panel of responders. The exchange included the following questions and answers from varied respondents.

We have a situation in which medical centers have knowledge that is of value to pharmaceutical industries, and we have some useful information that comes from pharmaceutical industries. How can we develop regulations and policy that will help us have an appropriate exchange?

- Simply hanging out and talking together would allow an exchange of information without anyone buying lunch or giving a gift. You could explore other ways to gain access to research and knowledge. Whatever becomes a gift is slippery; there should be no reason for it.
- If a company really believes it makes the best product, no gifts should be necessary to get that product adopted.
- Try to make the relationship other than a one-to-one personal exchange. The drug companies can give money to institutions rather than to individual doctors, and universities can create different ways of distributing knowledge that reduce conflicts of interest. Perhaps all the various representatives could talk at the same event.

- A cynical view is that if you do succeed in eliminating gifts, some other crafty strategy will come into play. If the biopharmaceutical industry is banned from the medical school grounds, what stops them from shipping items to people's homes or printing brochures with coupons on the back? In effect, coupons create an action plan that can have a long-term effect.

One of the charges to the AAMC task force addressing the conflict of interest issues is to make recommendations to the AAMC about strategies that would enable trainees to be better equipped to deal with the world when they graduate. Are there known, demonstrably effective educational strategies that are applicable here that have clear benefits?

- Business schools have been influenced by the medical case study method, which is a powerful way to learn about things that affect decisions. There is fascinating evidence that “analogical reasoning” is especially useful; it is important to compare and contrast cases to pull out relevant information.
- You need decision support systems to help the doctor make the right decision in particular circumstances. The right drug may not come to mind that easily. Simple computer analysis can outperform psychiatric diagnosis in some conditions. Similarly, look for situations when decision support systems can outperform most physicians.

If we require doctors to disclose any interest they have in particular treatments, how can we do this so it helps patients make good decisions?

- Usually, this is done for liability reasons rather than to help the person being advised. People need to know what to do with the disclosure information, or it is not beneficial. When you have advice givers who are very “savvy” and advice receivers who are novices, the playing field isn't really level. It is also possible that disclosure could be used as a substitute for a better policy that might really work. More advice-savvy recipients are needed for this type of approach to be meaningful.

Often, new trainees favor banning gifts, but there is resistance from residents above them. How can people at the lower end of the hierarchy exercise influence?

- Medicine is hierarchical, and most changes do come from the top down. However, even when academic medical centers make top-down changes, students and house staff often play a key role.
- As a group, students can have greater influence than they can have as individuals. For example, there is a “no free lunch” movement initiated by medical students at the University of Washington.

Is there some way to introduce something like the Ten Commandments in the experiment to help individual doctors frame their decisions appropriately?

- Making change at the individual level is very hard; the more you know about individual bias, the more you know it can't simply be unlearned. Institutional change is likely to be more helpful.

- It is difficult to get people to think about trade-offs all the time, but to the extent expert systems can be developed, they would be helpful in ensuring this happens. It might also help to make financial consequences clear.
- If practitioners could grasp some of these insights, it would reduce bias and become part of their mental equipment.
- You cannot really be unbiased about judging data once you already have the information that might sway your judgment. Researchers do double-blind studies so that their expectations do not bias results. On the same principle, the structural solution to the problem is to make sure, for example, that a medical student does not know what pharmaceutical company is paying for his or her education. We can't educate ourselves around the problem.

It is hard to convince people that something that seems obviously true isn't true. An example is the idea that capital punishment deters punishment. Another is the idea that gifts follow a dose-response model—the bigger the gift, the greater the effect. The idea that we are not capable of making unbiased decisions is also counterintuitive.

- We need to replicate the findings presented with real problems and real physicians.
- People need information that convinces them that something might bias their own decision—that we are not just talking about tricks that stupid people might fall for.
- It is helpful to be able to show people that there are signatures in the brain for these effects. We can “look in the box” and actually see them. That is potentially very persuasive.

At the moment, no one in the medical profession advocates, “Do nothing.” If you remove the incentive of gifts, doing nothing may become a real option again.

- This makes sense. We often focus on prescribing the wrong drugs as the potential problem, when in fact perhaps the best option in some cases is not to prescribe drugs at all.

Free samples for patients can be viewed as a way to help poor patients rather than as a favor to the physician.

- Yes, free samples may seem harmless. Nevertheless, they are a gift to the doctor in that they help the physician build patient loyalty.
- A good strategy would be finding a way to break the link between the drug representative and the sample. For example, perhaps the samples could go to free clinics.
- Another problem with samples is that they are not usually tracked, so a recall would be a problem.

What does it take to lose trust, once you have it?

- It doesn't take much to lose trust. In one experiment, there was a large sign that said "free money" and bills were placed on a table - \$1, \$5, \$20, even \$50 bills. Very few people took the money because the distrust of marketers is so strong. Once people begin to lose their trust in physicians, it will be hard to get back.

Is there a way to give some kind of test to medical students that would show them they can be influenced by COI without knowing it?

- That specific tool is not readily available, but there are certainly related ones that could readily be adapted. Dr. Bazerman has a test that reveals bias in auditing that could be rewritten easily for a medical context. Perhaps there are bright young students who are eager to do applied research in this context.
- Almost any experiment used to demonstrate unconscious bias could be retooled for this purpose.

Is there a way to conceptualize ideal interactions between the pharmaceutical industry and physicians that do not pose COIs?

- Start calling gifts bribes so it is clear what they really are.
- You need to find a way to eliminate influence but keep information. Perhaps you could create rules about disclosure of research that would give us access to better information than we have now about pharmaceuticals. The tobacco industry did research for years and was very successful at finding out what the government should have wanted to know, but they kept it hidden. We need to change the rules about how research is conducted.
- You could have industry underwrite educational materials or endow awards—something that creates goodwill but is not directed to individuals. This would still have influence, of course, but it is hard to see where to draw an absolute boundary.
- An audience member commented on the "ratcheting up" phenomenon: A medical school that desired to limit interactions with the biopharmaceutical industry made a policy that there would be no interaction with industry representatives at the school. Four years later, they discovered that one drug company had been funding a "golf and spa day" for graduating residents. Drug representatives had also been calling medical students at home to arrange dinners. Changing the culture is not easy.

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Biographical Sketches of Symposium Speakers

Dan Ariely, Ph.D.

Dr. Ariely is the Alfred P. Sloan Professor of Behavioral Economics at MIT, where he holds a joint appointment between MIT's Program in Media Arts and Sciences and the Sloan School of Management. He is also a visiting scholar at the Boston Federal Reserve Bank and a visiting professor at Duke University. At MIT, he is the principal investigator of the media lab's eRationality group, a co-director of the lab's Simplicity consortium, and the founder of the Center for Advanced Hindsight. He and his students are conducting experiments that illuminate day-to-day irrationality in decision making and creating software solutions to overcome persistent human shortcomings.

As a behavioral economist, Dr. Ariely studies how people actually act in the marketplace, as opposed to how they should or would perform if they were completely rational. His interests span a wide range of daily behaviors such as buying (or not), saving (or not), ordering food in restaurants, pain management, procrastination, dishonesty, and decision making under different emotional states. His experiments are consistently interesting, amusing, and informative, demonstrating profound ideas that fly in the face of common wisdom.

Max H. Bazerman, Ph.D., D.Sc. in Economics (hon)

Dr. Bazerman is Jesse Isidor Straus Professor of Business Administration. In addition to being the Straus Professor at the Harvard Business School, he is also formally affiliated with the Kennedy School of Government, the Psychology Department, the Institute for Quantitative Social Sciences, the Harvard University Center on the Environment, and the Program on Negotiation. In his prior position at Kellogg, he was the founder and director of the Kellogg Environmental Research Center. He is currently on the board of a number of organizations.

Dr. Bazerman's research focuses on decision making in negotiation, and improving decision making in organizations, nations, and society. He is the author, coauthor, or co-editor of 16 books (including *Negotiation Genius* [with Deepak Malhotra], Bantam Books, in press) and over 180 research articles and chapters. He is a member of the editorial boards of the *American Behavioral Scientist*, *Journal of Management and Governance*, *Mind and Society*, *Negotiations and Conflict Management Research*, and *The Journal of Behavioral Finance*. Also, he is a member of the international advisory board of the *Negotiation Journal*.

David Blumenthal, M.P.P., M.D.

Dr. Blumenthal is director of the Institute for Health Policy and physician at The Massachusetts General Hospital/Partners HealthCare System in Boston, Massachusetts. He is also Samuel O. Thier Professor of Medicine and professor of health care policy at Harvard Medical School.

From 1987-1991 he was senior vice president at Boston's Brigham and Women's Hospital, a 720-bed Harvard teaching hospital. From 1981 to 1987 he was executive director of the Center for Health Policy and Management and lecturer on public policy at the John F. Kennedy School of Government at Harvard. During the late 1970s, Dr. Blumenthal was a professional staff member on Senator Edward Kennedy's Senate Subcommittee on Health and Scientific Research. Dr. Blumenthal was the founding chairman of AcademyHealth (formerly the Academy for Health Services Research and Health Policy), the national organization of health services researchers. He is also Director of the Harvard University Interfaculty Program for Health Systems Improvement. From 1995 to 2002 Dr. Blumenthal served as executive director for The Commonwealth Fund Task Force on Academic Health Centers. He has served as a trustee of the University of Chicago Health System and currently serves as a trustee of the University of Pennsylvania Health System (Penn Medicine).

His research interests include the dissemination of health information technology, quality management in health care, the determinants of physician behavior, access to health services, and the extent and consequences of academic-industrial relationships in the health sciences.

Michael J. Friedlander, Ph.D.

Dr. Friedlander is the Wilhelmina Robertson Professor and chair of Neuroscience and the director of neuroscience initiatives at Baylor College of Medicine (BCM) in Houston, Texas. At BCM, Dr. Friedlander has expanded the Department of Neuroscience and the college's interdepartmental neuroscience initiatives through substantial recruitment of new faculty, enhancement of the department's human neuroimaging facilities, and development of the nation's first computational psychiatry program in conjunction with the Department of Psychiatry and the Department of Neuroscience. In collaboration with clinical chairs at the college, he has codeveloped translational and interdisciplinary research initiatives between basic neuroscience and the departments of neurology, neurosurgery and Psychiatry. He also codirects a graduate program track in the Neurobiology of Disease sponsored by the National Institute of Mental Health (NIMH) and teaches neuroscience to graduate and medical students. He joined BCM in July of 2005 after serving on the faculty of the University of Alabama at Birmingham (UAB) for 25 years. He serves as the associate editor for the neuroscience section of the *Journal of Experimental Biology and Medicine*.

His research is in the area of development and environmental effects on the functional interactions between neurons in the visual areas of the cerebral cortex, including the role of calcium in triggering long-term synaptic changes that occur during learning.

Harry B. Greenberg, M.D.

Dr. Greenberg is currently the associate dean for research and the Joseph D. Grant Professor of Medicine and Microbiology and Immunology at Stanford University School of Medicine. He also serves as a part-time physician at the Palo Alto Veterans Administration (VA) Hospital. Dr. Greenberg has spent the past 30 years studying viruses that infect the gastrointestinal tract, lungs, and liver. He served as a medical officer in the Laboratory of Infectious Diseases at the National Institutes of Health for nine years before joining the Stanford faculty as an associate professor of medicine and of microbiology and immunology in 1983. Dr. Greenberg has served as chief of the Division of Gastrointestinal Medicine, as associate chief of staff for research at the Palo Alto VA Hospital, and associate chair for academic affairs in the Department of Medicine.

Dr. Greenberg's national and international stature has led to his election to various scholarly societies such as the American Society for Clinical Investigation (ASCI), the American Academy of Pediatrics (AAP), and the American Association for the Advancement of Science (AAAS) and to his appointment to editorial positions on a number of scientific journals, including *American Journal of Medicine*, *Virology*, and *The Journal of Virology*. He is a frequent speaker and participant at various international workshops and symposiums on microbial pathogenesis, immunity and vaccination, and he served as chair of the FDA Advisory Committee on Vaccines and Related Biologicals.

George Loewenstein, Ph.D.

Dr. Loewenstein is the Herbert A. Simon Professor of Economics and Psychology at Carnegie Mellon University. He has held academic positions at the University of Chicago and Carnegie Mellon University, as well as fellowships at Center for Advanced Study in the Behavioral Sciences, the Institute for Advanced Study in Princeton, the Russell Sage Foundation, and the Institute for Advanced Study in Berlin. He is one of the founders of the field of behavioral economics and, more recently, of the new field of neuroeconomics.

His research focuses on applications of psychology to economics, and his specific interests include decision making over time, bargaining and negotiations, psychology and health, law and economics, the psychology of adaptation, the role of emotion in decision making, the psychology of curiosity, conflict of interest, and "out of control" behaviors such as impulsive violent crime and drug addiction. He has published over 100 journal articles and numerous book chapters, and he has edited six books on topics ranging from intertemporal choice to behavioral economics to emotions.

Read Montague, Ph.D.

Dr. Montague is a Brown Foundation professor of neuroscience and professor of psychiatry at Baylor College of Medicine, director of the Human Neuroimaging Lab, and director of the Center for Theoretical Neuroscience, all located in Houston, Texas. He has been a fellow at the Institute for Advanced Study in Princeton, New Jersey; Rockefeller University in New York City and the Salk Institute San Diego, California. He led the development of the first brain-scanning software that made it possible to study simultaneously socially interacting brains. Apart from the attention he commands in the academic arena, his research has been frequently featured in national news media including the *Los Angeles Times*, the *New York Times*, and the *Wall Street Journal*.

Thomas H. Murray, Ph.D.

Thomas H. Murray is president of The Hastings Center. Dr. Murray was formerly director of the Center for Biomedical Ethics in the School of Medicine at Case Western Reserve University in Cleveland, Ohio, where he was also the Susan E. Watson Professor of Bioethics. He is a founding editor of the journal *Medical Humanities Review*, and is on the editorial boards of *The Hastings Center Report*; *Human Gene Therapy*; *Politics and the Life Sciences*; *Cloning, Science, and Policy*; *Medscape General Medicine*; *Teaching Ethics*; *Journal of Bioethical Inquiry*; and the *Journal of Law, Medicine & Ethics*. He served as president of the Society for Health and Human Values and of the American Society for Bioethics and Humanities. Dr. Murray has testified before many congressional committees and is the author of more than 200 publications. His most recent books are *The Worth of a Child*, published by the University of California Press; *Healthcare Ethics and Human Values: An Introductory Text with Readings and Case Studies*, Blackwell Publishers, edited with Bill Fulford and Donna Dickenson; *The Cultures of Caregiving: Conflict and Common Ground Among Families, Health Professionals and Policy Makers*, edited with Carol Levine; and *Genetic Ties and the Family: The Impact of Paternity Testing on Parents and Children*, edited with Mark A. Rothstein, Gregory E. Kaebnick, and Mary Anderlik Majumder. He is also editor, with Maxwell J. Mehlman, of the *Encyclopedia of Ethical, Legal and Policy Issues in Biotechnology*, (John Wiley & Sons, 2000).

Bruce M. Psaty, M.D., Ph.D.

Dr. Psaty is co-director of the Cardiovascular Health Research Unit, professor of medicine, epidemiology, and health services at the University of Washington, and an investigator at the Center for Health Studies, Group Health, Seattle, WA. As a practicing general internist and cardiovascular-disease epidemiologist, Dr. Psaty has broad interests in drug safety and public health, including cardiovascular epidemiology, hypertension, hormone replacement therapy in postmenopausal women, pharmacoepidemiology, and pharmacogenetics. For the past 10 years, all funding for his research, including numerous drug safety studies, has come from the National Heart, Lung, and Blood Institute (NLHBI), the National Institute on Aging, or the American Heart Association (AHA). Several current projects, funded by the National Institutes of Health (NIH), focus on drug-gene interactions and represent efforts to translate findings from the Human Genome Project into clinical practice, thus improving the safety and efficacy of commonly used medications. Dr. Psaty was a member of the Institute of Medicine's Committee on the Assessment of the U.S. Drug Safety System.

With about 300 peer-reviewed publications, Dr. Psaty publishes regularly, including a number of articles and editorials on drug safety. He also teaches and mentors students, fellows, and junior faculty in medicine and epidemiology.

David J. Rothman, Ph.D.

Dr. Rothman is president of the Institute on Medicine as a Profession and Bernard Schoenberg Professor of Social Medicine at Columbia College of Physicians & Surgeons. David Rothman joined the Columbia medical school faculty in 1983 and his subsequent work has examined the history of health care practices and health policy. He has published *Strangers at the Bedside: A History of How Law and Bioethics Transformed Medical Decision Making* (1991), *Beginnings Count: The Technological Imperative in American Health Care* (1997), and *The Pursuit of Perfection: The Promise and Perils of Medical Enhancement* (2003, coauthored with Sheila Rothman). Other interests include organ transplantation and human rights and medicine. This work contributed to *Trust Is Not Enough: Bringing Human Rights to Medicine*.

He is now addressing the place of professionalism in medicine. His initial publication in this area appeared in the *New England Journal of Medicine*: "Medical Professionalism—Focusing on the Real Issues." More recently, in collaboration with the ABIM Foundation, published the *JAMA* article "Health Industry Practices that Create Conflicts of Interest." With an endowment from the Open Society Institute and George Soros, he established the Institute on Medicine as a Profession (IMAP), a not-for-profit organization dedicated to making professionalism a field and a force within medicine.



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