Introduction

Mental illness is, and always has been, a mystery. Despite active research, we may have to wait many decades for answers to important questions. Yet it is precisely because mental illness is enigmatic that I chose psychiatry as a career, and why I still love it. Sixty years later, I can say that becoming a psychiatrist was one of the best decisions I ever made, and I have little interest in retirement.

Over time, my perspective on psychiatry has changed, in the direction of greater skepticism. As a student, I did not understand why I needed to be taught the history of medicine. Once ideas go out of date, why bother to learn about them? Yet, as I grew older, I became more interested in the history of my specialty, and came to realize that progress is not linear. Impeded by false beliefs, medical science can go off on serious tangents. Understanding past mistakes can help us to be appropriately skeptical about current theories and practices—some of which may be remembered as dangerous errors.

I have always been the type of person who questions everything. When I was young, this attitude got me into trouble. I asked tough questions that threatened the convictions of my teachers. Since I did not accept received wisdoms without question, they saw me as a rebellious young man. Now, in old age, I have been called a curmudgeon for saying many of the same things. Although psychiatrists do a lot of good, it remains important to criticize contemporary practice, with its susceptibility to fads and its penchant for fallacies. That is the passion that drives this book.

The title of this volume is a deliberate paraphrase of a classic volume by Martin Gardner, *Fads and Fallacies in the Name of Science* (Gardner, 1957). *Fads* are ideas and practices based on temporary bursts of enthusiasm, whereas *fallacies* reflect cognitive errors or wishful thinking. When we think of fads, bizarre ideas come to mind, and Gardner's book focused on some of the strangest and most pseudoscientific theories of the time. However, fads in psychiatry have occurred not only on the fringe, but also in the very mainstream of theory and practice. Some of the trendiest theoretical paradigms turn out to be unsupported by data. In diagnosis, currently faddish approaches to classification lack a secure base in etiology, and many are unlikely to last. In treatment, both psychopharmacology and psychotherapy have embraced interventions that have a weak evidence base and that have made unjustified claims about their efficacy. These errors run the risk of doing harm to patients.

Should we be surprised or discouraged that psychiatry does not yet understand mental illness? No. The brain is the most complicated structure in the known universe. Neuroscience has not solved these problems fast enough to be applied to practice. We are often told that answers lie just around the corner, but that is where they tend to stay. The most important questions remain unanswered.

Given that psychiatrists still have so much to learn, they need to remain humble. For example, the idea of reducing everything about mental illness to a molecular or a neuronal level is currently all the rage, but is over-simplistic and hubristic. I am not criticizing basic research. But for clinical application, the biological processes behind disorders can only be understood in the context of interactions with psychological adversities and sociocultural stressors—that is, within a *biopsychosocial model* (Engel, 1980). Although multifactorial models can be intimidatingly complex, they explain why research on the origins and treatment of mental illness is so difficult.

Ironically, the main source of psychiatric fads is the strong desire of practitioners to help patients. Human nature being what it is, clinicians are uncomfortable with doubt and seek certainty. They have trouble maintaining a cautious stance in the face of scientific ignorance. Practitioners do not want to wait 100 years for answers, and are tempted to believe they know enough to practice in the present. Yet that is the main reason why psychiatry has been infected by fads and fallacies. This book will document how and why this happens.

Why I Have Written This Book

I began my career as a clinician and an educator. Despite my contrarian temperament, I largely accepted the point of view of my teachers. Yet, with time, I came to realize that the older generation was wrong about many things. Quite a few relied on clinical judgment to support theories, and were barely familiar with empirical data. I gradually became committed to a scientific and empirical perspective, and, with the help of colleagues, trained myself to become a researcher. I became a passionate convert to evidence-based medicine. I no longer take clinical experience, including my own, for granted. Despite the current fad for "lived experience," I am not prepared to accept ideas that fail to be supported by quantitative data.

For this reason, I have taken care in this book to ensure that its conclusions are consistent with the scientific literature, and I have referred the reader to relevant studies, comprehensive reviews, or meta-analyses. But since the subject of psychiatry as a whole is so vast, I have had to be selective about references.

This book will also draw on my 50 years of work as a consultant. Although one cannot base practice on clinical experience, the latter can be used to illustrate points that are confirmed by empirical data. Since 1972, I have run a hospital clinic that sees hundreds of patients every year referred from primary care. I also worked in a university health service for 25 years and saw thousands of troubled students. In 2001 and 2007, I founded two specialty clinics for the treatment of personality disorders, and over the last two decades I have conducted many thousands of consultations on patients with these conditions. Although the patients I treat myself are highly symptomatic, like many of my colleagues I now spend more time on consultations to primary care providers.

In total, I estimate that I have seen at least 30,000 patients over the last 50 years. When my students ask me how I manage to reach conclusions fairly rapidly, I tell them that things get easier after the first 30,000 cases. Yet even the most extensive experience does not automatically make you right. You could be making the same mistakes thousands of times. That is why I strongly support evidence-based psychiatry.

If you want to practice scientific medicine, you have to give up certainty and embrace doubt. In the first 10 years of my career, I aimed for radical change. With experience,

I learned that although I could help many or most patients, psychiatry lacks the tools to achieve consistent and stable remissions of serious mental disorders. The field is only at the beginning of a very long journey. Once I recognized that my specialty still has a thin knowledge base, I went into research to do my part in broadening it.

This second career in research started rather late, in my mid-forties. For that reason, I could not reach the same level as those who had started earlier. Moreover, I am only one soldier in a vast army. Yet I benefited from having more clinical experience, which some of my research colleagues—tied to labs and desks—lacked. Being an active clinician also helped me to ask more relevant questions. In turn, conducting research affected my practice. The doubt that characterizes the scientific culture is the best antidote to fads. I brought its worldview back to my clinical work and my teaching.

The clinical trenches are far from the ivory tower of academia. Although I aim to practice, as much as possible, in an evidence-based way, some of the most crucial questions cannot yet be answered by empirical data. Thus, when I treat patients, I keep in mind what I can and cannot do. And although I teach students to follow the research literature, I advise them to remain cautious about generalizing from just one or a few published studies. Unfortunately, not all of my colleagues share this perspective. Some jump on bandwagons and pretend to have an unjustified certainty. Most simply follow the crowd, and join in a consensus, however uncertain, that is shared by their colleagues.

Psychiatric Fads: Then and Now

When I was young, two major theoretical models shaped psychiatry, and both became sources of orthodoxy. One was the psychoanalytic model. I began training in the late 1960s, towards the end of the heyday of psychoanalysis in North America. At many universities, including my own, analysts were the leaders of academic psychiatry. Trainees revered them, mainly because they were eloquent and seemed to have an answer for everything. Some analysts may have been rather arrogant, but students tend to be attracted to confidence and certainty. As teachers, analysts could provide plausible (or not so plausible) explanations for symptoms of all kinds. They also insisted, without evidence, that their treatment method was highly effective. When it did not work, that was only because therapy had not lasted long enough, or was not conducted with sufficient skill.

The psychoanalytic fad was never as powerful in Europe. It had a good deal of influence in the UK, but never dominated psychiatry there. Disinterest in research ultimately proved to be the downfall of psychoanalysis. Neither the theory nor the method could stand up to empirical scrutiny. Today, although the analytic movement remains alive, it plays a rather marginal role in psychiatry, both in North America and in Europe. I have written two books about its decline (Paris, 2005, 2019).

Although psychoanalysis was a fad, one cannot say that it was *only* a fad. Many of its concepts and methods have been incorporated into other forms of psychotherapy that have since undergone clinical testing, and have been shown to be effective. Even cognitive–behavioral therapy (CBT) was founded by an analyst (Aaron Beck), and one can see a few surviving elements of his previous training in the method. But the key issue concerns the length of treatment, which leads to therapy being expensive and unavailable to most patients. As I shall show in this book, research supports *brief* courses of both psychodynamic psychotherapy and CBT, but does not support seeing patients regularly for years on end.

This having been said, psychoanalysis has a legacy. My training promoted an ability to listen empathically to patients and to understand what they might be thinking and feeling. (This is also a skill that cannot be entirely turned off, even in private life.)

Following the move away from psychoanalysis, modern psychiatry returned to its medical roots. Even in my student days, biological psychiatry had become an alternative way of looking at psychopathology. But it had not yet become an orthodoxy, and did not yet take psychopharmacology to an extreme, as it does now. Although drugs are often effective (and occasionally miraculous), clinicians who only treat symptoms with medications tend to lose interest in people and their life histories. Yet research shows that in disorders such as depression and anxiety, the effects of psychological treatment are more durable (Cuijpers et al., 2020). This is why I expect and hope that psychotherapy, much of which is well supported by research, will make a comeback.

The 1960s was the golden age of psychopharmacology. The dramatic success of drug treatment for severe mental disorders gave biological psychiatry an enormous boost. Healy (2002) described the medical management of psychosis as one of the most inspiring moments in human history. I entirely agree. I visited a large mental hospital as an undergraduate student, and saw what psychotic patients were like before drugs were available to control their symptoms. Only a few years later, psychiatrists had effective treatments for most of the psychoses and severe mood disorders. I saw patients being discharged and maintained in the community after years of serious illness. This was indeed a time of miracles.

Biological psychiatrists may be less colorful than psychoanalysts, but they have kept psychiatry within the scientific mainstream. Instead of tradition and authority, they rely on research studies and clinical trials. Gradually, neuroscience became the dominant force in psychiatry, even if clinicians did not understand why the drugs they prescribed are effective. Unfortunately, the neuroscience community has taken a narrowly biological approach, claiming that mental disorders are "nothing but" brain disorders. That mantra is both true and untrue. There can be no mind without brain. But psychiatry needs to study mind at its own level, not as something that can be reduced to neural connections. Moreover, neuroscience should not ignore (or pay lip service to) the powerful effects of psychological and social forces, which interact with biological factors, and which can also shape the structure and function of the brain.

In this way, biological psychiatry, when associated with an almost total dependence on drug treatment, can be as dogmatic as psychoanalysis ever was. Its ideas are based on a core of truth that has been stretched to the point of faddishness. Drugs are useful tools, but rarely *cure* severe mental disorders, many of which tend to remain chronic. Psychiatrists, rushing to gain the respect of their medical colleagues, embraced an ideology that is triumphant for now, but covers vast ignorance with a gloss of science.

Thus, despite the progress of recent decades, neuroscience is still in its infancy. Brain research has not even begun to explain how psychological symptoms develop. It should eventually do better. But it will never be possible to reduce all mental phenomena and symptoms to a cellular level, or to neural networks. Unless psychiatry embraces a broader model, it will suffer from a cripplingly narrow perspective.

Fads in Contemporary Psychiatry

I wish I could say that psychiatry has outgrown the fads and fallacies of my youth. But it has not. This book will focus on three areas that remain problematic.

The first is the diagnostic system used by psychiatrists. The *Diagnostic and Statistical Manual of Mental Disorders (DSM)* is now in its fifth edition, and although developed by American psychiatrists, it is used in most places in the world. I shall examine this system and outline its limitations. The latest revision, the DSM-5-Text Revision (DSM-5-TR; American Psychiatric Association, 2022) is a tool that works best for the most severe illnesses, but is much less useful for the common disorders that are most prevalent in practice. I shall also examine several of the alternatives to DSM, including the *International Classification of Diseases (ICD)*, now in its eleventh edition (ICD-11; World Health Organization, 2018). Some of these alternatives are based on quantitative dimensions rather than qualitative categories. But none of these has been shown to provide a solution to the lack of precision in categorization. They are still limited by the absence of etiologically based models, and the lack of data describing the endophenotypes that lie behind clinical disorders. This book will conclude that although DSM-5 is problematic, we currently lack the knowledge to replace it with something radically different or better.

The second focus of the book will be a critical examination of the currently popular view that neuroscience, by itself, can provide the answers to all the dilemmas of psychiatry. Clinicians have often been promised breakthroughs, each of which has been touted as being "just around the corner." But since that is where solutions remain, these promises remain unfulfilled.

In some ways, the more we learn, the more we realize how difficult will be the task of understanding mind and brain. The brain is an incredibly complex system consisting of about 85 billion neurons, with trillions of connections between them. Reading the 20,000 or so genes on the genome, and using genome-wide association studies (GWAS), has not yet been of much help. As we shall see, this research shows that every phenotype is rooted in small effects from hundreds or thousands of interacting alleles. We can add up these correlations to produce a "polygenic risk score," but that measure only accounts for a small part of the outcome (Tam et al., 2019).

Progress in biological research continues to be more relevant to basic science than to clinical needs. Unfortunately, the National Institute of Mental Health (NIMH) in the USA mainly funds studies of neuroscience, and provides little support for research that examines issues of direct clinical relevance. Perhaps research funders believe in making long-term investments at the expense of current needs. But this fallacy is based on hope, not facts, and is a disservice to the millions of people who suffer from mental illness. We have the tools to help many or most of our patients, but suffer from serious underfunding and lack of human resources to make our efforts count for more.

This book will argue that we need to avoid reductionism and adhere to a biopsychosocial model that acknowledges the complexity of the interactions that carry a risk for mental disorders. The bias in favor of neuroscience has greatly affected clinical practice. Psychiatrists these days may spend only 15 minutes with each patient, just enough time to check on symptoms and write a prescription. And when medication fails to help, the result is often more medication (i.e., polypharmacy).

The third, closely related, issue concerns the marginalization of psychotherapy in the practice of psychiatry. Only a minority of psychiatrists are seriously committed to making talking therapy part of their clinical activities, and that field is now dominated by clinical psychologists. This would not be a problem if psychological treatment was properly insured and readily available, but it is not. In the USA, psychotherapy remains expensive, with most insurance covering only a few sessions. The result is that patients

with common mental disorders (anxiety and depression) routinely receive medication without access to evidence-based forms of psychological treatment. In the UK, there has been a serious effort to make psychotherapy for these problems available within the National Health Service (Clark et al., 2018). But this welcome initiative only scratches the surface of the problem, especially for patients with severe and disabling mental disorders.

The Antipsychiatry Movement

A book like this, which focuses on how psychiatrists can go wrong, might suggest to readers that its author supports what has been called "antipsychiatry." That is most definitely not the case. I am a mainstream thinker and practitioner who is only asking my colleagues to slow down and exercise more scientific caution.

The antipsychiatry movement dates back at least to the 1960s. It was always political. Right-wingers and radical libertarians like Thomas Szasz claimed that mental illness was a myth, and that nobody should ever be treated involuntarily (Szasz, 1961). This point of view could only be maintained by individuals who were safely protected by academia, and who never spent time working in hospital emergency rooms or wards. But it appealed to those who felt threatened by the idea that any of us can lose our minds, and that we may have to be looked after against our will.

On the left wing of politics, Ronald Laing took a similar view, romanticizing mental illness as an exciting journey into the boundaries of the mind (Laing, 1967). Laing, unlike Szasz, did treat seriously ill patients, but with little success. Instead of providing medication to psychotic patients, he offered psychotherapy, pretending to be their guru on a "trip." His personal life was marked by alcoholism and abandonment of his many children, several of whom died while still young (Burston, 1998).

The opposition of antipsychiatrists to psychopharmacology is a marker of the irrationality of their viewpoint. In recent years, the American journalist Robert Whitaker has claimed to be a spokesman for the supposedly oppressed mentally ill (Whitaker, 2001). The British psychologist Richard Bentall, who emphasizes trauma as a cause of psychosis (Bentall, 2010), has played a similar role.

A few other sticks have been used to beat psychiatry. One that appears often is a so-called "experiment" reported 50 years ago by Rosenhan (1973) in the journal *Science*. Rosenhan described sending eight volunteers to mental hospitals, having instructed them to pretend to be psychotic, resulting in their admission. Needless to say, anyone can be admitted to a hospital—whether medical or psychiatric—if they fake the symptoms of an illness. But the truth of this story is even darker. Careful investigation by a journalist showed that the entire study was a fraud (Cahalan, 2019). Rosenhan seems to be the only person who pretended to be ill, and the other participants were figments of his imagination. This story shows how fraudulent research with sensational results can reach the pages of the most respected scientific journals. And it has been told and retold in books and the media ever since.

My reaction to antipsychiatrists is that they seem not only to hate the idea of mental illness, but also to be prepared to undermine the treatment of people who suffer from it. Fortunately, these critics have had little influence on the practice of psychiatry. Antipsychiatrists prefer to stand on the sidelines, and to add the mentally ill to the long list of oppressed sufferers who require the service of social justice warriors.

Antidotes to Fads

Faddish clinical practices derive from overly simplistic theories. Given our lack of knowledge about the causes and potential cure of mental illness, it is not surprising that clinicians have often failed to adopt practices based on evidence-based medicine. Contemporary views about the etiology of mental disorders have favored the idea that mental symptoms are due to a "chemical imbalance" or aberrant neural circuits. These theories could turn out to be at least partly correct, but are currently unsupported by good evidence. Even so, many practitioners, and quite a few patients, believe these ideas to be scientific truth. The result is that treatment aims to correct putative imbalances with a "cocktail" of drugs. Many patients are being given prescriptions that they do not need.

The enterprise of science encourages debate and doubt, which are the best correctives for faddish ideas. In the basic sciences, even the most powerful paradigms decline when the weight of evidence fails to support them, but change is slower in medicine. Sick people can be desperate, and physicians may seek desperate remedies. I have great sympathy for front-line clinicians who deal with highly distressed patients. But that is why psychiatry, which deals with poorly understood illnesses that cause profound suffering, is so susceptible to faddish ideas. A scientific worldview implies a commitment to test all theories before accepting them, and to subject all treatments to clinical trials. Practitioners can practice virtues such as patience, humility, and caution.

The antidote to fads consists of thinking scientifically and conducting evidence-based practice (Evidence-Based Medicine Working Group, 1992). This influential concept, developed by the British physician Archie Cochrane, in whose name guidelines to treatment are still being published, is a principle to which we all pay lip service. But clinicians have preconceptions that make them see the world in a way that confirms their point of view. These *confirmation biases* (Kahneman, 2011) lie at the heart of fallacious thinking in clinical work. Close attention to the scientific literature helps to keep such biases in check, and it also leads to a more cautious and conservative way of working with patients. Adopting an evidence-based perspective helps us to be comfortable with uncertainty, and it makes us less likely to harm patients and more likely to help them.

Chapter 1

Fads and Fallacies in Science, Medicine, and Psychology

Defining Fads

Fads are novel ideas that are rapidly adopted and enthusiastically followed—at least for a time. Fads are also based on bad theories. Science moves slowly, and to make progress more certain, proceeds with caution. Yet since fads can appear new and attractive, they initially gain much attention. Most end by disappearing from view, sometimes with barely a trace. The American sociologist Joel Best described these phases as "emerging, surging, and purging" (Best, 2006).

Not every new idea is a fad. There can be real breakthroughs in knowledge, but it takes years to determine how they actually pan out. As a rule, it is best to remain cautious about concepts that spread too rapidly, and to be more welcoming to those that gain support gradually, that prove to be replicable, and that withstand the test of time. In the end, fads are addictive ideas that short-circuit the slow advance of science. They lead to mistaken conclusions that can be embraced incautiously, but do not bear close inspection.

Fallacies and Cognitive Errors

Fallacies are cognitive errors that can be described in research (Kahneman, 2011). Most people assume that however foolish others may be, they themselves are more rational and have good judgment. Thus a lack of critical perspective on the self is the most prevalent of all fallacies. It is related to what has been called a *fundamental attribution error*. This term refers to the tendency to attribute other people's mistakes to their character, but to attribute one's own mistakes to circumstance.

One would like to assume that intelligent clinicians and scientists are less susceptible to fallacies, which only appeal to uneducated non-professionals. If only that were so! This book will show how stubbornly wrong ideas can be held, even by brilliant people. It also takes time for them to decline and disappear, often only after the death of influential founders of schools of thought and their disciples. In a witticism attributed to the physicist Max Planck, science advances one funeral at a time.

One of the earliest books on this subject was Charles Mackay's *Extraordinary Popular Delusions and the Madness of Crowds* (Mackay, 1841/1980), still in print after almost 200 years. Mackay made fun of faddish ideas, but implicitly assumed that his readers would be immune to them. Over a century later, Martin Gardner's *Fads and Fallacies in the Name of Science* (Gardner, 1957) showed how science, or at least popular science, can also be infected by fads. Most of Gardner's examples were fringe ideas that have since died out, but a few remain current nearly 70 years later, including extra-sensory perception (ESP), homeopathy, food fads, and Scientology.

If Gardner were still with us, he would no doubt want to write about the latest twists in the story. Fads and fallacies remain a problem, even in mainstream science. For example, a well-known psychologist published a paper some years ago claiming to prove the existence of a form of ESP called precognition (Bem, 2011). Attempts at replication of these findings consistently failed (Ritchie, 2020). Yet, as often happens in science, it was more difficult to publish failures to replicate than sensational findings that turn out be incorrect. This is one reason why we have a "replication crisis" that affects both medical and social sciences. Or as the internist John Ioannidis famously described the matter, most research findings turn out to be false (Ioannidis, 2005). Thus the progress of science generally involves two steps forward and at least one step backward.

Even so, some ideas have a tendency to "go viral." The evolutionary theorist Richard Dawkins made a useful contribution to the understanding of fads by introducing the term "meme" (Dawkins, 1976), a concept that was later expanded by the psychologist Susan Blackmore (Blackmore, 1999). Dawkins and Blackmore suggest that ideas can spread through society rather like genes, and that they are replicated even more rapidly. The difference is that the mechanism is entirely social and cultural. The concept of a meme goes some way toward explaining how false ideas can spread rapidly.

To explain why people are attracted to fads, we can begin by considering fallacious mechanisms of thought that promote incorrect conclusions. Fads gain adherents because they seem promising, even when based on false reasoning. These errors have been the subject of a large body of scientific research, particularly in the new disciplines of behavioral economics (Ariely, 2008; Thaler, 2015) and cognitive science (Kahneman, 2011).

Fads and fallacies can also lead to people losing a great deal of money, as demonstrated by the regular periods of financial turmoil that have been driven by misjudgments and unjustified optimism (Taleb, 2007). What research most often shows is that many opinions and judgments are based on emotion, not reason, and that arguments are used to justify conclusions that have already been reached. This explains why it can be a waste of time to try to change another person's mind by arguing—whether in politics and religion, or in scientific debate.

Some of the most important cognitive errors derive from preconceived beliefs. The idea that we discover the truth from reason is beloved of philosophers. Yet there is good evidence that people adopt a view of the world based on intuition, not data, and that preconceived ideas shape their perceptions of reality (Haidt, 2012).

Many decades ago, Festinger (1957) introduced the term *cognitive dissonance* to account for how people explain away discrepancies between their expectations and unwelcome facts. He studied how followers of a failed prophet became even more fanatical when their prediction about the end of the world did not come about. Once they were committed to a point of view, it was hard for them to admit they had been wrong or foolish. Instead, they "doubled down," holding on to their original opinions more strongly than ever. (They explained the failure of the prophecy as being the result of their intense prayers.)

Strangely, scientists sometimes do the same thing. When presented with contrary evidence, they may find a way to explain why the data prove they were right in the first place, or why contrary data cannot be relied on because of methodological flaws (Ritchie, 2020). Of course, since hardly any study is definitive, one can easily play that game. And if highly trained researchers can sometimes be fanatical, those trained as clinicians are

even more likely to be credulous. Practitioners with strong beliefs about the effectiveness of certain treatment methods can be very good at finding ways to explain away contradictory evidence.

The general term used to describe these phenomena is *confirmation bias* (Oswald and Grosjean, 2004). Once you have already made up your mind, new information is interpreted in the light of preconceived ideas. One might think that this kind of error should not happen in research, where data, at least in principle, should be the final arbiter. As the nineteenth-century biologist Thomas Huxley is thought to have said, "many a beautiful theory is killed by an ugly fact." Unfortunately, some scientists hold on to favorite theories with religious fervor.

Many researchers will have had the experience of encountering difficulty in publishing results that challenge a current consensus or paradigm. Peer review is a necessary part of science, but can sometimes be used by experts who do not want data contradictory to their own views to be published. Thus when a submitted scientific paper challenges a broadly held consensus (i.e., is "counter-intuitive"), the immediate reaction of a peer reviewer could be negative, an intuition that can easily be backed up by pointing out inevitable shortcomings in research methods. When I was a journal editor, I sometimes made the mistake of asking colleagues with fixed ideas to review papers that they disagreed with, requiring me to search out more balanced opinions. I have seen peer reviewers demonstrate their scientific potency by tearing apart papers that do not support their own ideas (or that simply fail to quote their work).

Similarly, anyone who has ever attended a scientific congress can attest to the way that researchers hold on to favorite ideas for dear life. During the wait for older scientists to be replaced by younger ones, incorrect conclusions can linger on through simple inertia.

Mahoney and DeMonbreun (1977) carried out a striking empirical study of confirmation bias in the peer review of scientific papers. They sent the same submission to 75 expert readers, modifying only what the data showed. The results revealed that reviewers had a much more favorable opinion of studies with findings that confirmed their own theoretical views, and a poorer opinion of those that disconfirmed them. In another provocative study, researchers sent out several classical high-quality research papers from years in the past under different names (Peters and Ceci, 1982). Only a few journals recognized the deception, and 89% of the submissions were rejected on methodological grounds.

The same process occurs in grant submissions. I have known researchers who spend almost as much time predicting who their reviewers will be as on writing a grant proposal. If a hypothesis seems too controversial, they may withhold the submission. (Some colleagues have told me that they prefer to transfer funds from another grant.)

Kahneman (2011) published a widely read book that described a very broad range of cognitive biases, one of which is the *availability heuristic*. In that scenario, error results from depending on what comes easily to mind, rather than on what is most probable. Even the most intelligent people tend to be impressed by a lively anecdote or a recent personal experience. But as the witticism goes, "the plural of anecdote is not data."

This type of cognitive bias tends to afflict clinical practice. For example, practitioners may remember something that happened to a recent patient, but fail to bear in mind that the most striking observations tend to be rare. If you have just seen a series of patients with a particular diagnosis and have given them a certain therapy, you may be tempted to