

CHAPTER 1

Introduction

The Evolution of Mindfulness Science

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A decade ago, when each of us began to give academic talks on mindfulness, a few members of our audiences—mainly clinical psychologists and the occasional cognitive scientist—would nod their heads knowingly when mindfulness was described, even if they had not heard the term before. Most others found the whole idea of mindfulness unfamiliar in the context of their scientific training. A lot has changed in a decade. Today, mindfulness is among the hottest topics in both clinical and basic psychological science. Research on the topic regularly appears in journals across the spectrum of the behavioral sciences, federal grant agencies devote considerable sums to its study, a number of behavioral interventions include mindfulness training in treating a variety of mental and physical health conditions, and many in the general public know something about mindfulness from the considerable number of books, online media, courses, and workshops on the subject.

The current widespread theoretical and scientific interest in mindfulness is particularly remarkable when seen in historical context of psychology, psychiatry, and related disciplines. Whereas psychological science has conventionally focused in one way or another on the contents of consciousness (e.g., cognitions, emotions, and their somatic and behavioral consequences), mindfulness fundamentally concerns consciousness itself. While there is no single definition of mindfulness (Anālayo, 2014), fundamental to classical and other definitions is clear-eyed attention to the workings of the mind, body, and behavior (e.g., Bodhi, 2011). This attentiveness to what is present appears to yield corrective and curative benefits in its own right. These benefits have placed this quality of consciousness squarely in a scientific spotlight.

Theoretical and Empirical Advances in the Field

One testament to the burgeoning interest in mindfulness is the exponential growth in research papers and books on the topic; as Figure 1.1 shows, publications (articles and books) containing the term *mindfulness* were few through to the 1980s and 1990s but have increased exponentially over time since the early 2000s. Over a 30-year span, the science of mindfulness has seen significant developments along four major fronts, each represented in this volume: conceptualization, psychological theory, basic science, and applied science. We briefly discuss each of these areas in turn.

Conceptualization

Within Western psychology, interest in conscious awareness of or attention to, what occurs—as both a way of being and a tool for inquiry—is long-standing, dating at least to the writings of William James (1890/1950). Over the course of the 20th century, consciousness came to figure prominently in one form or another in a number of schools of psychology, ranging from Gestalt, humanistic, and existential

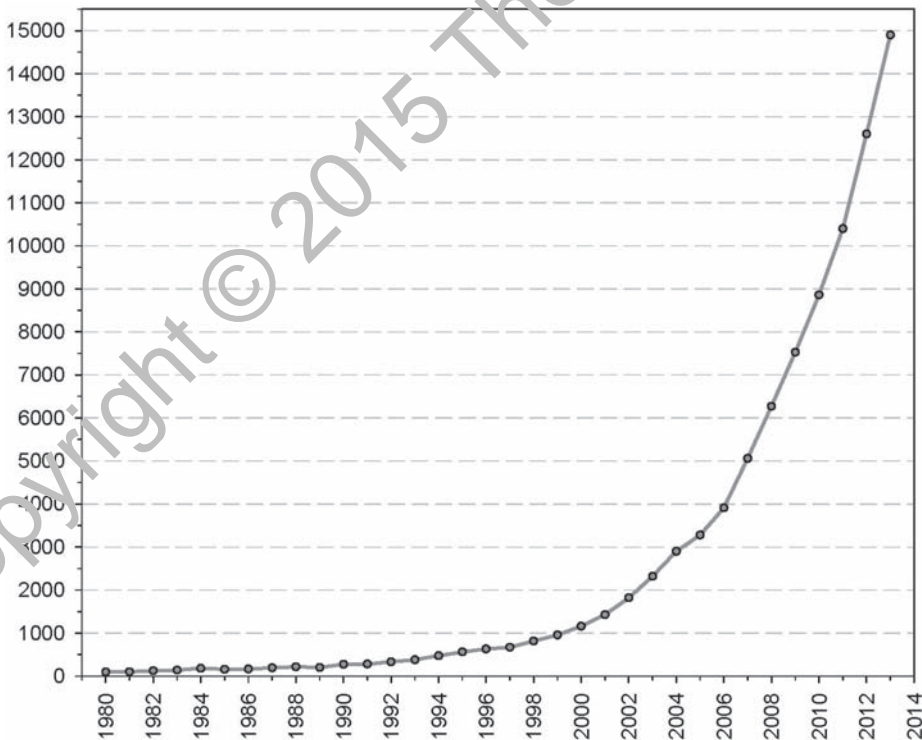


FIGURE 1.1. Number of publications containing the word *mindfulness* in Google Scholar, 1980–2013. Each point represents the citation count for a single year.

phenomenology to, more recently and perhaps most surprisingly, cognitive behaviorism. However, these historical interests pale by comparison to the intensity of interest in consciousness today. The receptive attentiveness featured in mindfulness has conceptual affinity with other modes of attending that are actively investigated in contemporary psychology, including *concrete* and *experiential processing* (Teasdale, 1999; Edward R. Watkins, 2008 and Chapter 6, this volume), *first-order phenomenal experience* (Lambie & Marcel, 2002; Marcel, 2003), *interest taking* (Edward L. Deci, Richard M. Ryan, Patricia P. Schultz, & Christopher P. Niemi, Chapter 7, this volume), and *psychological distancing* (Ayduk & Kross, 2010).

Although research on mindfulness has connections with these contemporary interests, it has nonetheless been most deeply informed by the rich “inner science” (Cabezón, 2003) developed over many centuries in the Buddhist traditions. Wallace (2003, 2007) and others (e.g., Hut, 2003) suggest that there is a deep complementarity between Western scientific and Buddhist contemplative approaches to the study of the mind and behavior. The methods employed by each approach differ, of course—one experimental, the other experiential—but the refinement of attention cultivated in Buddhist contemplative practices has made it a powerful tool for the direct observation of mind and behavior. In this sense, Buddhism represents a mode of inquiry bridging “rigorous logical analysis (as in philosophy) and empirical investigation (as in science)” (Wallace, 2003, p. 27).

Yet for much of the brief history of mindfulness science, the Buddhist intellectual influence on research has been, with notable exceptions, rather distant—simply referenced rather than actively engaged. In recent years, active dialogue between Buddhist scholarship and Western science has grown, and with it efforts to clarify our understanding of what mindfulness is, its cognitive expressions, and its psychological effects. Part I of this book, with chapters from Buddhist scholar Rupert Gethin (Chapter 2), philosophers Jake H. Davis and Evan Thompson (Chapter 3), and psychologist James Carmody (Chapter 4), offers insights that have accrued from this rich cross-disciplinary dialogue.

Psychological Theory

Another marker of the evolution of mindfulness science is its increased embeddedness in psychological theory. For much of its brief scientific history, researchers in the area have drawn from Buddhist theory (or clinical theories drawing from Buddhism) regarding the salutary effects of mindfulness. Buddhist psychological theory was not developed to make predictions about specific outcomes of interest to Western science, so much research has explored the neurophysiological, subjective, and behavioral correlates and consequences of mindfulness without comprehensive, scientifically grounded theoretical frameworks. Part II of this volume addresses this agenda with chapters that seek to understand mindfulness and its operation from within four major contemporary theoretical perspectives focused on largely different but inter-related levels of analysis. These bear on networks of attention (Yi-Yuan Tang and Michael I. Posner, Chapter 5), on modes of perceptual processing (Edward R. Watkins, Chapter 6), on motivation (Deci et al., Chapter 7), and on learning-supportive

environments (Thomas G. Szabo, Douglas M. Long, Matthieu Villatte, & Steven C. Hayes, Chapter 8).

Basic Science

Mindfulness research had its origins in the clinic, on the front lines of suffering, wherein questions were framed in terms of mindfulness-based treatment effectiveness. For much of the history of the field, basic scientific questions about mindfulness were not addressed: What is mindfulness anyway, and how can we measure it? To which psychological phenomena is it similar and to which does it differ? What effects does mindfulness itself have, stripped of the components that accompany its training in treatment programs (e.g., group and instructor support)? Through what neural and psychological processes or mechanisms do these effects occur? In recent years, questions such as these have received considerable study, and the chapters in Part III of this handbook present state-of-the-science research on the measurement of mindfulness (Jordan T. Quaglia, Kirk Warren Brown, Emily K. Lindsay, J. David Creswell, & Robert J. Goodman, Chapter 9), and on the expressions and consequences of mindfulness for neural structure and functioning (Fadel Ziedan, Chapter 10), cognition (Marieke K. van Vugt, Chapter 11), emotion (Joanna J. Arch & Lauren N. Landy, Chapter 12), interpersonal behavior (Suzanne C. Parker, Benjamin W. Nelson, Elissa S. Epel, & Daniel J. Siegel, Chapter 13), and the nature of the self (Richard M. Ryan & C. Scott Rigby, Chapter 14). Using a suite of methods to study mindfulness—trait and state subjective measures, brief experimental inductions, mindfulness training programs, and comparison of advanced mindfulness practitioners to matched controls—this science is probing deeply into the character and action of mindful states and traits, with a yield of findings that enhance our understanding of the nature of mindfulness while also providing insights that help clinical researchers to target symptoms and populations likely to benefit from mindfulness training.

Applied Science

From its beginnings in the early 1980s the research base of mindfulness-based and mindfulness-integrated psychoeducational and clinical treatment programs has expanded into a wide variety of populations, while at the same time uncovering mechanisms of their effectiveness. Applied mindfulness science can be grouped into that which targets healthy populations, discussed in Part IV of this volume, and that which addresses symptomatology in clinical populations, discussed in Part V.

In healthy populations, mindfulness training programs for adults dealing with stress have spread around the world, and with them, a growing body of research demonstrating benefits for a range of psychological outcomes, as Shauna L. Shapiro and Hooria Jazaieri discuss (Chapter 15). Recently, training programs have been developed to address the particular developmental stresses of healthy children and adolescents, as well as psychiatric symptomatology in clinical youth populations, and David S. Black (Chapter 16) discusses this incipient growth area of research. Such training has not been limited to correcting deficits or normalizing psychological

functioning, however. Training in mindfulness and other contemplative practices has long been thought to push the capacities for well-being into the range of what might be considered optimal functioning, and Brown (Chapter 17) discusses the evidence for this claim.

There is now a family of mindfulness-based and mindfulness-integrated treatments being applied to a wide range of psychiatric and biomedical populations. This body of literature has become large enough to warrant a volume of its own (Didonna, 2009). In this book we highlight research on mindfulness treatment that, first, addresses clinical conditions impacting a large number of adults in the West and second, has a strong and growing evidence base. Chapters in Part V concern the application of mindfulness training to the treatment of emotion dysregulated and overregulated problems (Thomas R. Lynch, Sophie A. Lazarus, & Jennifer S. Cheavens, Chapter 18), chronic depression (Julie Anne Irving, Norman A. S. Farb, & Zindel V. Segal, Chapter 19), anxiety disorders (Sarah A. Hayes-Skelton & Lauren P. Wadsworth, Chapter 20), addictive disorders (Sarah Bowen, Cassandra Vieten, Katie Witkiewitz, & Haley Carroll, Chapter 21), and a number of biomedical conditions (Linda E. Carlson, Chapter 22). A final chapter in this section describes how mindfulness might get under the skin to influence this broad range of mental and physical health outcomes, via stress buffering pathways (J. David Creswell, Chapter 23).

Conclusions

As we observed earlier in this Introduction, it is remarkable that broad research interest in mindfulness exists at all. Equally remarkable is the breadth of investigation that has taken place in the comparatively brief span of 30 years that the topic has received study. The research discussed in this volume highlights many of the most recent developments in the field, of course, but it is telling that the vast majority of all research on mindfulness has been carried out in the last decade. The science continues to grow rapidly but also, and more importantly, is collectively taking a multilevel approach that allows us to ask sophisticated questions about the predisposing factors, correlates, mechanisms, and consequences of mindfulness, and training in it, at neurophysiological, subjective, and overt behavioral levels, and in a range of functional domains—including neural, cognitive, conative, affective, physical, and social—that are of interest to scholars, researchers, and health care providers in a variety of disciplines.

While we have learned a great deal about mindfulness in the past 30 years, unquestionably the field of mindfulness science is still maturing, and in the chapters herein the authors have taken pains to point out how the current research is limited in its methods and conclusions, and to point to specific ways in which future research studies can overcome these limitations. That said, the work represented in this handbook is among the best conducted to date, measured in terms of scientific creativity, sophistication, and insight. Our hope is that this volume offers readers both a panoramic view of the current science of mindfulness and a compass to help guide its ongoing evolution.

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