
Behavioral Insights

How Behavioral Science Can Help Investors Make Better Choices

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Introduction

A quick survey of asset manager websites might leave a financial advisor wondering when and why investor behavior and related topics have become so pervasive. Some in the industry even argue that behavioral coaching is the single most impactful service an advisor can offer.¹ Whatever your persuasion, insights from behavioral scientists are leading to more effective ways of changing people's behavior than mere education, which has been the prevailing approach. This paper is intended to provide financial advisors with a quick summary of how we got here, what problems behavioral scientists attempt to solve, and a tool they employ to solve them. Research shows² that behavioral guidance can have a meaningful impact on investors' chances of reaching long-term financial goals.

Key Takeaways

- ▶ Traditional economics unrealistically assumes that people make decisions in an optimal way. In contrast, the behavioral and decision sciences seek to understand how real people make choices in everyday situations.
- ▶ Behavioral biases are patterns of sub-optimal decision-making, and behavioral scientists have identified a catalogue of these mistakes that help explain the imperfect ways people make choices.
- ▶ Choice architecture is an approach that behavioral scientists use to help people make better decisions, and its use often goes unnoticed by the decision-maker.
- ▶ Changing the way portfolio performance is presented is one practical way that choice architecture can be used to mitigate recency bias, which can lead to poor outcomes.

A Break From Convention

For more than a century, traditional economists have assumed humans to be perfectly rational when building their economic models. This rational Economic Man³ makes logical, self-interested decisions that maximize expected utility in the narrow sense—that is, their choice is always the one that does them the most material good. Economic Man pursues goals by responding consistently to incentives and making appropriate trade-offs as needed. Economic Man thinks carefully about both the present and the future and anticipates the likely consequences of his actions on his material well-being.

1 Murphy, R., Sin, R., & Lamas, S. 2019. "The Value of Advice: What Investors Think, What Advisors Think, and How Everyone Can Get on the Same Page." Morningstar White Paper. <https://www.morningstar.com/lp/value-of-advice>

2 Blanchett, D. & Kaplan, P. 2013. "Alpha, Beta, and Now . . . Gamma," The Journal of Retirement, Vol. 1, No. 2, P. 29. <https://doi.org/10.3905/jor.2013.1.2.029>

3 Mill, J.S. 1836. "On the Definition of Political Economy, and on the Method of Investigation Proper to It." London and Westminster Review, October 1836.

Does Economic Man sound like anyone you know? Aside from fictional Vulcans on Star Trek, presumably not. The ideal of a perfectly rational decision-maker is useful for building economic models, but it doesn't reflect reality and can be misleading to those seeking to give useful financial guidance.

In truth, we humans are considerably less rational in our decision-making than these models presume. We have limited attention spans, finite willpower, fallible memories, and inconsistent reasoning abilities; most of us can't stick to a diet or exercise plan, for example, and we consistently show our irrationality in simple experiments by psychologists. When you consider all that goes into decision-making about your financial investments—the emotions involved, your complex personal circumstances, and the need to forecast far into the future—it's no wonder that our real-world decisions can vary so much from those made under some ideal set of circumstances.

Importantly, the ways in which our decisions go awry are not haphazard. A new school of economists (they were influenced by cognitive psychologists) have studied human behavior and found that we tend to make irrational decisions in *systematic* ways. That is, we are *predictably* irrational, especially in particular situations.

This new school isn't about modeling human behavior but studying it in the real world. Several non-economists have won the Nobel Prize in economics, including Daniel Kahneman, whose work was popularized in the 2011 best-seller "Thinking, Fast and Slow." In it, Kahneman (based on work with his long-time collaborator Amos Tversky) lays out a catalogue of cognitive biases (more on these in the next section) as well as a notion of two general ways the brain operates—fast and slow—referenced in the book's title. "Fast" thinking is easy, intuitive, and approximate, while "slow" thinking is effortful, deliberate, and more precise. Consider this simple math problem: A bat and ball together cost \$1.10. The bat costs \$1 more than the ball. How much does the ball cost? Once you have your answer, check it with the reference below.⁴

Richard Thaler, an economist, a best-selling author, and the winner of the Nobel Prize in 2017 for his work integrating psychologically realistic assumptions into economic decision-making, has applied behavioral economics to public policy and finance. In fact, much of the most influential work of behavioral economics has been in finance, and it's in the sub-field of behavioral finance that Morningstar Investment Management and our parent, Morningstar, Inc., have invested considerable resources—realizing that while we share many insights about investments, we should also provide insights about *investors*.

From Research to Application

The behavioral sciences have spent much of the last decades cataloging the shortcomings of people when they make decisions. This may be interesting but doesn't necessarily fix the problem. A major challenge in the coming decades will be to use these insights to help "flawed" decision-makers make

⁴ The answer that quickly springs to most people's mind is that the ball costs 10 cents. This, of course, is wrong. Slowing down and thinking carefully, it's easy to see that $\$1.05 + 0.05 = \1.10 . But to get the right answer, you need to turn on your slow thinking, which requires effort.

better choices. This is a different approach than trying to educate people into being perfectly rational decision-makers. Rather than aim to change people (and how they think and learn), researchers find ways to change the choice environment such that an imperfect decision-maker can still make good choices.

Consider the example of enrollment in an employer-based defined contribution plan such as a 401(k) or 403(b). Traditionally, an employee had to opt in, meaning that you had to affirmatively elect to participate in the plan. As we saw with fast and slow thinking, whenever effort is involved, people are less likely to make a good decision—the easy or lazy route usually wins. And that was the case with defined contribution plans, with many people not saving anything for retirement. To help people overcome the apparent burden of enrollment, decision scientists recommended flipping the decision so that you had to opt-out of participating in the retirement plan. In one well-known study,⁵ scientists found that participation rates increased to 86% from approximately 50% just by changing the default to automatic enrollment. Similar automatic techniques have increased average saving levels in these plans.

Financial advisors have practiced client education for decades, usually in the form of informing clients on the right saving and investing behavior. While providing information is still important, research shows⁶ that education alone does not reliably change behavior. Most people know they should eat healthy food, but certainly not everyone always does. And more information (e.g., a clear ingredients list and standard nutritional information on food packaging) alone is not sufficient.

The retirement plan example above illustrates how a simple change in the way a decision is structured—something known as *choice architecture*—can improve decision-making and lead to better outcomes for people.

Nudging People to Better Decisions

Choice architecture is the careful design of the ways in which choices are presented with the intent of improving the outcomes and quality of decision-making. It takes the focus off self-discipline and intrinsic knowledge to facilitate decisions that are in your best interest. These are often "nudges"—to borrow a phrase from Thaler's best-selling book of the same name—or simple changes in the way information is presented that can have significant impacts on helping people overcome biases. So, instead of telling people to eat healthily, the choice architecture approach would be to put healthy foods first in the cafeteria line and in the easiest-to-reach spots. By making the best (or least bad) option the default, it is easier for people to choose the smart option quickly and with less resistance.

How can decision science help investors, and how is Morningstar Investment Management using it to help advisors? One of our core principles is putting investors first. To do so, Morningstar's Behavioral Science team thinks carefully about how investment decisions are made. In the next section, we'll

⁵ Madrian, B.C. & Shea, D.F. 2001. "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior." *The Quarterly Journal of Economics*, Vol. 116, No. 4, P. 1149.

⁶ Mandell, L., & Klein, L.S. 2009. "The impact of financial literacy education on subsequent financial behavior." *Journal of Financial Counseling and Planning*, Vol. 20, No. 1, P. 15.

highlight one process—the presentation of performance data—that can be improved by removing bias and making it easier to make good choices, all with the aim of helping advisors' clients make good financial decisions and ultimately reach their long-term financial goals.

What You Pay Attention to Matters

A major cognitive bias is recency bias, which describes the human tendency to give greater importance to the most recent event. For investors, this bias tends to emerge amid a market downturn. Even for those of us predisposed to a long-term view, our attention narrows during times of stress, convincing us that the falling market is likely to continue. And left unchecked, this bias can lead investors to make emotionally charged decisions—ones that could lead to a permanent loss of capital. Unless, that is, we can reallocate our attention to information that better serves us.

For example, market or portfolio performance is often communicated daily—if not every 15 minutes—in stoplight colors so investors can see immediately how their portfolio is doing at that moment (see Exhibit 1). What’s problematic is that most people gravitate to the negative numbers, aided in no small way by the fact that they’re bright red. Markets tend to be negative frequently, even when their longer-term path is positive. When you add the effects of recency bias, seeing this negative performance frequently can make an investor think they are on the wrong path, even if they are not.

Exhibit 1 Stoplight Colors Can Cause Unnecessary Angst in Investors

Nasdaq		S&P 500		DJIA			
13227.70 -149.84(-1.12%)		3910.52 -30.07(-0.76%)		32423.15 -308.05(-0.94%)			
Portfolio 1 ▼							
Tracking	My View	My Performance	X-Ray				
Stock Industry/ Fund Category	% Weight ▼	\$ Current Price	\$ Change	% Change	Shares Held	\$ Market Value	
Large Blend	38.99	389.50	-3.09	-0.79	10.00	3,895.00	
Foreign Large Blend	15.62	48.78	-0.75	-1.51	32.00	1,560.96	
Diversified Emerging Mkts	15.55	51.77	-0.86	-1.63	30.00	1,553.10	
Intermediate Government	14.72	26.27	0.06	0.21	56.00	1,471.12	
Small Blend	10.51	210.07	-6.18	-2.86	5.00	1,050.35	
Commodities Focused	4.61	16.44	-0.13	-0.78	28.00	460.32	
	100.00		-112.16	-1.11		9,990.85	

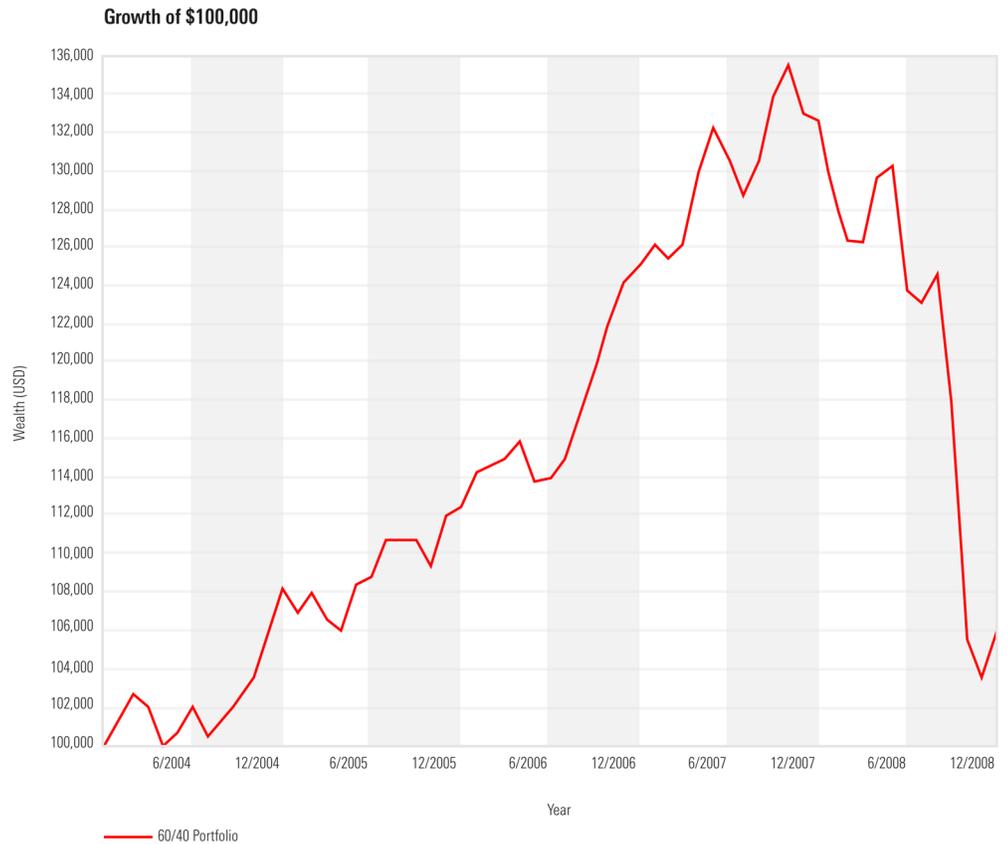
Source: Morningsar.com ("Portfolio" tab).

To mitigate this effect, we suggest contextualizing portfolio performance in a goals-based framework, which would likely entail displaying portfolio performance in terms of the probability of reaching an investment goal. So, instead of seeing today’s account value change in red or green, you would see your current portfolio value and its probability of reaching a predetermined savings goal over a set time horizon. Of course, you would still be able to get more investment-level detail if you want it. But by

focusing investors' attention on their long-term goals rather than today's market environment, we might help people make better decisions and thus improve their financial wellness.

Let's compare two charts to show the effect of performance presentation on perspective. The first chart below shows the growth of \$100,000 invested in a hypothetical portfolio⁷ of 60% stocks and 40% bonds over a five-year period through December 2008. What's important here is the shape of the return line and how an investor might interpret it in real time. At its peak near the end of 2007, the portfolio would have gained about 36% before losing most of the gains throughout the subsequent drawdown in 2008. A conversation with a client at this moment would likely center on the recent loss of account value, made worse by the high market uncertainty and the steady flow of negative reporting emanating from the financial media; essentially, a conversation primed for action, albeit the imprudent kind.

Exhibit 2 Recency Bias Might Cause a Client Conversation to Focus on the Recent Decline...

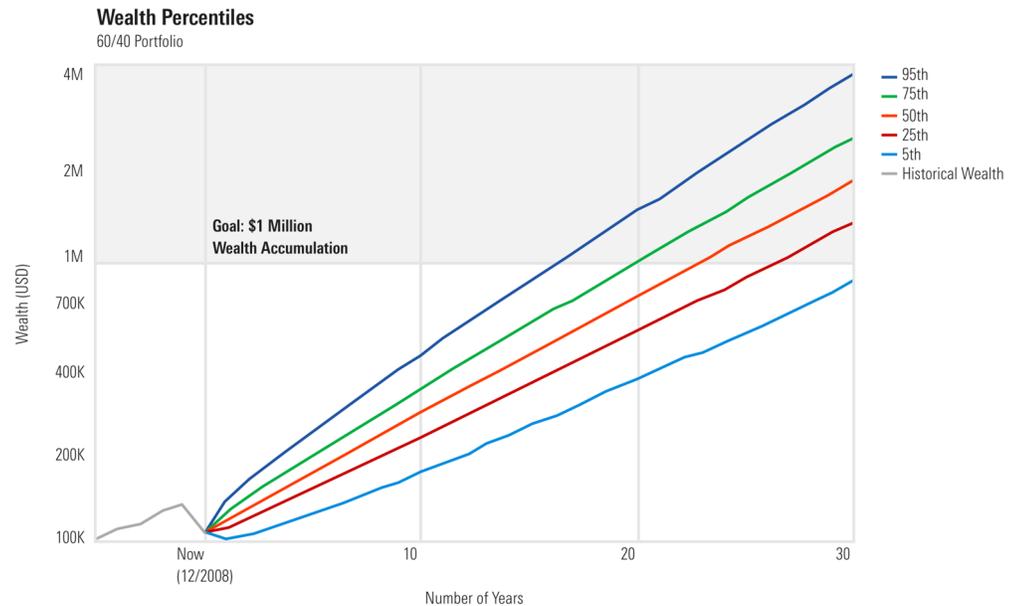


Source Morningstar Direct. Data as of 12/31/2008. The performance shown is that of a hypothetical portfolio and is for illustrative purposes only. This is not a reflection of actual clients' portfolios. Past performance is no guarantee of future results.

⁷ The 60/40 hypothetical portfolio is composed of 60% S&P 500 TR USD and 40% BBgBarc US Agg Bond TR USD. (Indexes may not be directly invested in.) The hypothetical portfolio is rebalanced annually, and the capital market assumptions were calculated using monthly returns from January 1976 through December 2007. The results are not adjusted for inflation.

The second chart illustrates the concept of contextualizing performance using simulation software that is widely available; this is from Morningstar Direct. By entering a starting value and a few capital market assumptions, the simulation⁸ will forecast the distribution of wealth outcomes over a given time horizon. So, in this case, the starting value is the same 60/40 portfolio's account value at the end of 2008, and the goal is \$1 million in wealth in 30 years. The second chart still shows the first five years of historical investment growth as the first chart, but the focus is redirected from past performance to a future wealth outcome. Even after the large drawdown in 2008, the percentiles in this simulation show that there is still a greater than 75% chance of hitting that wealth goal (i.e., \$1 million is below the 25th percentile of outcomes). Given this focus on a future state, a conversation with a client at the same moment in time should be less likely to result in an overreaction to recent poor performance, and it's precisely the mitigation of this type of bad behavior that is in a client's best interest.

Exhibit 3 ... Yet it's Important to Keep the Long-Term Picture in Mind



This chart depicts a Monte Carlo simulation, which illustrates probable investment outcomes from a certain point based on long-run historical data. The performance shown is that of hypothetical portfolios; it is for illustrative purposes only. This is not a reflection of actual clients' portfolios. Past performance is no guarantee of future results.

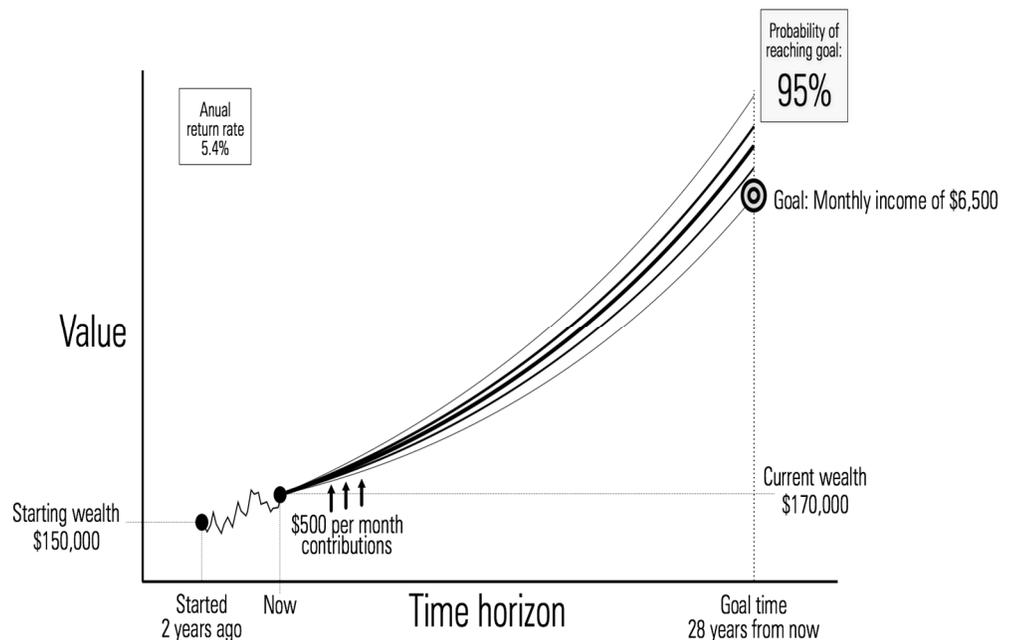
Framing bias is the tendency to respond differently based on the context of a choice. For example, consider two scenarios. A shop levies a 3% fee on credit card purchases. Another shop offers a 3% discount for paying cash. If you would act differently in the two shops (with regards to your payment method), that illustrates framing bias.

⁸ Monte Carlo simulation using 2,000 simulations of a 60/40 portfolio composed of 60% S&P 500 TR USD and 40% BBgBarc US Agg Bond TR USD. The portfolio is rebalanced annually, and the capital market assumptions were calculated using monthly returns from January 1976 through December 2007. The results are not adjusted for inflation. The wealth percentiles shown represent the portion of outcomes that fall within the nth percentile of the total distribution of outcomes.

Our proposal above is a type of reframing. Instead of focusing attention on recent short-term losses, we assess the investor's current situation in the context of their long-term goal. This removes a lot of the emotional response, and we expect it will lead to better long-term outcomes for investors.

That's a good start, but perhaps a more sophisticated representation would resonate more with investors. For example, the conceptual illustration below shows a similar scheme, but this time the goal is a monthly retirement income—presumably, what you anticipate needing to live comfortably in retirement. The underlying simulation is the same, and it would mostly entail cosmetic upgrades to produce this type of illustration.

Exhibit 4 A Better Illustration of Future Wealth?



Source: Morningstar Investment Management. This chart depicts a Monte Carlo simulation, which illustrates probable investment outcomes from a certain point based on long-run historical data. The performance shown is that of hypothetical portfolios; it is for illustrative purposes only. This is not a reflection of actual clients' portfolios. Past performance is no guarantee of future results.

Considering that a goal such as the ability to meet a desired standard of living in retirement may be more relatable than a wealth goal, an income goal may provide an even more convincing story to help investors stay the course during difficult times.

Adding Value With Behavioral Coaching

In recent years, behavioral science has received much attention within the advice industry and for good reason. Research from Morningstar shows that financial advice can lead to better outcomes for clients, and others such as The Vanguard Group have concluded that behavioral coaching is the greatest potential advisor value-add.⁹ Reframing performance in terms of reaching long-term goals demonstrates

⁹ See Morningstar's "Value of Advice" and Vanguard's "Putting a Value on Your Value: Quantifying Vanguard Advisor's Alpha."

the powerful influence for good that behavioral science can have for investors. And we think it shows why every advisor should understand it.

Benjamin Graham said, “The investor's chief problem—and even his worst enemy—is likely to be himself.” Advisors have long worked to prevent this. Using nudges and decision architecture can help advisors in their efforts to help clients reach their financial goals. ■■■

For more examples of how our Behavioral Science group is helping investors reach their financial goals, please visit [morningstar.com/company/investor-success](https://www.morningstar.com/company/investor-success)

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The performance presented is that of a hypothetical portfolio and is not a reflection of actual client's portfolios. Actual results of an individual client using the hypothetical portfolio may differ substantially.

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Your investment goals matter to us. Our mission is to empower investor success by building investment portfolios selected by your financial advisor. Our world-class investment strategies draw on our core capabilities in research, asset allocation, investment selection, and portfolio construction. Our investment professionals are located around the world, which provides both a global point of view and local market expertise.

Based on a proprietary valuation-driven asset allocation process, our strategies offer investors a range of multi-asset risk- and outcome-based strategies designed to help meet a variety of goals. Also, our separately managed accounts offer concentrated portfolios of our portfolio managers' best ideas. We put more than 35 years of investment experience to work in every portfolio we manage to offer you a better investing experience, because your journey also matters.

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