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Communication throughout Investigation: A Pragmatist Framework for Conducting Clinical Science

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ABSTRACT: Clinical science is not just data, it’s persuasion. Siloed professional roles and conceptual habits that dichotomize facts from values keep us from recognizing this. Examples from bariatric surgery and attention-deficit/hyperactivity disorder (ADHD) research show that these habits have pernicious effects, such as stigmatization. A Pragmatist framework for clinical science denies the dichotomies and supports robust and democratic communication of and about research at all stages.

KEYWORDS: American Pragmatism, attention-deficit/hyperactivity disorder, bariatric surgery, dichotomization, Pragmatism, values in science, science communication

1. INTRODUCTION

“Science communication” can be understood as something that happens after science is done. That after-the-fact definition separates the clinical scientists, communicators, and eventual users of the information—clinicians and patients—into separate categories with different epistemic views and practical interests. These divisions form part of a bigger picture that dichotomizes science from practice, and facts (the bastion of science) from values (the needs and interests of clinicians, patients, and others). The dichotomized picture is false, however, and it has pernicious effects on science, patient care, and social understanding of diseases and disorders. A shift to interactive communication across the divisions, and at all stages of clinical research, has potential to improve the science and its practical results. American Pragmatism, updated with insights from feminist philosophy of science, provides a rationale for such a change and resources for enacting it.

The literatures of bariatric surgery\(^1\) and attention-deficit/hyperactivity disorder (ADHD)\(^2\) research provide examples that highlight the ubiquity of the issues involved and the pernicious results. Both literatures study common disorders, their effects on health, and potential treatments. Both have led to forms of care that have in some ways improved the lives of many—perhaps millions—of people. Each has also played a prominent role in persuading

\(^1\) The general term “bariatric surgery” includes a number of different procedures, all of which are intended to induce weight loss in people who have not succeeded at losing weight with diet and exercise. The procedures vary in invasiveness, degree of reversibility, effectiveness, risks, and side effects.

\(^2\) Attention-deficit/hyperactivity disorder is a mental disorder defined in the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 2000). Diagnosis requires impairment in two or more settings, and behaviors marked by clusters of signs and symptoms of hyperactivity, inattention, or both.

clinicians and the public to take up new perspectives and solutions to the underlying disorders: Diagnosis and drug prescriptions for ADHD are given to 11% of children and teens, an increase of 41% in the past decade. Bariatric surgery—often now referred to as metabolic surgery, to highlight its effects on Type 2 diabetes and other metabolic disturbances—has also taken off. As of 2011, over 200,000 surgeries were performed annually in the United States; this number is expected to rise. But underneath the enthusiastic uptake are downsides. For example, both literatures focus on short-term results. In the case of ADHD, research has yet to demonstrate long-term effectiveness of stimulant medication in important measures such as academic achievement, although stimulants have been the primary treatment since the 1950s. These widely prescribed drugs may or may not be achieving the expected effects. It was not until 2011, after two decades of use, that a Belgian study indicated that the long-term effects of Lap-Band surgery (one form of bariatric surgery) appeared to be “relatively poor,” given very high complication rates. In addition, as I have argued elsewhere (Hawthorne 2010a; Hawthorne 2010b), current research practices reinforce stigmatization of obesity and ADHD, affecting the lives and decisions of millions of people.

Importantly, both ADHD and obesity involve myriad personal, social, and economic pressures: pressures on children and adults to succeed at school and work, social and economic costs, profits for drug and device manufacturers, and professional gain for practitioners, among many others. Part 2 shows that clinical science does not stand apart from these social influences; instead, the science embeds social values in many ways. Not surprisingly, the influence has practical consequences in the interpretation, persuasiveness, and use of the work; some of these, such as reinforced stigmatization, are negative. Part 3 shows how the consequences become heightened by one form of dichotomization—affected people from non-affected—and how attempting another form of dichotomization—the supposed dichotomization of facts from values—masks the source of negative consequences. Finally, Part 4 argues that the solution is not to extract the values, but is, instead, to adopt a Pragmatist framework that encourages enhanced communication at all stages of clinical science, from inception to promotion of results.

2. VALUES IN SCIENCE

Let’s consider, then, some of the ways in which social values—the wide range of ethical and practical needs and interests—become embedded in clinical science. For the purposes of this paper, I am setting aside the ways in which scientific (epistemic) values are also embedded, and, with the important exception of dichotomizing practices, I am setting aside ways in which scientific methodology embeds values.³

Continuing medication (CME) materials, which communicate the results of clinical science to clinicians, demonstrate overtly some of the language and attitudes that appear more subtly in the clinical literature. CME courses are often quite obviously designed to persuade practitioners, by the clinician speaking, a sponsor, or both. The persuasive effort involves establishing, first, that the problem being dealt with is serious, and, second, that the authors have detected a useful means of dealing with it. In a clear example of the first step, a drug-company sponsored digital monograph quotes psychopharmacologist Joseph Biederman as

³ Epistemic values and other scientific practices do contribute to the end results, in ways I have discussed elsewhere (Hawthorne, 2010a).
saying, “The evidence that ADHD is an extraordinarily morbid condition is overwhelming … [it is an] enormously morbid, costly, and potentially devastating condition . . . untreated ADHD carries a very ominous prognosis” (“Assessing the safety of ADHD medications: An expert panel considers the clinical significance of potential adverse effects,” pp. 11–12).” Exemplifying the second step, a device-company sponsored “Obesity Compendium” presents the surgical solution to obesity (American Society for Metabolic and Bariatric Surgery, 2009). Two consecutive slides are titled, “Why is Bariatric Surgery so Effective?” The voice-over, by Lee M. Kaplan of Harvard Medical School, asks the same question. Such language, by expressing the enormity of the ADHD problem and the remarkable effectiveness of bariatric surgery, frames its subject matter in a light that discourages criticism. After all, what would happen if providers did not recognize “potentially devastating conditions” or treatments that are “so effective”?

Examples like this, where the influence of sponsors is obvious, cross the border into hype. CME materials are also one remaining bastion of permissible bad puns, at least in the case of bariatric surgery. A session on post-surgical weight regain titled “The ‘Elephant in the Room’” is an example (“Masters of minimally invasive bariatric surgery: What’s new and debatable in bariatric surgery,” 2013). But peer-reviewed journal articles also work to persuade clinicians of the clinical significance of a disease and the importance of the researchers’ solution. Introductions to research articles typically lay out reasons for concern and provide reasons to attend to the solution to be discussed, and the discussions typically argue for the researchers’ solution.4 Within a literature, this process can be remarkably uniform, drawing on a shared evaluation of clinical significance. Many bariatric surgery articles begin by drawing attention to “the obesity epidemic,” or to obesity as the “leading public health crisis” or “global world health crisis.” Often, authors support this judgment of clinical significance with a list of diseases and syndromes correlated with obesity, such as hypertension, dyslipidemia, insulin resistance and Type 2 diabetes, metabolic syndrome, and obstructive sleep apnea. Introductions in the ADHD literature, too, restate multiple sequelae and correlations of diagnosis, such as lesser academic achievement, increased risk of substance abuse, and higher divorce rates.

Formulaic claims signal basic assumptions—points that no longer need to be argued. For example, although each of the following claims is backed by references, the authors no longer consider it necessary to argue explicitly for the claims:

Surgery is currently the most effective and durable way to achieve significant weight loss in obese patients. (Leslie, Kellogg, & Ikramuddin, 2009, p. 215)

Bariatric surgery has emerged as a highly effective treatment for severe obesity and weight-related conditions. (Finks et al., 2011, p. 633)

[B]ariatric surgery is the only proven medical intervention providing sustained weight loss as well as improvement and resolution of obesity-related medical complications. (Holterman et al., 2010, p. 75)

In Bruno Latour’s (1987) terminology, these points have become black-boxed: they are no longer open to question within the literature. Outsiders, though, know that such judgments of

4 The middle sections of the articles—materials and methods and results—are usually less overtly persuasive. Social and pragmatic values do enter here, by way of preferred methodologies (and those not used), issues and parameters of interest (and those not considered), the clear directionality of “improvement” (a value-laden concept), and by other means. Again, though, I set these means aside for the purposes of this paper.
treatment efficacy are not claims of pure fact, but are instead open to question, particularly by those whose values differ—who might judge differently, for example, about what constitutes efficacy, or what degree of certainty is required for a claim. Thus, black-boxing sometimes sets reasonable counterclaims aside. For example, in contrast to the literature’s black-boxed descriptions of ADHD, critics argue that much of what we call ADHD is normal variation; in contrast to the “obesity epidemic” claim lies the perspective that it’s not disease that’s the problem, it’s bad food policy and poverty.5

Values, as well as empirical claims, get packed into the black-boxed assumptions. For example, both obesity and ADHD are conditions that have partially social causes and consequences. One bariatric surgeon I spoke with called his patients “victims of the system” (D. Leslie, personal communication, January 9, 2013), and many have pointed to strict behavior and performance expectations for children and adults, among other potential stressors, contributing to the explosion in ADHD diagnoses. Yet bariatric surgery for obesity and drug treatment for ADHD both target individuals, rather than tackling social issues. The approaches thus build in a value system focused on individual achievement and responsibility. The recommendations also embed the values of the medical system, built on individualized care occurring between physicians and patients. An alternative value system might offer appraisals of problems and their solutions focused on influences and changes in the system, rather than in the individual.

We can see these and other values at work as authors work to persuade readers to adopt the specific solutions they recommend. Jensen et al. (2005) build in economic values:

In summary, our findings suggest that carefully monitored medication treatment, although not quite as effective as the combination of medication and behavioral treatment, is likely to be more cost-effective in routine treatments for children with ADHD, particularly those without comorbid disorders. (p. 1635)

They want care to be inexpensive, cost-effective, and efficient—and they work to persuade skeptical readers who might value personal care, individualization, or other preferences more highly. In the bariatric surgery literature, the economic costs of obesity—the American Society for Metabolic and Bariatric Surgery (2009) cites a figure of $117 billion annually—are a common theme. Some calculations suggest that surgery, though having significant upfront costs, may be able to save health care dollars in the long term. The literature clearly acknowledges throughout that economics is only part of the picture, but that recognition does not eliminate the values from discussions that focus on costs. Notice, here, that the inclusion of values is surreptitious: higher cost is simply assumed to be bad.

Values also ubiquitously enter the clinical literature via terms that have, in philosophical jargon, “thick evaluative content.” These are terms that cannot be used or understood accurately without taking into account their embedded values. The term “cruel” is a non-medical example (Putnam, 2002). One can factually describe the acts one would think of as cruel, but unless one recognizes that there is something wrong in performing a cruel act, one has not grasped the meaning of the word. Much clinical terminology has the same feature. The terms “excess weight,” “obese,” “morbidly obese,” “severely obese,” “extremely obese,” and “super-obese,” are defined in terms of height and weight, and the application of a formula,

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5 One cannot, of course, expect any single article to address the possible counterclaims. It’s also true that within a literature, one can find atypical examples in which researchers address issues that most have black-boxed.
such as that to calculate body mass index (BMI). But unless one understands that being obese is a *problem*, one doesn’t grasp the terms. Consider the term “super-obese” for example, compared with “Super-Glue” or “Superman.” One needs to grasp which are super-bad and which are super-good to understand the terms. Similarly, in the ADHD literature, the terms “hyperactive,” “hypertalkative,” “inattentive,” and “impulsive,” and so forth, carry negative connotations, as does the designation “ADHD” itself. The terms in each literature stand in contrast to the preferred conditions, such as “normal weight,” “excess-weight loss,” “attention,” and “control.” Readers of the articles—and of this one—might well agree with the values, thinking that, for reasons of health, or quality of life, or achievement, it is preferable to avoid obesity and to focus easily. But agreement does not eliminate the values from the terms.

Packing social values into clinical science has complex and varied effects. Some are positive: convincing people to try an effective novel treatment, or to stop using an outmoded one, appeals to values as well as to facts. But at least three undesirable consequences come out of the ADHD and bariatric surgery literatures. One is the overselling of drugs, devices, and procedures; a second is de-emphasis of alternative perspectives and solutions. Given the black-boxed, value-laden assumptions in the literature, logic requires that one address the costly crises by treating individuals with drugs or surgery. Even without overt bias, these literatures encourage increased use of drugs and devices and decreased emphasis on alternatives. Overt bias, which does sometimes affect clinical science literature, strengthens these effects. The third negative effect, reinforced stigmatization of people who are obese or who have ADHD, is more clearly discussed in the context of dichotomization, below.

3. HEIGHTENED CONSEQUENCES

Two forms of dichotomization that appear ubiquitously heighten the effects of embedded values. The first is a tendency to dichotomize affected groups, such as the obese or those with ADHD, from people who are not affected. This form of dichotomization reinforces stigmatization. The second, the (supposed) dichotomization of facts and values, tends to obscure communication, blocking pathways to more desirable approaches to investigation.

Consider first the dichotomization of affected groups. As we have seen, the first step in persuading colleagues, clinicians, and, ultimately, patients to adopt a clinical scientist’s favored approach is to establish that a condition of interest is a “disease” or “disorder”—that is, that the condition is a problem. This step requires distinguishing the disease or disorder from “normal” conditions. Over the course of many studies, the clinical literature assembles negatively perceived correlations with a condition. The oft-repeated data on the expense of obesity to society, and ADHD’s correlation with social costs such as addiction, teen pregnancy, accidents, and school failure, paint pictures of the conditions that demand attention—and differentiate them importantly from “normal.”

The next step in dichotomizing people follows from medicine’s focus on individual patients. Because the locus of the disease or disorder is in the individual, once a person is diagnosed—fitting the criteria for obesity or ADHD—the package of negative evaluations of

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6 In medicine, the location of the problem and its solution are in the individual, even if social problems contribute to its development. For example, although clinicians and scientists recognize that factors such as the ubiquity of fast food and limitations on access to healthful food contribute to obesity, medical practice and science for the most part address care of the obese individual, rather than addressing social risk factors. Even preventive care for individuals has been deemphasized, although this may be changing.
the “problem” become attached to the individuals who fit the criteria. Most clinical scientists and clinicians would, at a conscious level, wish to avoid transferring judgments in this way. However, at least in the case of obesity, the negative perceptions have been shown to exist and to have practical effects on communicating with patients. The typical scientific practice of determining and communicating generalizations or group averages, rather than distinctive points about individuals, also helps transfer negative judgments of the disease to the individual. Generalizations help to create dichotomized schemas for “obese person” or “ADHD [patient]” that differentiate them from “normal” or from people with other disorders and diseases. These schemas serve clinical and scientific practicalities: they guide clinical assessment and treatment decisions, and they help establish well-defined intervention and control groups. But when the schema embeds negative evaluations, the persuasive language and strategies that target the disease simultaneously reinforce the judgment that the individual is a problem, even when the intention is to persuade colleagues to provide care.

Via these refining processes, dichotomized groups effectively become targets—for efficiently delivered care, or for overtreatment; for compassionate attention, or for stigma. Rhetorical uses of dichotomization help persuade others toward action or changes in attitude, sometimes with unfortunate results.

A more abstract pattern of dichotomization is at work here as well. Although practice and the literature in clinical science richly blend fact and value, as we saw in Part 2, the standard belief about clinical science is that it keeps fact and value separate—that is, that it dichotomizes fact and value. Although I cannot present a full argument here, feminist and pragmatist philosophers have observed that the myth of fact/value dichotomy plays into a mutually supporting set of other supposed dichotomies in which one side is privileged, the other derogated. In general, privilege attaches to facts, objectivity, reason, the mind, maleness, and health, while disparagement attends values, subjectivity, emotion, the body, femaleness, and disease. By dichotomizing obese/non-obese, ADHD/non-ADHD, the clinical science literature links into the other dichotomies. The dichotomizing then has the serious consequence that it reinforces stigmatization of whatever or whoever is on the non-privileged side of the divide.

The myth of the fact/value dichotomy has the further unfortunate effect that it allows two forms of denial: denial of the existence of and need for values within clinical science, and denial of the existence of and need for facts to inform values. The former ignores legitimate roles of values in clinical science, such as the importance of values in guiding quality of life measures—deciding what quality of life consists in, and how to measure it. Denying the value-ladenness of clinical science also tends to mask the values—often, in the examples under discussion, covering up the role played by the interests of surgeons, psychiatrists, and industry. The latter form of denial is of less concern for the present discussion, although it is of very serious concern in much public discourse.

Dichotomization of fact and value also encourages rhetorical trumping strategies in which a supposedly incontestable fact or incontrovertible value wins by fiat. This strategy presents claims such as “Diet and exercise don’t work for obesity” and “Behavioral and

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7 According to the results of implicit association tests, physicians have, on average, a strong bias against obesity (Sabin, Marini, & Nosek, 2012), and they build less rapport with obese patients (Gudzune, Beach, Roter, & Cooper, 2013).

8 In particular, it is of concern when people attempt to trump scientific investigation or deny the results of research by asserting dogmatic values.
educational treatments don’t “work for ADHD” as pure fact, as if the reasoning behind them were uninfluenced by values. As we have seen, however, such assessments are loaded with economic and social interests. Denying this, and instead drawing on the trumping strategy, often effectively advances the interests of people in power, because their values are most likely to be embedded in the “facts.”

By distorting choices, the myth of fact/value dichotomization has practical effects for scientists, clinicians, and patients. Under the false assumption that facts and values are dichotomized, people cannot understand the full content of value-laden facts or fact-laden values (just as one cannot understand a thick ethical term without understanding both its descriptive and its normative content). For example, a clinician might communicate with a patient based on Holterman et al.’s (2010) claim, considered earlier: “[B]ariatric surgery is the only proven medical intervention providing sustained weight loss as well as improvement and resolution of obesity-related medical complications” (p. 75). Asserted as a simple fact, the claim makes the patient’s choice quite clear: get the operation. But understanding the claim more complexly, with the underlying values exposed, makes it clear that many reasonable options remain open.

4. PRAGMATISM: COMMUNICATION AND PROBLEM SOLVING

Many think that the solution to these problems is to get social values out of clinical science (Boorse, 1975; Lacey, 1999), or to constrain their influence in specific ways (Douglas, 2009; Schwartz, 2007). I agree that removing overt bias is essential. In particular, it has been shown repeatedly that drug- and device-company–sponsored research shows strong bias in favor of corporate interests; removing or sharply limiting that bias would improve both objectivity and patient care (Krimsky, 2003; Lemmens, 2004). But given the multiple sources of values that enter research, and the many ways in which they do so, I do not think that strict constraints are possible. For example, one cannot control the connotations of thick evaluative terms like “obesity” short of inventing new terms—and doing that would sever the connection to the original problem. In addition, if it were possible to extract values, doing so would remove the chance for embedded values to have the positive results that stem from passions for patient care and advocacy.

One alternative approach to resolving the problems of negative consequences and obfuscated communication derives from American Pragmatism, particularly the work of John Dewey, coupled with updates from feminist philosophy of science.9 A Pragmatist framework for conducting science recognizes that both fact and value are central to most inquiry and practice, including most scientific reasoning.10 Because the point of most reasoning is to take action, people need values to decide on their goals, and facts to determine how to achieve the aims they set. Facts do typically concern physically existing entities, while values typically pertain to human preferences. But Dewey argues that experience is interactive: the world shapes knowledge and our values, and we shape the world. This back-and-forth makes the fact/value boundary porous, rather than dichotomized. Thus, instead of dichotomizing facts from values, or favoring one to the exclusion of the other, pragmatic thinking demotes both

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9 For the purposes of this paper, I will explain the approach and its implementation, rather than arguing for it.

10 According to Dewey, reasoning is practical unless it relies on definitions and internally consistent rules. Most scientific reasoning is practical.
facts and values from their independent status and makes action—including acts of judgment—primary (Dewey, 1915/1998). To make a good decision on action, a reasoner needs to use facts and values explicitly and critically.\footnote{In Dewey’s terms, we need to establish \textit{descriptive judgments} that assess a situation; such judgments equate roughly to facts. We also need to make \textit{practical judgments} that direct action toward a goal. \textit{Value judgments} are a form of practical judgment that guide us toward the goals of bringing about good or mitigating bad.}

Taking up the Pragmatist perspective requires a new understanding of scientific goals and practice. Rather than thinking of the goal of clinical science as determining value-free facts, and then, after the science is done, determining how to use those facts in accordance with clinical values, one redescribes the goal: the goal of clinical science is to solve a clinical problem. To do this, researchers need to draw on both facts and values, finding a way to weigh them together given the problem at hand.

In a sense, clinical sciences are already doing this. As we saw above, researchers work to persuade others toward particular solutions to problems, drawing on facts and values in the process. But under the myth of value freedom, the use of values is cryptic, rather than explicit. Researchers who adopted a Pragmatist framework would use values explicitly, rejecting the denial and trumping that plague current communication. Because of their expertise and influence, their doing so would encourage a change in perspective among clinicians and the wider public as well.

However, in a Pragmatist framework, the wider audiences are not simply bystanders. In fact, the term “audience” becomes a misnomer. Instead of practices by which isolated scientists develop and then communicate knowledge, and clinicians dispense the fruits of it, Pragmatism embraces a democratic vision in which those affected by knowledge and its effects have a say in knowledge production. In practice, enacting a Pragmatist approach would shift the form and timing of communication. Rather than scientists persuading others after the fact, much communication among scientists, clinicians, patients, and a wider public would occur early: before the research is done. Such practices would decrease the practical dichotomizations among these groups.

On the face of it, this change seems only fair. In seeking solutions to a clinical problem, clinical science and the practices derived from it embed someone’s interests and concerns. The clinical problem affects people—sometimes millions of people; it seems fitting that those affected would have some say in, for example, what questions are asked, what solutions are sought, and how effectiveness is defined and measured. Equally importantly, bringing in additional voices and perspectives encourages challenges to entrenched views. In Dewey’s (1981) terms, “the cure for the ailments of democracy is more democracy” (p. 327; see also Anderson, 2011). In particular, seeing alternatives raises important questions about entrenched goals and attitudes.

It is not obvious, of course, how clinical research would include these other voices; it is also clear that there are legitimate worries about involving an uneducated crowd. Dewey held a radically democratic view about engaging the public in producing knowledge, and a faith that a democratic process would find the truth eventually. Most scholars today (myself included) who think that some kind of public involvement is needed in science that affects public well-being think that pure democracy in science is untenable for practical and epistemic reasons (for example, Kitcher, 2011; Kourany, 2010; Longino, 1990). Indeed, given the climate of knowledge and power differentials, the deep involvement of industry in clinical science, and the tendency of groups to be swayed without careful reasoning, poorly enacted democratic
procedures would likely conflict with the Pragmatic goal of careful evaluation of facts and values.

So how would a Pragmatist approach to conducting clinical science work? Consider the concerns about bariatric surgery and ADHD research. As we have seen, embedded values and their effects on the facts receive little scrutiny, and one result is that the clinical problems are defined and solutions proposed in a way that reinforces stigmatization of a population. The Pragmatist framework for clinical science stops burying the sources of the difficulty by (1) setting the goal of solving a clinical problem (“deciding what to do,” as opposed to the current “finding facts”); (2) recognizing that both facts and values are needed to define the clinical problems and their solutions; and (3) establishing venues for informed input and criticism, with the goal that relevant facts and values receive explicit and careful attention and uptake at all stages of science.

In this model, science communication becomes a conversation rather than a presentation, and it occurs (within practical limitations) at all stages of science. For example, in the case of bariatric surgery and ADHD research, the three steps would bring in the voices of patients, patient advocates, and others affected by the problems and their solutions into the choice of subject matter—obesity per se, or other health issues? ADHD per se, or struggles with particular settings? Surgery, drugs, or other approaches? A Pragmatist approach would garner input and criticism to help define parameters for such concepts as obesity, hyperactivity, health, and quality of life. Multiple perspectives would assess methodology—the operationalizations, subject choice, endpoint choice, length of observation, accuracy of measurement, and statistical analyses central to research. Wide input would help refine interpretation and clinical recommendations, and suggest how best to communicate results to address real needs.

But including the voices of affected people in decision making presents tremendous challenges. One is simply practical—how would input be gathered? I will not attempt to solve the practical problem. Involved institutions could develop streamlining procedures, taking urgency and other factors into account; generally, some sort of considered representation rather than direct democracy would be a practical necessity. Another set of problems relates to potential distortions in different directions: clinical science could be distorted by ignorance of science or opposition to it, and inclusiveness could be derailed if the voices of people of lower social status or power were squelched by those with more social resources. In the case of bariatric surgery and ADHD research, both sets of concerns are crucial. For example, progress in surgery or drug development could be inappropriately blocked by a crowd’s moralistic appeals opposing “easy fixes,” or the voices of stigmatized patients seeking alternative therapies could be drowned out by high-status scientists and clinicians or high-resource device companies.

Here is where the insights of feminist philosopher of science Helen Longino become crucial. Longino has observed that the insularity of scientific communities—such as heavily male-dominated communities—can bias scientific work because like-minded thinkers may fail to examine their background assumptions, such as those involving sex or gender. Her project has been to consider ways in which scientific communities might increase the objectivity of the community and its results by including a representative range of voices (Longino, 1990; Longino, 2002). Part of the purpose of this inclusiveness is to confront values embedded in the background assumptions—in an expansion on Dewey, the solution to the problems of values is more values.
Longino argues that while scientific communities need to be open to input from non-scientists, non-scientists should not have a direct role in decision making. This clarification addresses the concern that clinical science could be compromised by inclusiveness. Addressing both that concern and the potential for voice-squelching requires four additional safeguards, however. Longino advises, first, that scientific communities establish venues for criticism (1990, pp. 76–80; Longino 2002, pp. 131–134), making venues for public input and discussion of the aims and methods a part of standard practice in clinical science. (A Pragmatist framework would also require that the discussion include both facts and values, and that the goal be a choice of action.) Second, Longino argues that scientific communities need to exhibit uptake of criticism. This criterion guards against quashing the ideas of the less powerful by requiring that ideas, new voices, and criticism be taken up and duly considered by those who will make the ultimate decision. This criterion does not require that non-standard ideas ultimately be accepted, but rather that they be respected. The third safeguard is that decisions be based on shared standards. This recommendation guards against undue influence from various directions—money, power, ignorance, and others. But it is perhaps the most difficult recommendation to enact, because deciding on shared standards is often the very point at issue in contentious debates. Even within scientific communities, this criterion can be difficult to negotiate: standards of evidence in cultural anthropology differ distinctly from those in particle physics, for example. Nevertheless, the criterion is crucial because reasonable debates are impossible without some shared standards. For the broader debates needed in clinical science, the standards should be minimal in order to gain acceptance. And, as Longino and Dewey both argue, standards must also be revisable in the light of criticism.

Finally, the fourth recommendation is that scientific communities recognize tempered equality of intellectual authority. This criterion draws attention to the frequent relevance of facts and principles other than those particular to the science in question, as well as to the expertise of people outside the scientific community as intellectual authorities—experts—in forms of evidence that can be crucial to criticism or improvement of scientific practice. Given that decisions on the practice and uses of clinical science affect people’s lives, expertise in clinical medicine, health education, parenting, or lived experience of disability, for example, might usefully guide aspects of research or analysis. Experts bring perspectives that cannot be developed, or sometimes even grasped, by nonexperts. In Longino’s discussion, focused on the scientific community, the caveat word “tempered” recognizes that the expertise of clinical scientists does matter for clinical knowledge generation and practice. Within a Pragmatist framework, with its increased emphasis on give and take with wider communities, all of the involved communities of experts would need to accept criticism and tempering of their authority, as well as working with shared standards.

Establishing such an approach would undeniably be difficult, and not just on a procedural level. Intractable differences in goals are likely, and they may affect willingness to participate as well as derailing consensus. Private funding creates roadblocks even to an attempt, given that the incentives for industry and other private funders to participate in democratic procedures are likely to be low and unenforceable. Just as centrally, most people have limited skills in recognizing and communicating the facts and values they find important, and in evaluating those that others bring to bear on an issue.

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12 Longino points out, as well, that some people cannot fully engage in creating scientific knowledge, as they lack the capacity to do so.
Yet steps toward fuller and more open exchanges are possible. In part, the widespread agreement that exists on many issues provides a basis and incentive. Goals of reducing obesity rates, educating children well, and reducing stigma around mental and physical illness all receive general support, even if the means are contested. With some effort, involved people could be convinced of a need for additional change, given negative fallout from current practice. I have focused here on reinforced intolerance, a primary concern stemming from the literatures of bariatric surgery and ADHD research. Other consequences of the scientific status quo, which space precludes discussing at length, include inattention to social solutions to problems currently defined clinically—that is, relative to research on clinical intervention, less information exists on solutions such as changing food policy, increasing nutrition education, altering school standards, improving classroom support, and the like. Prevention also receives less attention, as does investigation of long-term effects of surgical and pharmacological treatments. Starting from agreement on rectifying these deficiencies, or from agreement on the already widely shared goals, clinical science could progress toward appropriate inclusiveness—of involved people and of carefully considered facts and values. Progress could build as well on models of decision making that already include stakeholders, such as those in education settings. Preliminary models for discussing values also exist, such as the attention to “significance”—a value-laden concept—of research in funding evaluations by the National Institutes of Health.

5. CONCLUSION

Current science communicators can also play an important role in progress, and they do not need to wait for a Pragmatist framework to appear. People in any communication role, from journalism to patient care to policy, as well as scientists themselves, can be among those who increase their skills in assessing and critiquing the facts and values embedded in clinical science. Individually, people can adopt the critical role they might have played in a Pragmatist conversation—noting, questioning, and bringing to light the embedded values and gaps in research that contribute to negative social effects. Doing so will push the conversations forward.

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