CHAPTER ONE

Science and Pseudoscience in Clinical Psychology

Initial Thoughts, Reflections, and Considerations

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In many ways, the sprawling terrain of clinical psychology and allied disciplines (e.g., psychiatry, social work, counseling, school psychology, psychiatry nursing) houses two largely disconnected worlds. One world consists of researchers and practitioners who ground their work largely in scientific evidence. Investigators in this first world adhere to scientific methods in their research, availing themselves of these methods as crucial safeguards against biases in their inferences. Practitioners in this first world actively consume research findings and base their interventions and diagnostic methods largely on the best available published findings. The other world, which is largely unknown to many academics ensconced comfortably in their Ivory Tower, consists of mental health professionals who routinely neglect research evidence (Dawes, 1994). Many professionals in this second world are not regular consumers of scientific findings, and they commonly administer therapeutic and assessment methods that are either unsupported or inadequately tested.

Indeed, over the past several decades, clinical psychology and related disciplines have witnessed a change in the relation between science and practice. A growing minority of clinicians appear to be basing their therapeutic and assessment practices primarily on clinical experience and subjective

intuition rather than on controlled research evidence. As a consequence, the term "scientist–practitioner gap" is being invoked with increasing frequency (see the foreword to this volume by Carol Tavris; Baker, McFall, & Shoham, 2008; Fox, 1996), and concerns that the scientific foundations of clinical psychology are steadily eroding continue to be voiced in many quarters (Dawes, 1994; Kalal, 1999; McFall, 1991). Fueling these worries are surveys of clinical psychologists and other mental health professionals, which reveal that large percentages of them are skeptical of the need for evidence-based practice (Baker et al., 2008). Many report that they place considerably more weight on their clinical experience, intuition, and theoretical orientation than on controlled research evidence when selecting interventions (Lilienfeld, Ritschel, Lynn, Cautin, & Latzman, 2013; Pignotti & Thyer, 2009). As the history of medicine teaches us, this devaluation of scientific evidence is likely to have deleterious consequences for our clients (Grove & Meehl, 1996).

It is largely these concerns that have prompted us to compile this edited volume, which features chapters by distinguished experts across a broad spectrum of areas within clinical psychology. Given the markedly changing landscape of clinical psychology, we believe the second edition of this book to be both timely and important.

Much has changed since the publication of the first edition of this volume over a decade ago (Lilienfeld, Lynn, & Lohr, 2003). These changes make a revised edition imperative. On the one hand, there are some grounds for optimism. In the years following the appearance of the first edition, the field of clinical psychology has seen a heightened focus on evidence-based practice, accompanied by a movement to identify empirically supported therapies for specific psychological conditions. On the other hand, there are ample reasons for continuing concern. As the chapters to follow make clear, many or most domains of clinical practice continue to be plagued by the widespread use of questionable or unvalidated techniques. In this book's second edition, we have not only updated our previous chapters in light of recent research, but added two new chapters focused on clinical domains that have become a focus of increasing concern over the past decade: attachment therapies (see Mercer, Chapter 15, this volume) and questionable treatments for childhood and adolescent antisocial behaviors (see Petrosino, MacDougall, Hollis-Peel, Fronius, & Guckenberg, Chapter 16, this volume). As a consequence of these updates and additions, this volume remains the most comprehensive resource for practitioners, researchers, instructors, and students who wish to distinguish well-supported from poorly supported techniques in clinical psychology and related fields.

Some might contend that the problem of unsubstantiated treatment techniques is not new and has in fact dogged the field of clinical psychology virtually since its inception. To a substantial extent, they would be correct. Nevertheless, the growing availability of information resources (some of which have also become misinformation resources), including popular psychology books and the Internet, the apparent upsurge of mental health

training programs that do not emphasize scientific training (Baker et al., 2008; Beyerstein, 2001), and the burgeoning industry of fringe psychotherapies, have magnified the gulf between scientist and practitioner to a problem of serious, even critical, proportions.

THE SCIENTIST–PRACTITIONER GAP AND ITS SOURCES

What are the primary sources of the growing scientist–practitioner gap? As many authors have noted (see Baker et al., 2008, Gambrill, 2006, and Lilienfeld, 1998, for discussions), some practitioners in clinical psychology and related mental health disciplines continue to use unsubstantiated, untested, and otherwise questionable treatment and assessment methods. Moreover, psychotherapeutic methods of unknown or doubtful validity are proliferating on an almost weekly basis. For example, one highly selective sampling of fringe psychotherapeutic practices (Eisner, 2000; see also Singer & Lalich, 1996) included neurolinguistic programming, Thought Field Therapy, Emotional Freedom Technique, rage reduction therapy, primal scream therapy, feeling therapy, Buddha psychotherapy, past lives therapy, future lives therapy, alien abduction therapy, angel therapy, rebirthing, Sedona method, Silva method, entity depossession therapy, vegetotherapy, palm therapy, and a plethora of other methods (see also Pignotti & Thyer, Chapter 7, this volume).

Furthermore, a great deal of academic and media coverage of such fringe treatments is accompanied by scant critical evaluation. One edited volume (Shannon, 2002) features 23 chapters on largely unsubstantiated psychological techniques, including music therapy, homeopathy, breath work, therapeutic touch, aromatherapy, medical intuition, acupuncture, and body-centered psychotherapies. Nevertheless, in most chapters these techniques receive minimal scientific scrutiny (see Corsini, 2001, for a similar example). More recently, consumers can purchase volumes on energy therapies, body work therapies, and brain-based psychotherapies, among scores of others, that are largely or entirely devoid of empirical support (e.g., Feinstein, Eden, Craig, & Bowen, 2005; Heller & Duclos, 2012).

Additional threats to the scientific foundations of clinical psychology and allied fields stem from the thriving self-help industry. This industry produces hundreds of new books, manuals, and audiotapes each year (see Rosen, Glasgow, Moore, & Barrera, Chapter 9, this volume), many of which promise rapid or straightforward solutions to complex life problems. Although some of these self-help materials may be efficacious, the overwhelming majority of them have never been subjected to empirical scrutiny. In addition, an ever-increasing contingent of self-help "gurus" on television and radio talk shows routinely offer advice of questionable scientific validity to a receptive, but often vulnerable, audience of troubled individuals (Lilienfeld, 2012).

Similarly questionable practices can be found in the domains of

psychological assessment and diagnosis. Despite well-replicated evidence that statistical (actuarial) formulas are superior to clinical judgment for a broad range of judgmental and predictive tasks (Grove, Zald, Lebow, Snitz, & Nelson, 2000), most clinicians continue to rely on clinical judgment even in cases in which it has been shown to be ill advised (Vrieze & Grove, 2009). There is also evidence that many practitioners tend to be overconfident in their judgments and predictions, and to fall prey to basic errors in reasoning (e.g., confirmation bias, illusory correlation, hindsight bias) in the process of case formulation (see Garb & Boyle, Chapter 2, this volume). Moreover, many practitioners base their interpretations on assessment instruments (e.g., human figure drawing tests, Rorschach Inkblot Test, Myers–Briggs Type Indicator, anatomically detailed dolls) that are either highly controversial or questionable from a scientific standpoint (see Hunsley, Lee, Wood, & Taylor, Chapter 3, this volume).

Still other clinicians render confident diagnoses of psychiatric conditions, such as dissociative identity disorder (known formerly as multiple personality disorder), whose validity remains in dispute (see Lilienfeld & Lynn, Chapter 5, this volume, but see also Gleaves, May, & Cardena, 2001; Reinders, Willemsen, Vos, den Boer, & Nijenhuis, 2012, for different perspectives). The problem of questionable diagnostic labels is especially acute in courtroom settings, where psychiatric labels of unknown or doubtful validity (e.g., road rage syndrome, sexual addiction, battered woman's syndrome) are sometimes invoked as exculpatory defenses (see McCann, Lynn, Lilienfeld, Shindler, & Hammond, Chapter 4, this volume).

STRIKING A BALANCE BETWEEN EXCESSIVE OPEN-MINDEDNESS AND EXCESSIVE SKEPTICISM

Still, we should avoid the temptation to be dismissive. At least some of the largely or entirely untested psychotherapeutic, assessment, and diagnostic methods reviewed in this volume may ultimately prove to be efficacious or valid. It would be a serious error to refuse to consider any untested techniques out of hand or antecedent to prior critical scrutiny. In fairness, such closed-mindedness has sometimes characterized debates concerning the efficacy of novel psychotherapies (Beutler & Harwood, 2001). Nevertheless, a basic tenet of science is that the burden of proof falls squarely on the claimant, not the critic (Shermer, 1997). As a consequence, it is up to the proponents of these techniques to demonstrate that they work, not up to the critics of these techniques to demonstrate the converse.

As Carl Sagan (1995b) eloquently pointed out, scientific inquiry demands a unique mix of open-mindedness and penetrating skepticism (see also Shermer, 2001). We must remain open to novel and untested claims, regardless of how superficially implausible they might appear at first blush. At the same time, we must subject these claims to incisive scrutiny to ensure that they withstand the crucible of rigorous scientific testing. As space

scientist James Oberg observed, keeping an open mind is a virtue but this mind cannot be so open that one's brains fall out (Sagan, 1995a; see also Rosen, Glasgow, Moore, & Barrera, Chapter 9, this volume). Although the requirement to hold all claims to high levels of skeptical scrutiny applies to all domains of science, such scrutiny is especially crucial in applied areas, such as clinical psychology, in which erroneous claims or ineffective practices have the potential to produce harm (Lilienfeld, 2007).

WHY POTENTIALLY PSEUDOSCIENTIFIC TECHNIQUES CAN BE HARMFUL

Some might respond to our arguments by contending that although many of the techniques reviewed in this book are either untested or ineffective, most are likely to prove either efficacious or innocuous. From this perspective, our emphasis on the dangers posed by such techniques is misplaced because unresearched mental health practices are at worst inert.

Nevertheless, this counterargument overlooks several important considerations. Specifically, there are at least three major ways in which unsubstantiated mental health techniques can be problematic (Lilienfeld, 2002; see also Beyerstein, 2001). First, some of these techniques may be harmful per se (Dimidjian & Hollon, 2010; Lilienfeld, 2007). The tragic case of Candace Newmaker, the 10-year-old Colorado girl who was smothered to death in 2000 by therapists practicing a variant of rebirthing therapy (see Mercer, Chapter 15, this volume), attests to the dangers of implementing untested therapeutic techniques. There is also increasing reason to suspect that certain suggestive techniques (e.g., hypnosis, guided imagery) for unearthing purportedly repressed memories of childhood trauma may exacerbate or even produce psychopathology by inadvertently implanting false memories of past events (see Pignotti & Thyer, Chapter 7, and Lynn, Krackow, Loftus, Locke, & Lilienfeld, Chapter 8, this volume). Even the use of facilitated communication for infantile autism (see Romanczyk, Turner, Sevlever, & Gillis, Chapter 14, this volume) has resulted in numerous erroneous accusations of child abuse against family members. Moreover, there is accumulating evidence that certain widely used treatment techniques, such as critical incident stress debriefing (see Rosen, Glasgow, Moore, & Barrera, Chapter 9, this volume), Scared Straight programs for delinquency (see Petrosino, MacDougall, Hollis-Peel, Fronius, & Guckenberg, Chapter 16, this volume) and perhaps certain self-help programs (Rosen, 1987; see Chapter 9, this volume) can be harmful for some clients. Consequently, the oft-held assumption that "doing something is always better than doing nothing" in the domain of psychotherapy is likely to be mistaken. As psychologist Richard Gist reminds us, doing something is not license to do anything.

Second, even psychotherapies that are by themselves innocuous can indirectly produce harm by depriving individuals of scarce time, financial

resources, or both. Economists refer to this side effect as "opportunity cost." As a result of opportunity cost, individuals who would otherwise use their time and money to seek out demonstrably efficacious treatments may be left with precious little of either. Such individuals may therefore be less likely to obtain interventions that could prove beneficial.

Third, the use of unsubstantiated techniques eats away at the scientific foundations of the profession of clinical psychology (Baker et al., 2008; Lilienfeld, 1998; McFall, 1991). As one of us (Lilienfeld, 2002) observed:

> Once we abdicate our responsibility to uphold high scientific standards in administering treatments, our scientific credibility and influence are badly damaged. Moreover, by continuing to ignore the imminent dangers posed by questionable mental health techniques, we send an implicit message to our students that we are not deeply committed to anchoring our discipline in scientific evidence or to combating potentially unscientific practices. Our students will most likely follow in our footsteps and continue to turn a blind eye to the widening gap between scientist and practitioner, and between research evidence and clinical work. (p. 9)

In addition, the promulgation of treatment and assessment techniques of questionable validity can undermine the general public's faith in the profession of clinical psychology and lead citizens to place less trust in the assertions of clinical researchers and practitioners (Lilienfeld, 2012).

THE DIFFERENCES BETWEEN SCIENCE AND PSEUDOSCIENCE: A PRIMER

One of the major goals of this book is to distinguish scientific from pseudoscientific claims in clinical psychology. To accomplish this goal, however, we must first delineate the principal differences between scientific and pseudoscientific research programs. As one of us has noted elsewhere (Lilienfeld, 1998), science probably differs from pseudoscience in degree rather than in kind. Science and pseudoscience can be thought of as Roschian (Rosch, 1973) or open (Meehl & Golden, 1982; Pap, 1953) concepts that possess intrinsically fuzzy boundaries and an indefinitely extendable list of indicators. Nevertheless, the fuzziness of such categories does not mean that distinctions between science and pseudoscience are fictional or entirely arbitrary. As psychophysicist S. S. Stevens observed, the fact that the precise boundary between day and night is indistinct does not imply that day and night cannot be meaningfully differentiated (see Leahey & Leahey, 1983). From this perspective, pseudosciences can be conceptualized as exhibiting a fallible, but nevertheless useful, list of indicators or "warning signs." The more such warning signs a discipline exhibits, the more it begins to cross the murky dividing line separating science from pseudoscience (see also Herbert et al., 2000). A number of philosophers

of science (e.g., Bunge, 1984) and psychologists (e.g., Ruscio, 2001) have outlined some of the most frequent features of pseudoscience. Among these features are the following (for further discussions, see Herbert et al., 2000; Hines, 1988; Lilienfeld, 1998):

1. *An overuse of ad hoc hypotheses designed to immunize claims from falsification.* From a Popperian or neo-Popperian standpoint (see Popper, 1959), assertions that could never in principle be falsified are unscientific (but see McNally, 2003, for a critique of Popperian notions). The repeated invocation of ad hoc hypotheses to explain away negative findings is a common tactic among proponents of pseudoscientific claims. Moreover, in most pseudosciences, ad hoc hypotheses are simply "pasted on" to plug holes in the theory in question. When taken to an extreme, ad hoc hypotheses can provide an impenetrable barrier against potential refutation. For example, some proponents of eye movement desensitization and reprocessing (EMDR) have argued that negative findings concerning EMDR are almost certainly attributable to low levels of fidelity to the treatment procedure (see Rosen, Glasgow, Moore, & Barrera, Chapter 9, this volume). But they have typically been inconsistent in their application of the treatment fidelity concept (Rosen, 1999).

It is crucial to emphasize that the invocation of ad hoc hypotheses in the face of negative evidence is sometimes a legitimate strategy in science. In scientific research programs, however, such maneuvers tend to enhance the theory's content, predictive power, or both (see Lakatos, 1978; Meehl, 1990).

2. *Absence of self-correction.* Scientific research programs are not necessarily distinguished from pseudoscientific research programs in the verisimilitude of their claims because proponents of both programs frequently advance incorrect assertions. Nevertheless, in the long run most scientific research programs tend to eliminate these errors, whereas most pseudoscientific research programs do not. Consequently, intellectual stagnation is a hallmark of most pseudoscientific research programs (Ruscio, 2001). For example, astrology has changed remarkably little in the past 2,500 years (Hines, 1988).

3. *Evasion of peer review.* On a related note, many proponents of pseudoscience avoid subjecting their work to the often ego-bruising process of peer review (Ruscio, 2001; see also Gardner, 1957, for illustrations). In some cases, they may do so on the grounds that the peer review process is inherently biased against findings or claims that contradict well-established paradigms (e.g., see Callahan, 2001a, for an illustration involving Thought Field Therapy; see also Rosen, Glasgow, Moore, & Barrera, Chapter 9, this volume). In other cases, they may avoid the peer review process on the grounds that their assertions cannot be evaluated adequately using standard scientific methods. Although the peer review process is far from flawless

(see Peters & Ceci, 1982, for a striking example), it remains the best mechanism for self-correction in science and assists investigators in identifying errors in their reasoning, methodology, and analyses. By remaining largely insulated from the peer review process, some proponents of pseudoscience forfeit an invaluable opportunity to obtain corrective feedback from informed colleagues.

4. *Emphasis on confirmation rather refutation.* The brilliant physicist Richard Feynman (1985) maintained that the essence of science is a bending over backwards to prove oneself wrong. Bartley (1962) similarly maintained that science at its best involves the maximization of constructive criticism. Ideally, scientists subject their cherished claims to grave risk of refutation (Meehl, 1978; see also Ruscio, 2001). In contrast, pseudoscientists tend to seek only confirming evidence for their claims. Because a determined advocate can find at least some supportive evidence for virtually any claim (Popper, 1959), this confirmatory hypothesis-testing strategy is not an efficient means of rooting out error in one's web of beliefs.

Moreover, as Bunge (1967) observed, most pseudosciences manage to reinterpret negative or anomalous findings as corroborations of their claims (see Herbert et al., 2000). For example, proponents of extrasensory perception (ESP) have sometimes interpreted isolated cases of *worse* than chance performance on parapsychological tasks (known as "psi missing") as evidence of ESP (Gilovich, 1991; Hines, 1988).

5. *Reversed burden of proof.* As noted earlier, the burden of proof in science rests on the individual making a claim, not on the critic. Proponents of pseudoscience frequently flout this principle and instead demand that skeptics demonstrate beyond a reasonable doubt that a claim (e.g., an assertion regarding the efficacy of a novel therapeutic technique) is false. This error is similar to the logician's ad ignorantium fallacy (i.e., the argument from ignorance)—the mistake of assuming that a claim is likely to be correct merely because there is no compelling evidence against it (Shermer, 1997). For example, some proponents of unidentified flying objects (UFOs) have insisted that skeptics account for every unexplained report of an anomalous event in the sky (Hines, 1988; Sagan, 1995a). But because it is essentially impossible to prove a universal negative, this tactic incorrectly places the burden of proof on the skeptic rather than the claimant.

6. *Absence of connectivity.* In contrast to most scientific research programs, pseudoscientific research programs tend to lack "connectivity" with other scientific disciplines (Bunge, 1983; Stanovich, 2012). In other words, pseudosciences often purport to create entirely new paradigms out of whole cloth rather than to build on extant paradigms. In so doing, they often neglect well-established scientific principles or hard-won scientific knowledge. For example, many proponents of ESP argue that it is a genuine (although heretofore undetected) physical process of perception, even though reported cases of ESP violate almost every major law of physical signals (e.g., ESP purportedly operates just as strongly from thousands of

miles away as it does from a few feet away). Although scientists should remain open to the possibility that an entirely novel paradigm has successfully overturned all preexisting paradigms, they must insist on extremely high standards of evidence before drawing such a conclusion. This dictum comports with Bayesian perspectives on science, which mandate that *a priori* plausibility be considered when evaluating the likelihood of scientific theories (Lilienfeld, 2011; Wagenmakers, Wetzels, Boorsbom, & van der Maas, 2011).

7. *Overreliance on testimonial and anecdotal evidence.* Testimonial and anecdotal evidence can be quite useful in the early stages of scientific investigation. Nevertheless, such evidence is almost always much more helpful in the context of discovery (i.e., hypothesis generation) than in the context of justification (i.e., hypothesis testing; see Reichenbach, 1938). Proponents of pseudoscientific claims frequently invoke reports from selected cases (e.g., "This treatment clearly worked for Person X, because Person X improved markedly following the treatment") as a means of furnishing dispositive evidence for these claims. For example, proponents of certain treatments (e.g., secretin, glutein-free diets, chelation therapy) for autistic spectrum disorder (see Waschbusch & Waxmonsky, Chapter 13, this volume) have often pointed to uncontrolled case reports of improvement as supportive evidence (Offit, 2010).

As Gilovich (1991) observed, however, case reports almost never provide sufficient evidence for a claim, although they often provide necessary evidence for this claim. For example, if a new form of psychotherapy is efficacious, one should certainly expect at least some positive case reports of improvement. But such case reports do not provide adequate evidence that the improvement was attributable to the psychotherapy because this improvement could have been produced by a host of other influences (e.g., placebo effects, regression to the mean, spontaneous remission, or maturation; see Cook & Campbell, 1979; Lilienfeld, Ritschel, Lynn, Cautin, & Latzman, 2013).

8. *Use of obscurantist language.* Many proponents of pseudoscience use impressive sounding or highly technical jargon in an effort to provide their disciplines with the superficial trappings of science (see van Rillaer, 1991, for a discussion of "strategies of dissimulation" in pseudoscience). Such language may be convincing to individuals unfamiliar with the scientific underpinnings of the claims in question and may therefore lend these claims an unwarranted imprimatur of scientific legitimacy.

For example, the developer of EMDR explained the efficacy of this treatment as follows (see also Rosen, Glasgow, Moore, & Barrera, Chapter 9, this volume):

> [The] valences of the neural receptors (synaptic potential) of the respective neuro networks, which separately store various information plateaus and levels of adaptive information, are represented by the letters Z

> through A. It is hypothesized that the high-valence target network (Z) cannot link up with the more adaptive information, which is stored in networks with a lower valence. That is, the synaptic potential is different for each level of affect held in the various neuro networks. . . . The theory is that when the processing system is catalyzed in EMDR, the valence of the receptors is shifted downward so that they are capable of linking with the receptors of the neuro networks with progressively lower valences. (Shapiro, 1995, pp. 317–318)

9. *Absence of boundary conditions.* Most well-supported scientific theories possess boundary conditions, that is, well-articulated limits under which predicted phenomena do and do not apply. In contrast, many or most pseudoscientific phenomena are purported to operate across an exceedingly wide range of conditions. As Hines (1988, 2001) noted, one frequent characteristic of fringe psychotherapies is that they are ostensibly efficacious for almost all disorders regardless of their etiology. For example, some proponents of Thought Field Therapy (see Rosen, Glasgow, Moore, & Barrera, Chapter 9, this volume) have proposed that this treatment is beneficial for virtually all mental disorders. Moreover, the developer of this treatment has posited that it is efficacious not only for adults but for "horses, dogs, cats, infants, and very young children" as well (Callahan, 2001b, p. 1255).

10. *The mantra of holism.* Proponents of pseudoscientific claims, especially in organic medicine and mental health, often resort to the "mantra of holism" (Ruscio, 2001) to explain away negative findings. When invoking this mantra, they typically maintain that scientific claims can be evaluated only within the context of broader claims and therefore cannot be judged in isolation. For example, some proponents of the Rorschach Inkblot Test have responded to criticisms of this technique (see Hunsley, Lee, Wood, & Taylor, Chapter 3, this volume) by asserting that clinicians virtually never interpret results from a Rorschach in isolation. Instead, in actual practice clinicians consider numerous pieces of information, only one of which may be a Rorschach protocol. There are two major difficulties with this line of reasoning. First, it implies that clinicians can effectively integrate in their heads a great deal of complex psychometric information from diverse sources, a claim that is doubtful given the research literature on clinical judgment (see Garb & Boyle, Chapter 2, this volume). Second, by invoking the mantra of holism, proponents of the Rorschach and other techniques can readily avoid subjecting their claims to the risk of falsification. In other words, if research findings corroborate the validity of a specific Rorschach index, Rorschach proponents can point to these findings as supportive evidence, but if these findings are negative, Rorschach proponents can explain them away by maintaining that "clinicians never interpret this index in isolation anyway" (see Merlo & Barnett, 2001, for an example). This "heads I win, tails you lose" reasoning places the claims of these proponents largely outside of the boundaries of science.

We encourage readers to bear in mind the aforementioned list of pseudoscience indicators (see Lilienfeld, Ammirati, & David, 2012, and Ruscio, 2001, for other useful indicators) when evaluating the claims presented in this volume. At the same time, we remind readers that these indicators are only probabilistically linked to pseudoscientific research programs. Scientists, even those who are well trained, are not immune from such practices. In scientific research programs, however, such practices tend eventually to be weeded out through the slow but steady process of self-correction. In contrast to sciences, in which erroneous claims tend to be gradually ferreted out by a process akin to natural selection (e.g., see Campbell's [1974] discussion of evolutionary epistemology), pseudosciences tend to remain stagnant in the face of contradictory evidence.

CONSTRUCTIVE EFFORTS TO ADDRESS THE PROBLEM

Until recently, the field of clinical psychology has shown relatively little interest in addressing the threats posed by pseudoscientific or otherwise questionable practices. As Paul Meehl (1993), perhaps the foremost clinical psychologist of the latter half of the 20th century, observed:

> It is absurd, as well as arrogant, to pretend that acquiring a Ph.D. somehow immunizes me from the errors of sampling, perception, recording, retention, retrieval, and inference to which the human mind is subject. In earlier times, all introductory psychology courses devoted a lecture or two to the classic studies in the psychology of testimony, and one mark of a psychologist was hard-nosed skepticism about folk beliefs. It seems that quite a few clinical psychologists never got exposed to this basic feature of critical thinking. My teachers at [the University of] Minnesota . . . shared what Bertrand Russell called the dominant passion of the true scientist—the passion not to be fooled and not to fool anybody else . . . all of them asked the two searching questions of positivism: "What do you mean?" "How do you know?" If we clinicians lose that passion and forget those questions, we are little more than be-doctored, well-paid soothsayers. I see disturbing signs that this is happening and I predict that, if we do not clean up our clinical act and provide our students with role models of scientific thinking, outsiders will do it for us. (pp. 728–729)

Nevertheless, the past two decades have witnessed several constructive efforts to address the problems posed by questionable and potentially pseudoscientific methods in clinical psychology. In particular, Division 12 of the American Psychological Association has advanced a set of criteria for empirically supported treatments (ESTs) for adult and childhood disorders, along with provisional lists of therapeutic techniques that satisfy these criteria (see Chambless & Ollendick, 2001, and Barlow, 2004, for

thoughtful reviews). Vigorous and healthy debate surrounds the criteria established for identifying ESTs as well as the current list of ESTs (Herbert, 2003; Westen, Novotny, & Thompson-Brenner, 2004; see also Gaudiano, Dalrymple, Weinstock, & Lohr, Chapter 6, this volume). Despite this controversy, it seems clear that the increasing push toward ESTs reflects a heightened emphasis on distinguishing interventions that are scientifically supported from those whose support is negligible or nonexistent. In this respect, the EST movement, although hardly immune from criticism (see Lilienfeld, Lynn, & Lohr, Chapter 17, this volume), is an important step in the direction of minimizing error in clinical inference.

This and other developments which reflect a heightened emphasis on evidence-based practice in some doctoral training programs (Weissman et al., 2006), suggest that careful attention is at long last being accorded to questionable practices in clinical psychology and to distinguishing them from practices with stronger evidentiary support. We hope that readers will find this second edition of this edited volume to represent another constructive step in this direction.

THE GOALS OF THIS VOLUME

With the aforementioned considerations in mind, the primary goal of this second edition of this edited volume is to assist readers—whom we hope will include clinical researchers, practicing psychologists, psychiatrists, social workers, counselors, and psychiatric nurses, graduate students in clinical psychology and allied disciplines (e.g., social work, counseling), medical students, lawyers, educators, and educated laypersons—with the crucial task of distinguishing techniques in clinical psychology that are scientifically supported or promising from those that are scientifically unsupported or untested. To assist readers with this task, we have asked the authors of each chapter to delineate not only which techniques and claims are devoid of empirical support, but also which are either empirically supported or promising. In this way, we expect readers to emerge with an enhanced understanding and appreciation of the differences between mental health techniques that are and are not grounded in the most up-to-date scientific evidence. In addition, as noted earlier, we intend to assist readers with the task of identifying research programs in clinical psychology that embody many of the features of pseudoscience and to distinguish them from research programs that exemplify the core features of scientific epistemology (e.g., self-correction).

We have organized this volume into four major sections. First, we begin with an examination of questionable or untested practices and assumptions in the domains of psychological assessment and diagnosis. Second, we examine general controversies in psychotherapy and self-help interventions that cut across multiple psychological disorders. Third, we turn to

largely untested or unsubstantiated treatment techniques (both psychotherapeutic and psychopharmacological) for various adult psychological conditions, including posttraumatic stress disorder, alcoholism, and depression. Fourth, we examine similarly untested and unsubstantiated treatments for childhood disorders, with a particular focus on attention-deficit/hyperactivity disorder and infantile autism. We conclude the volume with a brief set of constructive remedies for narrowing the gap between scientist and practitioner.

By concluding this volume on a relatively optimistic note, we intend to leave readers with the impression that the problem of pseudoscience in contemporary clinical psychology, though formidable in severity and scope, may not be intractable. If our sanguine assessment is correct, a future generation of clinical psychologists may perceive this volume as a mere historical curiosity, a legacy of a bygone era when clinical practices were often unsubstantiated and not routinely grounded in the best available scientific evidence. Nothing would please us more.

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