
De-Biasing Investment Decisions: The Role of Mindfulness

By Barbara McEvilley, Ashby Monk and Jason Voss

1. Welcome

Cognitive biases refer to forms of conditioned decision-making that can lead to poor judgment. For professional investors, cognitive biases can impair investment decisions and reduce investment performance. The nature of these biases has been well described in the seminal (and Nobel Prize winning) work of Daniel Kahneman and Amos Tversky in 1979. In the ensuing decades, academic research diagnosed a plethora of cognitive biases that affect investors, including confirmation bias, loss aversion, status quo bias, anchoring bias and overconfidence bias (among many others).

Researchers have clearly been effective at identifying and defining these biases within the investment ecosystem, but the development of potential solutions for minimizing their effects has not kept pace. Therefore, while we can clearly spot the symptoms of these biases in the Addepar client data, we do not have any “over the counter” solutions that we can easily prescribe. To be sure, there are best practices in investment governance, leadership and even culture that can assist in de-biasing. Moreover, the seminal work by Clark et al. (2006, 2007) demonstrates that education and the resulting qualifications it provides can be linked to improvements in investment decisions. Nevertheless, this work does not specifically set out to debias the investment decision-making process. This is precisely what we set out to do with this Addepar Research Brief (ARB): to begin formulating targeted solutions to address investors’ cognitive biases.¹

In what follows, we provide an in-depth review of mindfulness, which is a frequently cited solution to the problem of biased decision-making. While mindfulness may strike readers as somewhat odd

¹ Advances in generative AI are showing some promise at spotting cognitive biases, which offers decision-makers an opportunity to remove them from a particular process.



or beyond the domain of investment management, we believe it touches on critical issues related to the mindset and motives that underpin the types of decisions that are critical to performance. As such, this ARB explores, in a secular and straightforward manner, the widespread use of mindfulness techniques among investors, specifically meditation, to drive higher investment performance. We draw on interviews and case studies with investors, ranging from managers of highly successful hedge funds (that every professional investor would know) to our own anonymized clients.

2. NTK

Here are the key takeaways you need to know (NTK) from this brief:

- Investors use four main types of meditation, each of which offers different benefits. While the names may vary among various “Eastern” and “Western” traditions, the four types include mindfulness, focused attention, compassion and visualization.
- Among these types of meditation, mindfulness is the only one that has been scientifically proven to reduce bias in decision-making. That said, investment practitioners do report, in our interviews, the benefits of the other meditation types as well.
- While mindfulness is often associated with cross-legged people humming from the comfort of a cushion, it can, in fact (once mastered), be practiced anytime/anywhere, including during an investment committee meeting or a negotiation with an investment partner.

3. Significance

In a 2014 story for the Financial Times, Sally Boyle, head of human capital management for EMEA at Goldman Sachs, suggested that mindfulness would become pervasive within the financial services industry. In that same Financial Times article, Kok-Song Ng, chairman of global investments at GIC, Singapore’s sovereign wealth fund, noted the value of “selfless attention” and “expanded awareness” to all investors. These ideas stem from the cognitive improvements that lead to less biased decision-making, which enhances investment performance. Through regular mindfulness practice, a meditator gains the ability to observe her thoughts as she would any other object of her attention. In doing so, she gains the ability to create a meaningful pause between a thought stimulus (perception) and what would ordinarily be an immediate response to it—one that would likely be biased, conditioned and unconscious. It is at this precise moment that biases can be identified and eliminated.



While the practice of mindfulness may appear to readers to be an unserious approach to reducing investment biases, recent technological developments have allowed researchers to demonstrate its positive effects:

- Neuroscientists have deployed increasingly advanced tools (e.g., fMRI, EEG, PET and CAT scans) to elucidate what transpires in the meditator's brain while she is engaged in interoception, the practice of focusing one's attention inwardly, for example, on the breath or other bodily sensations (see the work of Lutz and others in a 2015 issue of *The American Psychologist*).
- Over the years, a number of articles have highlighted the practices of famous meditators, including Apple's Steve Jobs and Salesforce's Marc Benioff.
- While perhaps not as widely publicized, there are numerous examples of well-known meditators within the investment community. Paul Tudor Jones II helped found the Contemplative Sciences Center at the University of Virginia, which focuses on the intersection of meditation and business. Ray Dalio, founder of Bridgewater Associates, attributes his success as an investor to his meditation practice. Many investment firms now host internal meditation programs dedicated to supporting their associates in this area. Other well-known examples of investment agencies using meditation include Morgan Stanley, Blackrock, Goldman Sachs and Deutsche Bank. As Jason Voss (co-author) articulated in his book *"The Intuitive Investor,"* "meditation is at the root of ultimate investment success."

Modern technology provides neuroscientists with the means to observe the brains of meditators and thereby identify the neural substrates involved in their enhanced (unbiased) decision-making, in contrast to that of their non-meditating counterparts. For example, during interoception (the act of paying attention inwardly), neuroscientists have observed a shift in the meditator's activation from the amygdala to the prefrontal cortex, the most evolutionarily advanced region of the brain that is involved in planning and decision-making.

While mindfulness meditators still experience biases, which have been observed by neuroscientists as the activation of the amygdala within the meditator's brain, this activation can be trumped by the superior functioning of the prefrontal cortex. Therefore, despite their biases, through the process of interoception, meditators can observe their own cognition and create a space—a mindful pause—between a stimulus and a (biased) response. Through the principles of neuroplasticity, which refers to the ability of the brain to "rewire" itself, long-term meditators show both a diminished size in their amygdalae and an increased size in their prefrontal cortexes. At the



same time, the interconnections between different regions of the meditators' brains become stronger, resulting in an overall elevation of their mental functioning.

4. Context

Daniel Kahneman, Paul Slovic and Amos Tversky, known by many as the “grandfathers of behavioral finance,” first described judgmental heuristics and the biases they produce in their 1982 paper entitled “Judgment Under Uncertainty: Heuristics and Biases.” The insights they revealed in that academic piece were popularized for more mainstream audiences almost three decades later when Kahneman published his New York Times bestselling book “Thinking, Fast and Slow.”

In this book, Kahneman describes the dichotomous modes of thought in the human brain, which he calls “System 1” and “System 2.” Processed in the amygdala (the ancient brain system responsible for “fight, flight and freeze” responses), System 1 thinking is fast, emotional and instinctive. In contrast, System 2 thinking is processed by the prefrontal cortex (the most evolutionarily advanced region of the human brain responsible for executive function) and is characterized as slow, rational and deliberative. The fast thinking of System 1 is the kind prone to common cognitive biases that often lead to poor investment decisions, but mindfulness meditation can help overcome System 1 deficiencies by enlisting System 2 processes and advantages.

Mindfulness meditation has been classified as “open monitoring” or “open awareness,” as it asks the practitioner to focus her attention on general awareness in the present moment. As described by the medical and meditation pioneer Jon Kabat-Zinn in his book “Full Catastrophe Living,” mindfulness is the process of “paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally.” When the meditator’s various thoughts, emotions and bodily sensations invariably arise, often pulling her into the past or projecting her into the future, she is instructed to accept her thoughts without judgment and simply let them pass out of consciousness.

The goal is that, with practice, the meditator can achieve “witness consciousness.” Through witness consciousness (known as metacognition in science), as if observing oneself from a balcony at a distance, the individual is able to perceive many objects of attention (thoughts, emotions and sensations) with non-attachment. In other words, with practice, the meditator can perceive experiences, including thoughts, objectively rather than purely subjectively.



Mindfulness is not a meditation practice or experience that is separate from ordinary experiences. Rather, it is an innate state of consciousness that can be achieved both on and off the meditation cushion. Individuals typically have a preferred method for achieving a state of consciousness characterized by mindfulness. One may achieve such a state through a favorite form of exercise, such as running, through immersion in nature and perhaps through the experience of art or music. While these methods can support mindfulness, the most predictable and effective way to initially cultivate it is through the practice of mindfulness meditation.

With initial insights gained through a meditation practice “on the cushion,” the practitioner can then choose to augment or even abandon the cushion practice for her preferred “off the cushion” form(s) of mindfulness. As neuroscientist Sam Harris helpfully repeats in his meditation app Waking Up, the goal of mindfulness meditation is to infuse its insights throughout one’s daily life, and not to limit them to the singular activity of meditating.

With its roots in the 2,500-year-old Buddhist tradition, mindfulness meditation has grown increasingly popular in Western societies over the last few decades. Among others, Jon Kabat-Zinn is deeply credited with secularizing mindfulness meditation and bringing it to a mass audience in the United States. Kabat-Zinn’s early practice of yoga and studies with Buddhist teachers led him to integrate their teachings with scientific findings from his chosen profession of medicine. With this goal in mind, and while serving as professor of medicine at the University of Massachusetts Medical School in the late 1970s, Kabat-Zinn created the Stress Reduction Clinic and the Center for Mindfulness in Medicine, Health Care and Society.

Through his clinic and center, Kabat-Zinn started offering a formal training program known as Mindfulness Based Stress Reduction (MBSR), with techniques originally intended to help patients manage pain, anxiety and illness. Soon, MBSR was considered a proven therapeutic for much broader applications and was offered at a wide range of medical centers, hospitals and health maintenance organizations across the United States. Due to the clinical and scientific rigor he brought to his work, Kabat-Zinn helped ground the ancient “Eastern” tradition of mindfulness with “Western” medicine and science, leading to an explosion in its acceptance and widespread adoption. Today, with a reach far beyond the medical system, MBSR is widely available to audiences in non-clinical settings, such as universities and wellness retreats.

Given that some find the subject of meditation to be confusing, overwhelming and perhaps even esoteric, our co-author Voss created a simple yet comprehensive framework intended to help his CFA audience quickly grok the landscape of this ancient and now sprawling subject. As described



below, Voss took a “jobs to be done” approach to categorize the hundreds of meditation types available today into four essential groups, as mapped by the fields of psychology and neuroscience. For each, he highlights the key benefits to the meditation practitioner. Because our concern here is to describe a social technology that is scientifically proven for de-biasing decision-making, the rest of this ARB will elaborate only on mindfulness meditation.

Benefits of the four major types of meditation

	Meditation type	Benefits
1.	Mindfulness (aka open monitoring, open awareness or vipassana)	Gain awareness of thought patterns and biases
2.	Focused attention	Enhance ability to focus and sustain one’s attention
3.	Compassion (aka loving kindness or metta)	Enhance empathy; blur the distinction between self and other; foster sense of connection to a larger whole
4.	Visualization	Enhance creativity and the ability to think holistically

5. Approach

This ARB was inspired by findings from the Addepar Research platform. In examining our anonymized data, we observed investor behaviors that could not be explained by any rational models. For example, in the wake of the recent banking crisis, we saw that only 18% of uninsured deposits immediately flowed out of regional banks. Similarly, while the gap between bank rates and Treasury bills is currently the highest it has been in generations, very little cash has moved out of banks and into cash-equivalent securities. In our view, these are clear indicators of the status quo bias that triggered our interest in exploring this topic.

Beyond this motivation, our research included interviews with clients and experts as well as a review of the literature on meditation in general and mindfulness in particular. We also drew on prior research conducted by Voss (which was presented in his book “The Intuitive Investor”). Finally, we interviewed multiple neuroscientists to ensure that we incorporated the most up-to-date research to describe the science-backed benefits of meditation (including de-biasing decision-making).



6. Findings

Our research has identified how investors use mindfulness as a solution to several biases. Below is an overview of our findings, which details how our interviewees and case studies applied meditation to overcome a major bias:

- **Loss aversion bias:** Describes how people feel emotional pain more acutely than they do emotional pleasure. For this reason, their natural predisposition is to avoid personal harm or loss, a predisposition that is heightened during periods of stress that flood the body with the hormone cortisol, putting the amygdala into overdrive. *Dozens of studies prove that meditation lowers stress and, with it, cortisol, thus leading to enhanced cognitive function on the part of the practitioner. As a result, instead of one falling prey to loss aversion, a mindful investor can take advantage of high-stress periods and calmly buy while everyone else is selling (or vice versa).*
- **Representativeness bias:** Entails assessing new situations based on existing stereotypes (mental models). While such mental models can be useful, leading to efficient decision-making, the risk is that they could also cause investors to ignore the data specific to a unique opportunity or context at hand. For most, just before a mental model kicks in, there is a connection to memory (“What story do I know that is similar to this one?”). *Meditators can tune into and become more aware of such a feeling of cognition. Then, when evaluating a new opportunity, rather than fall prey to representativeness bias, the investor can interrupt the activation of their mental model when they feel it arise.*
- **Anchoring bias:** Entails using familiar information to evaluate largely unknown situations. For people to avoid this bias, they need to recognize their lack of knowledge about a new situation and then seek facts to understand it. *Through meditation, one can become cognizant of the moment between a state of ignorance and the launch of a model based on anchoring bias.*
- **Confirmation bias:** Regards focusing on information that affirms one’s preferred point of view. To put it another way, it is the inability to separate one’s preferences and prejudices from reality. *By emphasizing unbiased states of awareness, meditation helps people identify the prejudices and preferences that lead to poor judgments and unfounded conclusions.*
- **Mental accounting bias:** Entails the inability to break context or consider multiple contexts when making decisions. If one compartmentalizes assets into different categories and applies different decision rules to these categories, then she is engaging in mental accounting. For example, an investor may hurt her investment returns if she decides not to



sell a corporate bond out of a portfolio, because it is part of the diversified bond fund's "long-term capital." Instead, she may sell a better-performing bond simply because it is part of the "short-term capital" portion of the portfolio. *As meditators gain access to non-attached, present-moment states of consciousness, their worldviews become more holistic and they learn to avoid narrowing their contexts of understanding.*

- **Overconfidence bias:** Results from the recency of an outsized success (e.g., exceeding a benchmark by 500 basis points in a given year). In turn, this kind of bias may lead an investor to then take outsized risks and eschew customary due diligence. *Meditation's non-judgmental self-awareness allows investment professionals to continually "begin again" with fresh eyes.*

To summarize, meditation has been helping people think more clearly and with greater awareness 75 times longer than the 50-year history of behavioral finance. A skillful meditation practice allows investors to choose their contexts, mental models and actions with greater awareness and less judgment, thereby overcoming the biases identified by behavioral finance.

7. The ARB-itrage

Meditation provides investors with a toolkit to debias their decisions. For this reason, long-term meditation practitioners believe that its primary benefits are wisdom-oriented, rather than intelligence-oriented. As one of our interviewees suggested, through meditation, "the whole person becomes, from a holistic point of view, not only smarter but a better version of themselves." Such a mindful practice need not entail a lot of time or effort: in fact, neuroscience has demonstrated that a practitioner receives clinically meaningful benefits from meditation after only 10 days of practice, with a mere 10 minutes per day.

8. Coda

Cognitive biases are ingrained patterns of decision-making that cast shadows of doubt over the judgment of even the most astute professional investors. The pioneering work of Daniel Kahneman and Amos Tversky in 1979 is most famous for unveiling these biases, and decades of academic scrutiny have continued to spotlight an array of detrimental biases plaguing investors, including the comfort of confirmation bias, the irrational anxiety of loss aversion, the familiar path of status quo bias, the weight of anchoring bias and the glare of overconfidence bias, among others.



Despite their well-documented existence, including in our own data, easy remedies to these biases are not yet available. One of the few tools available for de-biasing is mindfulness, which perhaps offers an explanation for why so many famous hedge fund managers have adopted this practice.



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Appendix

Mindfulness meditation: A simple tutorial

To make mindfulness meditation accessible to his CFA audience, Voss provided a simple how-to guide in his CFA Meditation Guide, as outlined below.

Steps for a generalized mindfulness meditation:

- *Get comfortable.*
- *Relax.*
- *Take a deep breath and drop any concerns or preoccupations.*
- *Now rest your awareness in the present moment.*
- *See if you can hold this moment in awareness.*
- *Tune into your sensory experiences for several moments. There are likely many sensory experiences, including what you can see or hear happening in the space you are in. There are things like the temperature of the room, and so forth. Tune into those sensory experiences happening in the present moment.*
- *Now see if you can focus on just one thing: the temperature of the room.*
- *Just be aware of the temperature.*
- *Are you able to just feel the temperature and not think about the temperature? No words, no numbers, no assessments, no naming of your experience, just awareness of the sensations of the temperature.*
- *You probably realize that the mind has a life of its own. Even with this very simple assignment—resting your awareness in the present moment—minds are barely able to stay present.*
- *We are likely to start commenting on the experience, saying to ourselves things such as, “Why am I doing this?” or “This is a waste of time,” or “I need to write that email,” or even, “I’m really enjoying this, and I want to get better at it.”*
- *All of this is different than just being aware of the present moment.*
- *This wandering is innate to the mind; it is normal for the mind to wander.*
- *When straying away from awareness of the present moment, do not judge, condemn, force, or blame whatever pulls you away from awareness. Just acknowledge these distractions, and then let them slip through your mind like water running from you downstream.*
- *You may exit the meditation now by letting your mind slip out of awareness of the present moment.*



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