A Proposal for Considering Research Integrity from the Perspective of Behavioral Economics

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INTRODUCTION

Over the past 30 years, cases of scientific misconduct have tended to follow what is by now a familiar pattern: misconduct is intentionally committed, the clandestine misdeeds are revealed, institutions and funders react, investigations ensue, punishments are imposed, and the long process of correcting the research record continues on. Major cases of misconduct usually prompt institutions to review and tighten their research oversight and policies and to improve their approaches to instruction in the responsible conduct of research. When a case becomes a matter of national embarrassment, these reactions can be systemically widespread. There is, of course, variation in this general pattern, particularly in the extent of successful correction of the scientific record (16).

The trajectory of action associated with a misconduct case thus typically begins with an individual, but ownership of the problem rises through the academic research hierarchy to the officials of research institutions, funding agencies and regulatory bodies, among others. The consequences then come back down the hierarchy, often with implications that extend to several academic or administrative departments or even to entire institutions. In the U.S., three primary systemic responses to misconduct have emerged in recent decades: the development and elaboration of policies, regulations, codes of conduct and so on; instruction in the responsible conduct of research; and oversight and other mechanisms for ensuring compliance.

These approaches, though obviously valuable, are designed for general impact across disciplines and research settings. What is needed are strategies to protect research integrity in the specific contexts where the work of research is performed. This shift involves more careful consideration of the following four points.

First, misconduct is a behavior that issues from an intentional choice. Humans are fallible and subject to temptation. They make mistakes, engage in cover-up actions, and try to save face as well as reputations and employment. To a researcher sitting alone before a computer in the middle of the night, the details of regulations and instructional materials may sound distant and faint in the mind, compared to the drumbeat of competition and deadlines.

Second, research by its very nature is often performed in ambiguous or even turbulent contexts. Grinnell (9) notes that the everyday practice of science—“what really happens in the conduct of research”—is characterized by ambiguity, failed experiments, dead ends and new attempts, convoluted paths to results, and other uncertainties inherent in working at the limits of knowledge on a particular problem. He proposes that “a more nuanced approach to research integrity education is required, one that acknowledges and makes explicit the ambiguities inherent in practice and the ethical challenges to which they give rise. Achieving research integrity requires creating a research environment that openly recognizes and engages these ethical challenges and makes explicit their sources” (10).

Third, highly publicized instances of misconduct may seem rare and isolated, but low-level compromises to integrity are rather common (12). We argue that it would be easier, more effective, and more important to make significant reductions in the more prevalent misbehaviors that can affect research integrity.

Fourth, despite the careful development that has gone into policies, regulations, and instruction in ethics, these remain rather blunt tools applied generally across research settings. Data collection, methods of analysis, instrumentation, and interpretation of findings, among other aspects of research, differ widely across disciplinary fields. Moreover, more attention has been paid to figuring out why misconduct occurs than to figuring out what actions would best protect the integrity of the procedures, results, and publications in individual laboratories.

We propose that these four points be addressed using insights from the field of behavioral economics, which focuses on human behavior and decision-making with particular attention to behavioral cues in the immediate context. Application of these insights should focus on everyday research behavior rather than on the egregious acts of infamous wrongdoers, and on actions that can be taken in specific research settings to ensure research integrity. Our

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attention in this brief paper is on what principal investigators might consider doing to protect the integrity of research performed in their laboratories or other research settings.

RELEVANCE OF BEHAVIORAL ECONOMICS

The field of behavioral economics combines psychology and economics to examine human behavior and decision making. It does not begin with the assumption of classical economic theory that humans make rational decisions; rather, it focuses on the “idea that people do not always behave rationally and that they often make mistakes in their decisions” (1). It is moreover concerned with the ways in which people are affected by elements of their environment. They are influenced by cues in their immediate context, particularly by what others around them are doing.

Behavioral economics has given rise to many novel and attention-catching experiments and observations that illustrate apparent paradoxes of human behavior which, upon consideration, may be understood by taking a broader view of the situation. For example, Dan Ariely and his colleagues devised an opportunity for students at Yale University and at the Massachusetts Institute of Technology (MIT) to complete a task honestly or by cheating (13). Half of the students at each school were reminded of their school’s honor code and the other half were not. The researchers found moderate cheating among those who were not reminded of the code and none among those who had the code in mind—despite the fact that neither school actually has an honor code. In a further experiment at a university with a much-emphasized honor code—elsewhere identified as Princeton (2)—the experiment produced the same result. That is, the Princeton students, who were at the time two weeks past their initial training on the honor code, behaved like their peers at schools that have no code; it was the reminder of the code, not the training, that affected the likelihood of cheating (13).

Much of the literature in behavioral economics is concerned with financial decision making, but a substantial sector of the literature has to do with dishonest behavior of various kinds, some of which is relevant to research integrity. It explores limits on human rationality and willpower (14), especially over time and multiple occasions for decision making (2). Minor but prevalent deviations from the highest standards for research practice fall into the category of what behavioral economists recognize as virtually universal, moderate dishonesty (though some of them would reject the word “virtually”) (2). To them, human beings are constantly weighing the need to see themselves as honest and honorable against the temptation to benefit from cheating; the resolution of this tension is a decision to behave only slightly dishonestly (2). Applications of such ideas from behavioral economics have only barely started to enter discussions of research integrity. Dan Ariely’s book, The (Honest) Truth about Dishonesty (2) prompted recent presentations by the author to the 3rd World Conference on Research Integrity and to the annual meeting of the Council of Graduate Schools in which he explored relevant connections between his discipline and research integrity. Such connections have also been considered in the context of research in the pharmaceutical industry (6).

The accumulated strength of clever experiments has put behavioral economics in the spotlight for business and government. President Obama chose Cass Sunstein, Professor at Harvard Law School and co-author of Nudge: Improving Decisions about Health, Wealth, and Happiness (17), to head the White House Office of Information and Regulatory Affairs, a post he held from 2009 to 2012. Nudge offers dozens of suggestions for improving decisions by creating environmental cues that naturally encourage certain choices over others. Offices in other countries have more explicitly and deliberately built on this strategy; in the UK, for example, Prime Minister David Cameron set up the Behavioural Insights Team (called the “nudge unit,” because it originated from Cameron’s admiration for the book) to “find innovative ways of encouraging, enabling and supporting people to make better choices for themselves” (11). The prominence of behavioral economics is due in part to its generation of novel proposals for actually changing behavior. Intriguing suggestions for improving people’s choices, based on experimental research, are scattered liberally throughout books cited here, and many of these ideas can be readily and creatively tailored to specific contexts, such as research settings.

APPLICATION OF BEHAVIORAL ECONOMICS TO RESEARCH INTEGRITY: A MODEST PROPOSAL

We provide here a few examples of strategies derived from research in behavioral economics that may be useful in promoting research integrity. These strategies should complement but not, of course, replace the current integrity structures of policy, instruction, and oversight, which are critical to ensuring compliance with fundamental integrity standards.

One category of strategies derives from the emphasis in behavioral economics on behavioral prompts, as illustrated in the honor-code story above. Reminders that appear right at the point of temptation tend to prompt good behavior. A reference to a code of ethics or an ethical principle could be inserted into a submission process as a reminder of its salience to a particular section. A checklist (7) might serve as a cue to complete a series of steps without cutting corners. A password applied to an online shared file might require collaborators to access the file by typing a reminder such as “check calibration” or “no consent, no interview.”

A second category of interventions has to do with “choice architecture” and default behaviors (17). Default
choices require less thought and are typically selected as the path of least resistance. A choice architect is someone who designs processes or environments so that, at decision points, the default choice is the preferred course of action. In other words, it will take more effort to do something the wrong way than the right way. For example, a principal investigator might arrange to accept text along with output from a plagiarism checker more readily than text that has not been checked. As another example, to deflect disputes over authorship, a principal investigator might choose to display prominently a list of the lab’s papers that are in progress, along with the contributors in order who deserve authorship credit, so that the authorship list that is initially agreed upon will be the default choice, unless a significant alteration in contribution demands that the list be renegotiated. In some cases, the literal architectural environment may affect choices. Members of a research team, particularly newcomers, who work at relatively isolated work stations may feel more freedom to make perverse choices than those who work in close proximity, in clear sight of each other.

The previous example is linked to a third category of suggestions based on the power of group norms and influence. When dishonest behavior, even of a minor sort, is perceived as socially accepted by a group, it is more likely to be spread through the group (8). Group norms reflect a collective sense of what is appropriate or inappropriate behavior for the group’s members. Research teams that repeatedly emphasize ethical behavior as a condition for acceptance by the group set up self-fulfilling expectations. Slogans or mottos that genuinely represent a group’s high standards and are referred to at every meeting reinforce the connection between being a member of the group and behaving honestly. When members of a research group are asked to talk about the ethical aspects of the work they are doing, the exercise sends a signal that all in the group are responsible for considering their roles in protecting the integrity of the team’s work.

Simple strategies like these—adapted to the work and ethical concerns of a specific research setting—offer ways to support good choices by the fallible humans who find themselves in the complex and ambiguous contexts of research. The most effective strategies will be brilliant, local interventions that make use of insights from behavioral economics to constantly “nudge” all the members of the research team toward ethical choices.

A critical aspect of these strategies is that they can be devised and put in place by principal investigators themselves to protect the integrity of the work that issues from their research teams. These interventions should be instituted in the idiosyncratic work context of a specific lab to address salient issues in that context. They should not be imposed by regulatory or institutional authorities at higher levels, but instead tried out voluntarily as local interventions to support the lab’s members’ collective effort to produce the best possible research.

Applying ideas from behavioral economics does not require principal investigators to become behavioral economists or even to become well-read in the research of the field. Popular summaries of research (e.g., 2, 17) have inspired most of the innovative applications in other sectors, and they can likewise prompt creative, clever responses by academics. For positive behavioral change, the emphasis is mainly on small adjustments at critical leverage points. As researchers come up with ingenious ideas that work in their own labs, others may choose to adopt similar strategies tailored to their own research settings.

CONCLUSION

Behavioral economics can address aspects of research integrity that are not emphasized by current integrity systems. It offers a way of looking at research as a human behavior, subject to irrationality and ambiguity, but also subject to specifically targeted interventions that can cope with human weakness and limitations. It suggests a means of returning the focus of attention to behavior in laboratories and other research settings where misconduct actually occurs. The first step is to persuade some principal investigators to try clever strategies and see what works, using easily accessible literature based in behavioral economics as inspiration. Perhaps modest strategies to improve behavior can have a salutary influence on low levels of misbehavior that might compromise the integrity of research or even snowball into serious cases of misconduct.

None of these strategies will stop the determined miscreant, and vigilant oversight cannot be neglected. It is also important to note briefly that behavioral economics has its critics, some of whom see it as just a version of neoclassical economics (3). Its application by governmental agencies has been characterized negatively as liberal paternalism (17). The field had been criticized for being exceptionally broad, and its research covers far-ranging areas of human behavior, often through small studies without immediate generalizability—though their cumulative impact suggests ways to affect behavior.

Nonetheless, it is critical to find ways to promote research integrity at precisely the site where research misconduct occurs. As the editors of Nature Cell Biology have written, “It is ultimately also the responsibility of the senior investigator to create a laboratory environment that provides a strong foundation in best practice in research and research ethics, and to be a compelling role model for trainees” (15).

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\textsuperscript{b} We recognize the irony of advocating for an application of behavioral economics to research integrity, given the “audacious academic fraud” (4) of Diederik Stapel, a Dutch social psychologist who was the director of the Tilburg Institute for Behavioral Economics Research at the University of Tilburg.
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