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INTRODUCTION

"Don't Tell Me What I Can't Do!": On the Intrinsic Value of Control

Cass R. Sunstein *

The Lockean Exclamation

In the late, great television show Lost, one of the central characters, with the telling name of John Locke, exclaimed at crucial moments, "Don't tell me what I can't do!"[1] Locke liked doing things, but perhaps even more, he disliked being told that he could not do things. At every turn, he insisted on his own capacity for agency.

The Lockean Exclamation, as I shall call it, is related to the psychological idea of reactance (Brehm & Brehm, 1981), which refers to people's tendency to do something precisely because they have been told not to do it. It attests to a general phenomenon of which reactance is an example: Much of the time, control, understood as liberty of action, has intrinsic and not merely instrumental value.[2] When people feel that their control is being taken away, they will often rebel, even if exercising control would not result in material benefits or might produce material harms.

Tocqueville ([1857] in Elster, 2007) offered a memorable account:

> What has always kindled such a powerful love of liberty in the hearts of certain men is its intrinsic attractiveness, its inherent charm, independent of its benefits. It is the pleasure of being able to speak, act, and breathe without constraint under the sole government of God and the law. Whoever seeks in liberty anything other than liberty itself is born for servitude.

As a matter of political science, Tocqueville may or may not be right. But he is certainly capturing an important aspect of political psychology – an insistence on personal agency, or the value of control, for its own sake, "independent of its benefits." As he immediately added, what many people "love about" liberty "is not the material goods it gives them. They consider liberty itself a good."

Both psychologists and economists have investigated the intrinsic value of control, but we need to learn much more, not least because of its immense importance to both politics and law. Whenever a private or public institution blocks choices or interferes with agency, or is perceived as doing so, some people will rebel. In extreme cases, violence is possible. Consider the highly publicized

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* Robert Walmsley University Professor, Harvard University. I am grateful to Tali Sharot for joint work and for many valuable discussions.

[1] See https://www.youtube.com/watch?v=JAsp4rn9QnM

[2] See the intriguing findings in Jung and Mellers (2016) and in particular those involving a subgroup that is especially insistent on retaining control. In a similar vein, see Tannenbaum, Fox and Rogers (2014).

example in 2012. when New York Mayor Michael Bloomberg tried to ban the sale of sodas and other sugary beverages containing more than 16 ounces (see Sunstein, 2014, for a summary). This was a modest initiative, but the effort created a significant backlash, in part because of what appeared to be a loud, collective Lockean Exclamation from New Yorkers. Any form of paternalism – with respect to food, health care, and cigarettes -- risks running into a similar backlash. Of course some nations are quite different from others. The United States is especially prone to such backlashes. But we are one species. In every human heart, you can find the Lockean Exclamation.

Because nudges preserve freedom of choice, they do much better than mandates and bans; in diverse nations, they turn out to be approved by strong majorities (Jung & Mellers, 2016; Reisch & Sunstein, 2016). But even when majorities embrace nudging, minorities reject them. To the extent that some nudges create concerns, it is because they too trigger a version of the Lockean Exclamation, at least in some circles. For example, default rules (such as automatic enrollment in pension plans or green energy) allow people to opt out and to go their own way. But some people see them as putting a weight on the scales, and to that extent as diminishing agency and control (Jachimowicz, Duncan, & Weber, 2016).[3] More broadly, it is even plausible to think that political movements – not only the movement for sex equality and for same-sex marriage but also for Brexit and Donald Trump – have been animated, in significant part, by the Lockean Exclamation.[4] In the United States, the Lockean Exclamation has played a large role in Trump's presidency, not least in his attitude toward immigration, toward NATO, and toward the Paris agreement involving climate change.

The intrinsic value of control matters for business as well as politics and law. To what extent should companies preserve freedom of choice -- and emphasize to consumers and employees that they ultimately have freedom to go their own way? Banks, grocery stores, soft drink companies, cell phone companies, and automobile manufacturers face that question every day; so do employers of every kind. The answer is greatly complicated by the fact that the intrinsic value of control is countered, in many cases, by *a preference for preserving scarce cognitive and emotional bandwidth* -- and hence by an explicit or implicit choice not to choose. Inside everyone's mind, there is an occasionally desperate plea: "You figure it out!"

The plea might be heard when people purchase a home in a new city or enter a store with countless options, or when a government website asks them to register their preferences on lengthy forms as they (try to) apply for benefits, permits, or licenses. You might even want government to ban certain foods and drugs, not because you do not prize your own agency, but on the ground that it knows what is healthy and what is dangerous. Citizens might well be willing to say, to their government: *We want you to decide which medicines are safe and effective for their intended use*. In view of the informational advantages of public officials, that could easily be a rational delegation.

We can call the underlying plea ("You figure it out!") the Madisonian Exclamation, after James Madison (1787), who emphasized the many advantages of a republic over a democracy – in part

[3] Jachimowicz et al. emphasize "a hidden cost to the near- ubiquitous usage of defaults, whereby pre-selected options can prompt individuals to choose contrary to their preferences because they perceive lower autonomy."

[4] The bestseller *Hillbilly Elegy* (2016), by J.D. Vance, can be profitably read in this light.

because in the former, people delegate authority to relative specialists, who could make better decisions.[5] In the history of political and economic thought, many people have emphasized that point, including (in very different ways) Max Weber and Walter Lippmann. As for the Lockean Exclamation, so too for the Madisonian Exclamation: We know all too little about its boundary conditions.

Principals, Agents, and Rational Choice

The most objectionable denials of control occur when someone deprives you of freedom to act or to choose – when you are forbidden to use your money as you see fit, or to take the job that you want. But it is important to emphasize that any principal can voluntarily choose to relinquish some of that freedom. Indeed, that is an exercise of control, and it can be exceptionally important to both freedom and well-being. You might rely on or appoint an agent, who might have superior knowledge, might be immune from various biases, and might relieve you of the obligation to devote scarce time and limited cognitive resources to making choices that impose some kind of cognitive or hedonic tax. For these reasons, the Madisonian Exclamation has its appeal. Consider the areas of pension law and health care, where many people are often willing to delegate a little or a lot of authority.

At the same time, appointing an agent might be a big mistake. Any agent might have inferior knowledge, be ignorant of the principal's real concerns, have her own biases, or be influenced by her own self-interest. Aware of those problem, even a Madisonian principal might decide not to appoint an agent, or might appoint an agent with limited powers. Such a principal might think: I want to maintain control over my own pension and my own health care. Those with Lockean dispositions will be suspicious of the relinquishment of control that any such appointment might involve. As a matter of psychology, they tend to have faith in their own judgment and to distrust those who seek to make decisions on their behalf (hence the terms "micromanagers" and "control freaks").

With respect to the public sphere, it is often useful to think of the citizen as the principal and the agent as the government. Consider the questions of food safety, environmental protection, worker safety, and national security. I have suggested that regulation might be an implicit or even explicit delegation; citizens can decide to delegate the power to choose or seek a nudge (Bar-Gill & Sunstein, 2015). In any society, citizens will differ intensely on whether such a delegation is advisable. Many debates about what public officials should do involve an opposition between the Lockean Exclamation and the Madisonian Exclamation. I speculate that those who are suspicious of relinquishing control often have an immediate, intuitive, even automatic response to anyone who asks them to do so – and that response is intensely negative. In the terms of current psychological work, their automatic system (System 1) insists on maintaining control even if their

[5] See The Federalist No. 10: "The two great points of difference between a democracy and a republic are: first, the delegation of the government, in the latter, to a small number of citizens elected by the rest; secondly, the greater number of citizens, and greater sphere of country, over which the latter may be extended. The effect of the first difference is, on the one hand, to refine and enlarge the public views, by passing them through the medium of a chosen body of citizens, whose wisdom may best discern the true interest of their country, and whose patriotism and love of justice will be least likely to sacrifice it to temporary or partial considerations. Under such a regulation, it may well happen that the public voice, pronounced by the representatives of the people, will be more consonant to the public good than if pronounced by the people themselves, convened for the purpose."

deliberative system (System 2) counsels in favor of a delegation. (This speculation remains to be tested.)

In theory, the decision whether to choose, or instead to delegate the power to choose, should be a fully deliberative one, based on some form of cost-benefit analysis. Choosers might begin by thinking in terms of expected value: *Would the payoff be higher with or without a delegation*? Risk aversion might argue for or against delegation: If a chooser is concerned about avoiding risks, delegating or not delegating might seem especially attractive. The same is true of loss aversion[6]: Is the prospect of losses especially salient or vivid with a delegation, or without one? Choosers might also ask about the value of saving limited time and attention. If the savings would be substantial, choosers might be willing to sacrifice something in terms of expected value. It also matters whether choosing itself has benefits or costs, in the sense that choosers enjoy, or instead dislike, the time that they devote to choosing. For some people, it may be interesting or fun to think about the best investments or the right health care plan. For other people, those choices are unpleasant and tiring, a kind of hedonic tax, and it is a great relief if someone else can be persuaded (or paid) to make the choice for them. Compare experiences in restaurants, where some people like to linger over the possibilities, and to engage with the waiter, whereas others dislike the process and would just like to waiter to decide (for illuminating discussions, see Morgenbesser & Ullmann-Margalit, 1977; Ullmann-Margalit, 2017). There is a great deal of heterogeneity on this count with respect to relatively trivial and far more important decisions. Some people greatly enjoy thinking about their pension and the best investments; other people abhor that process. Some people like the idea of investigating potential mortgages; others really do not.

Choosers might also consider whether the pleasure of a reward, and the pain of a loss, are amplified or instead reduced if they are personally responsible for the outcomes. Studies have shown that people value items they have selected themselves more than identical items that were selected for them (e.g. Sharot, De Martino, & Dolan, 2009). It is not hard to imagine a situation in which choosers would prefer (1) gaining $100 if that gain came from their own efforts to (2) gaining $110 if that gain came from someone else's efforts, as the subjective value of the self-attained $100 may be greater than that of the $110 that was attained as a result of an agent's choice. On the other hand, personal responsibility might amplify the adverse effect of a bad result, because people might blame themselves more acutely than they would if the result came from the decisions of a delegate (even if the choice of the delegate was made personally).

Debates over the legislative grants of authority to executive officials often turn on issues of this kind, as legislators might seek to avoid responsibility by giving discretion to administrative agencies (but might be held responsible for the grant). In areas that range from occupational safety to climate change to immigration, legislators might benefit if they can delegate authority to others – and blame them. They are making their own version of the Madison Exclamation.

The Control Premium

Consistent with the Lockean Exclamation, it has been found that people prefer options that permit further choice to those that do not (Bown, Read, & Summers, 2003). Similarly, people are willing to pay to control their own payoffs, rather than delegate, when faced with potential

[6] To be sure, loss aversion is not and should not be a standard part of cost-benefit analysis.

rewards – *the control premium* (Owens, Grossman, & Fackler, 2014). A sense of control has also been shown to reduce stress and anxiety in the face of unwanted outcomes (Thompson, 1999). For that reason, making a choice may reduce the aversive utility of a loss, leading people to prefer agency over delegation.

Tali Sharot, Sebastian Bobadilla-Suarez, and I tested whether people will pay, or demand payment, to be choosers (Bobadilla-Suarez, Sunstein, & Sharot, 2016).[7] We conducted an experiment with several trials. On each trial, we asked participants to make a simple choice between two shapes in order to maximize reward and minimize loss. On "gain trials," a correct choice would result in a monetary gain and an incorrect choice in no gain. On "loss trials," a correct choice would result in no loss and an incorrect choice in a monetary loss. After performing the task for an extended period of time on their own, participants were given an opportunity to delegate the decision-making to an advisor. The expected value of the advisor was disclosed on each trial and participants' perception of their own expected value was also elicited. This allowed us to examine whether participants made "rational" delegation choices given their beliefs when faced with potential gains and with potential losses.

Our central finding was simple: *Participants are willing to forgo rewards for the opportunity to control their own payoffs*. In their own way, they were making, and acting on, the Lockean Exclamation. This preference was observed not only when participants were faced with potential gains but also when they were faced with potential losses. In one of our experiments, for example, a value maximizer would delegate 50% of the time, but participants' average delegation rate was significantly lower. As proof of the control premium, participants were also much more likely to retain agency when this was not the optimal decision (i.e., "*failure to delegate*") than to delegate when this was not the optimal decision (i.e., "*failure to retain agency*"). As a result of these failures, participants earned a lot less than they could if they selected optimally.

Importantly, we asked participants to make assessments of the (sub)optimality of their delegation choices. Their assessments were quite accurate, suggesting that they were entirely aware of the premium they were paying to maintain control. Our finding of a control premium is consistent with those in several other studies (Owens et al., 2014; Bartling, Fehr, & Herz, 2013).

Why Control? When Control?

The existing literature is instructive, but it remains sparse, and it raises many puzzles. One of the most important involves the *sources* of the control premium. In our own study, it is reasonable to think that people were making some kind of mistake. The task was not exactly fun, and so there was no hedonic value in making choices on one's own. On one interpretation, people were using a kind of Lockean Heuristic, in the form of a mental short-cut, or presumption, that generally works

[7] I draw on our joint work for several of the following paragraphs here; many thanks to my coauthors, from whom I have learned a great deal.

well but that creates severe blunders[8]: *Do not delegate consequential choices to other people*. Undoubtedly people do not use the Lockean Heuristic in all domains – but they certainly do in some important ones.

Probably the most important reason for the Lockean Heuristic, associated with John Stuart Mill's great argument on behalf of liberty, is that outcomes that we select ourselves often suit our preferences and values better than those that have been selected for us. Consider Mill's ([1859] 2002) insistence that the individual "is the person most interested in his own well-being," and the "ordinary man or woman has means of knowledge immeasurably surpassing those that can be possessed by any one else." When society seeks to overrule the individual's judgment, it does so on the basis of "general presumptions," and these "may be altogether wrong, and even if right, are as likely as not to be misapplied to individual cases." Behavioral economics raises some serious questions about Mill's argument to this effect (see Sunstein, 2014). But to the extent that it retains (enough) validity, it argues on behalf of a heuristic that would lead to a control premium. Note that in our experiment, the Lockean Heuristic went wrong; but on plausible assumptions, it usually goes right, at least in many domains in which people find themselves (for vivid evidence, see Waldfogel, 2009).

We might also speculate that a biologic system that provides higher intrinsic reward for things we have obtained ourselves could be adaptive. (Recall that people who win $100 through their own efforts might well enjoy higher subjective welfare than people who win $110 from the efforts of an agent.) If we learn that an action results in a reward, we can repeat that action in the future in order to gain more of the same. But if we do not execute an action to obtain reward (or avoid harm), we lose the opportunity to acquire a "blueprint" of how to gain rewards (or avoid harm) again in the future. Like most evolutionary arguments, this one is highly speculative, but it is plausible. The increased value of outcomes we have obtained ourselves emerges both from their immediate utility *and* from the information they offer us for later choices.

But we have also seen that for some decisions, people do not much care about control, and for others, they actually abhor it. In a restaurant in a foreign country, you might tell the waiter: You choose. When you are making a difficult medical decision, you might ask your doctor to figure it out for you. Control can be a cost, not a benefit. People might fear that they will err. They might be busy and lack "bandwidth." They might want to focus on some concerns but not others; they might think that choosing would deny them that important freedom (and control). They might be aware

[8] With this phrasing I am tracking the standard formulation, associated with Kahneman and Tversky (see Tversky & Kahneman, 1974). For a valuable discussion of some of the resulting controversies, see generally Kelman (2011), exploring apparently competing positions about whether heuristics produce systematic biases or are instead essentially accurate. Some entries in this debate, by one person at least, are bizarrely ill-tempered and uncharitable (see Gigerenzer, 2015; compare the gracious reference to "the Rapoport rules," which the author scrupulously follows, in footnote 1 of Rebonato, 2013). In my view, the debate has few serious implications for policy or law. Everyone agrees that heuristics generally work well; that is why they exist. Everyone agrees that heuristics are generally fast and frugal. Everyone also agrees that in important cases, boundedly rational people make mistakes. Everyone should also agree that in important cases, excellent (in the sense of useful and generally accurate) heuristics produce errors. When people make mistakes, some kind of nudge, or an improvement in choice architecture, might help. To be sure, the right improvement might take the form of a "boost." See the valuable discussion in Hertwig (forthcoming 2017).

of their own lack of information[9] or perhaps their own behavioral biases (such as unrealistic optimism). They might find the underlying questions confusing, difficult, painful, and troublesome—empirically, morally, or otherwise. They might not enjoy choosing. They might not want to take responsibility for potentially bad outcomes for themselves (and at least indirectly for others).[10] They might anticipate their own regret and seek to avoid it.

For rational actors, the relevant considerations can be organized into a simple framework, involving the costs of decisions and the costs of errors. Suppose that a taxi driver asks you, "Which route would you like me to take?" Many people do not welcome that question; it is a kind of cognitive tax (it imposes a decision cost), and it is not likely to reduce the number and magnitude of errors (because the driver is more likely than you are to know the best route). But if you are deciding what place to buy or rent in a new city, you might welcome a question of that kind, and you might not do a lot of delegating: You have privileged access to your preferences and your values, and any agent might well make costly errors. Of course you will welcome information and advice, but the ultimate decision will be yours. If someone intrudes, you might well offer the Lockean Exclamation.

For boundedly rational agents, heuristics and biases, and supposedly irrelevant factors (Thaler, 2015), will introduce complications. Take the case of the non-chooser, offering the Madisonian Exclamation. Perhaps she is refusing to make a worthwhile investment – say, in the acquisition of knowledge. Perhaps she is myopic and is excessively influenced by the short-term costs of choosing, which might require some learning, while underestimating the long-term benefits, which might be very large. A form of present bias (O'Donoghue & Rabin, 2015) might infect the decision not to choose. Perhaps the non-chooser suffers from a kind of self-control problem. She is unable to slow down and to take the time to focus on something that is not especially interesting, at least not in the short-run, but from which she can ultimately benefit a great deal. Perhaps she does not realize that her own tastes are malleable. Or a non-chooser might be unduly affected by "availability bias," because of an overreaction to a recent situation in which her own choice went wrong.

For their part, those who choose, or who show a significant control premium, might be making quite similar errors (as, perhaps, in our experiment). Present bias, for example, might lead people to make a decision on their own, when it would make far more sense to do the hard work of finding a reliable delegate. A decision to economize on bandwidth, and to allow someone else to make choices, might take a large measure of self-control.

The Madisonian Exclamation matters, but in my view, the intrinsic value of control, and the Lockean Exclamation, are far more important to business, politics, and daily life. They help to

[9] On the effects of lack of information in producing abstention, see Coupé and Noury (2004).

[10] For a demonstration, see Bartling and Fischbacher (2012). On people's preference for flipping a coin, as a way of avoiding responsibility, see Dwenger, Kübler, & Weizsäcker (2013). Consider this suggestion: The "cognitive or emotional cost of deciding may outweigh the benefits that arise from making the optimal choice. For example, the decision-maker may prefer not to make a choice without having sufficient time and energy to think it through. Or, she may not feel entitled to make it. Or, she may anticipate a possible disappointment about her choice that can arise after a subsequent resolution of uncertainty. Waiving some or all of the decision right may seem desirable in such circumstances even though it typically increases the chance of a suboptimal outcome." *Id.* at 1.

explain behavior in multiple domains: consumption, education, employment, environmental protection, savings, sports, voting, politics, and more. We need to know much more about when, why, and how much people value control – and about diverse valuations across persons, demographic groups, nations, and cultures. Let's get to work.

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PART I – EDITORIAL

Behavioral Economics: Expanding Boundaries

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Behavioral Economics in 2017

At the beginning of this year, I came across an attention-grabbing headline: "Behavioral Economics Isn't Dead Yet". It was written by Noah Smith on *Bloomberg View*. Despite some voices that may have questioned the future of behavioral economics (BE), Smith pointed to evidence that behavioral models may be slowly infiltrating macroeconomics. But BE is not only changing the field of economics. As discussed in previous editions of this Guide, the popularity of BE has also had a spillover effect on allied disciplines, such as psychology, and found applications in both commercial and public policy domains. The second annual report published by the US Government's Social and Behavioral Sciences Team (2016) is a perfect example of the applied breadth of behavioral insights, in that it showcases projects in many different policy areas, including pensions, higher education, climate change, criminal justice, and health. An even larger collection of behavioral case studies from around the world was recently published by the OECD (2017).

BE is also alive and kicking on the behavioraleconomics.com website, which hosts this Guide. The site now attracts thousands of visitors every day and has listed dozens of behavioral science jobs and events over the past year. Popular events included the Behavioral Science and Marketing Summit, ideas42 Behavioral Summit, OECD Conferences on Behavioural Insights, and Behavioral Exchange, which has published a series of conference videos online. Extensive conference proceedings are available from meetings at the more scholarly end of the continuum as well, such as the Behavioral Insights in Research and Policy Making and Advances with Field Experiments conferences.

There are many ways in which a discipline like BE continues to thrive. Firstly, it can grow from within, by testing and refining existing theories. As discussed in last year's BE Guide, researchers have become increasingly interested in the wider picture of applied behavioral science, particularly the cultural context, ethics and boundary conditions of nudging. (Recent examples include articles by Jung & Mellers, 2016 and Reisch & Sunstein, 2016, on attitudes towards nudging, a paper by Marchiori, Adriaanse & De Ridder, 2017, on boundary conditions of nudging, as well as needs and preference specific alternatives to nudging discussed in the ACR 2016 / SCP 2017 'Customized Nudges: Choice Architecture for a Heterogeneous World' symposium.) A discipline can also expand its boundaries by addressing new and unexplored problems, whilst it can additionally find relevance outside of its own field by building cross-disciplinary theories and practical applications.

This editorial provides a small 2016-2017 snapshot of BE's ongoing growth. The first section shows how one of the core ideas of BE, namely prospect theory and loss aversion, continues to inspire research and applications, while the remainder of the editorial presents a selective 'year in review' by summarizing a handful of key publications. The first two sections outline information avoidance theory and organizational perspectives on decision-making, including evidence-based management, which are good examples of how economists have become inspired by psychology and psychologists by economics. The last section, on the psychology of financial decision-making, illustrates connections between BE, psychology, and neuroscience, and serves as an interesting example in the search for parsimony in BE.

Prospect Theory Applications

One of the most widely applied theories from behavioral economics is prospect theory (Kahneman & Tversky, 1979), a model that shows how people decide between alternatives that involve risk and uncertainty. The theory demonstrates that people evaluate options based on reference points and that they are loss-averse—they dislike losses more than equivalent gains. As a result, individuals are more willing to take risks, in order to avoid a loss, than to secure a gain. Prospect theory and the concept of loss aversion continue to be of interest to researchers both in economics and other disciplines. Even though the theory is already decades-'old', a (admittedly crude) Google News and Google Scholar search of the terms 'prospect theory' OR 'loss aversion' (against the baseline terms 'psychology' OR 'economics') shows a steady increase in the number of the terms' mentions over the last five years.

Recent work in this area includes applications in traditional economic domains, ostensibly financial markets (e.g. Larson, List, & Metcalfe, 2016), housing markets (e.g. Buisson, 2016), and labor markets (e.g. Neumann, 2016).

Figure 1: Word cloud for prospect theory (Copyright: radiantskies / 123RF)

In one important paper, Larson and his collaborators (2016; see Metcalfe, 2017, for a summary) for the first time provide data from a *natural* (field) setting that shows evidence in favor of "myopic loss aversion" (MLA) (Benartzi & Thaler, 1995). This bias, which is a combination of taking a short-term view on an investment and loss aversion, is one possible explanation for the equity premium puzzle, the observation that stocks have historically had much higher returns than (relatively low risk) bonds. MLA means that people pay disproportionate attention to the volatility of their investments in the short term. Due to MLA, individuals who evaluate their investment more frequently make decisions as if their time horizon were shorter and react unfavorably to negative changes. Frequent feedback on asset performance becomes detrimental.

In Larson et al.'s study, MLA was investigated through a field experiment that invited professional traders to use a new trading platform. The researchers randomly assigned professional marginal traders to receive price information feedback either frequently (second-by-second) or infrequently (every four hours). The resulting data revealed patterns in support of MLA. Compared to traders who receive frequent price information, those with infrequent feedback invest 33% more in a risky asset, yielding 53% higher profits. As shown by other research in behavioral economics, this study also demonstrates that expected utility theory (a model assuming that people make optimal decisions under risk, albeit without considering contexts and reference points) is not descriptive of professional traders' actual behavior. The conundrum, according to the authors, is that investors want timely information and flexibility in decision-making, but this has negative consequences for both their wealth and the market as a whole.

Prospect theory, broadly defined, has recently also been applied in other domains, ranging from marketing to politics. Examples include:

- People are more likely to cheat, to avoid a potential loss in status than a gain in status (Pettit, Doyle, Lount & To, 2016; Samson, 2017)
- Although health is a special commodity compared to money, losses loom larger than gains when people decide between medical treatments with uncertain outcomes (Attemaa, Brouwer, l'Haridonc & Pinto, 2016).
- Cross-cultural dimensions, such as individualism and masculinity, increase loss aversion, whereas macroeconomic variables, such as GDP/capita and growth rates, have no effect (Wang, Rieger & Hens, 2017).
- In sense-making processes, negative deviations from expectations (determined by reference points) should be more aversive than positive deviations are pleasant (Chater & Loewenstein, 2016).
- Compared to positive emotions, negative emotions arising from a past experience (with a utilitarian service provider) have a stronger effect on a consumer's recommendation intentions (Rychalski & Hudson, 2017).

Votes for the United Kingdom to leave the European Union, and for Donald Trump to take on the mantel of President of the United States, caused a flurry of writing activity online, ranging from re-evaluations of polling methodologies to the psychology of trust (e.g. Harrell, 2016). Creative applications of prospect theory and associated ideas about message framing (which has a long history in communication and political science research) also made an appearance in this mix. An

interesting article by Heintz (2016) argues that many American voters perceived the economic and social status quo as much worse than what it should be. Political discourses by Trump (and Brexit) advocates were framed in terms of past losses, evident in slogans like "Make America great *again*" and "Take *back* control". Evans (2016) reminds readers that the Trump campaign projected a bleak picture of the future (terrorism, lack of jobs, etc.) if voters didn't opt for change, and that such a loss frame in prospect theory would be associated with greater willingness to take risks. Trump voters went with the risky option by rolling the political dice and electing a man who appeared unpredictable—a personified political lottery. Losses trump gains.

Information Avoidance

Behavioral economics assumes that people are boundedly rational actors with limited cognitive processing power and time, whose choices are influenced by the contexts in which decisions are embedded. Cass Sunstein's introduction to this Guide takes a step back from those decision processes and presents a fascinating strand of thinking about a question that often precedes decision problems themselves—choices about choices. Sometimes, decision-makers value control over their own choices, even if the outcome would be better if they let someone else choose on their behalf. When decision-making is deferred, outsourced to experts, or done by computer algorithms (see e.g. Cornil & Klesse, 2016), people *choose not to choose*. Other emerging ideas in BE that are being investigated by George Loewenstein and colleagues focus on an important, but sometimes taken for granted, ingredient for decision-making, namely information (Loewenstein, 2017). While a great deal of research into BE has been devoted to exploring how information affects the quality and outcomes of decisions, this domain examines conditions under which people may *choose not to know*.

According to Loewenstein, the emerging economics of information is based on belief-based utility, which suggests that pleasures and pains are "in the mind" and "people are motivated to hold certain beliefs because they feel good or fit into the sense they have made of the world". This view contrasts with standard economics, in which rational agents revise their beliefs based on any new information they receive. Sometimes, people *avoid* information, even if acquiring this knowledge would be to their own benefit (Golman, Hagmann & Loewenstein, 2017).

	Desire to...	***Desire not to...***
...obtain information	**Curiosity**	**Information avoidance**
...share information	**Information divulgence**	**Privacy**

Table 1: George Loewenstein's work in the *New* Economics of Information (adapted from Loewenstein, 2017)

What is information avoidance?

The idea of information avoidance is not entirely new in psychology. A 2010 paper by Sweeny et al. argues that threats to beliefs, obligations to act, and regulating emotions may be factors that lead people to avoid information. Both individual differences (e.g. how people deal with uncertainty) and situational factors (e.g. how easy it is to access or avoid information) may influence those motivations further.

The more recent behavioral economics view of Golman and colleagues (2017) focuses on active information avoidance, which occurs when access to information is free and people are aware that it is available. There are different ways in which individuals avoid information; for example, they may physically avoid it by failing to return to a clinic to get medical test results, or they may simply not pay proper attention to it. One of the psychological explanations for information avoidance can be found in people's preference for *belief consonance* (Golman, Loewenstein, Moene & Zarri, 2016). Thus, a common form in this regard involves the biased interpretation of information, such as accepting evidence that bolsters one's political beliefs and dismissing that which does not. Even forgetting can be the result of an active process when people do not rehearse (negative) information; for example, research has shown that car buyers avoid information that challenges the quality of their choice, and they are more likely to remember reading advertisements that promote their car than those that promote other models.

According to Golman et al., information avoidance is often driven by *hedonic* factors, such as reducing anxiety, aversion to regret, or the need to remain optimistic (more on the role of regret in information avoidance can be found in Gigerenzer & Garcia-Retamero, 2017). Experiments using IQ tests and attractiveness ratings, for instance, have found that people who expect negative feedback are more likely to avoid obtaining information or may even be willing to pay to avoid it (Eil & Rao, 2011). If information comes with high levels of threat, such as knowing whether or not one carries a gene for an incurable disease, information avoidance is not uncommon. Nonetheless, it can also be *strategic*; for example, an athlete might avoid information about competitors, because she fears that this knowledge would make it difficult to keep up the motivation needed to train for an event. Similarly, a taxpayer who believes that he is entitled to a tax deduction may choose not to seek advice from an accountant, who may try to convince him otherwise.

The theory of information avoidance can be related to a core aspect of BE, namely contexts of uncertainty (Golman & Loewenstein, 2015). While people generally dislike uncertainty, motivating them to acquire rather than avoid information, avoidance is based on a second motive, a "desire to avoid increasing attention on a negative anticipated outcome" (p. 19). Assuming that people have an inherent drive for sense-making (Chater & Loewenstein, 2016), the choice between embracing and avoiding information depends on whether the pleasure of making sense (i.e. satisfying one's curiosity) is stronger than the expected pain (e.g. anxiety of having knowledge). If information is very useful to the individual, its avoidance would be especially prevalent among those who heavily discount the future and put disproportionate weight on present benefits.

From the perspective of economics, Golman et al. note that avoidance has immediate benefits for people if it prevents the negative (usually psychological) consequences of knowing the information. However, it also has negative utility, especially in the longer term, because it deprives

people of potentially useful information for decision-making and feedback for future behavior. Furthermore, it can contribute to a polarization of political opinions and media bias.

Information avoidance in the information age

George Loewenstein argues that a better understanding of the hedonics of information would be beneficial to the discipline of economics in the information age (Edwards, 2016; Loewenstein, 2017). This is an important point and raises interesting questions about the effect of both information quality and quantity on avoidance. A study conducted a few years ago, for instance, seems to suggest that exposure to more information makes it more likely that people will seek information that is consistent with a prior decision (Fischer, Schulz-Hardt & Frey, 2008). In some cases, social media may reinforce individuals' own biases and the polarization of opinions through selective exposure (Bakshy, Messing & Adamic, 2015; Keegan, 2016).

Information avoidance on the internet has been investigated by Nachum Sicherman and collaborators (2016), who found evidence of an ostrich effect among investors. Data from investment accounts showed that people are less likely to check their portfolio online when the stock market is down rather than when it is up. The research also found that people with big portfolios are less likely to look at their portfolio under those conditions, even though having the information should be more important to them. Approximately 80% of investors in the data could be classified as ostriches.

One of the core behavioral insights in relation to behavior change is the importance of providing individuals with feedback about the consequences of their actions. Thus, information avoidance is also relevant in this domain, where the motivated avoidance of information about goal progress has been referred to as another ostrich problem (Webb, Chang & Benn, 2013). While new technologies, such as health and fitness monitoring devices, allow people to receive feedback about their behaviors and outcomes (Nunes & Gonçalves, 2017), their effectiveness could undoubtedly be increased further by gaining a better understanding of information avoidance.

Figure 2: The Ostrich Effect (Copyright: rangizzz / 123RF Stock Photo)

Organizational Perspectives on Behavioral Economics

The research focus of behavioral economics has traditionally been on individual decision-makers. There are growing efforts to connect theories and effects seen on this (micro) level with larger forces, such as those studied by macroeconomists (see references in previous editions of this Guide, for example). Nevertheless, there is also a meso level that encompasses organizations. One of BE's frontiers is the study of decision-making within and between organizations, including their management. New articles in the *Annual Review of Organizational Psychology and Organizational Behavior* provide an overview of the organizational context of decision-making, increasingly prevalent evidence-based management approaches, and associated ideas on field experimentation in organizations.

The social context of decisions

Richard Larrick (2016) provides a conceptual framework for BE in organizational settings by integrating ideas from social psychology, behavioral economics, and organizational psychology. The author notes that behavioral insights from decision research have been applied in social settings by simply extending individual processes. In order to gain a better understanding of decision-making in organizations, however, more dynamic factors should be considered, such as the flow of information between people.

Understanding BE in a social context, according to Larrick, requires us to acknowledge that people are *social products* shaped by social Influence. Social life in organizations also involves intergroup dynamics and *social preferences* along with group memberships. Finally, from an organizational point of view, it is important to consider that decisions also occur in the context of *social processes*.

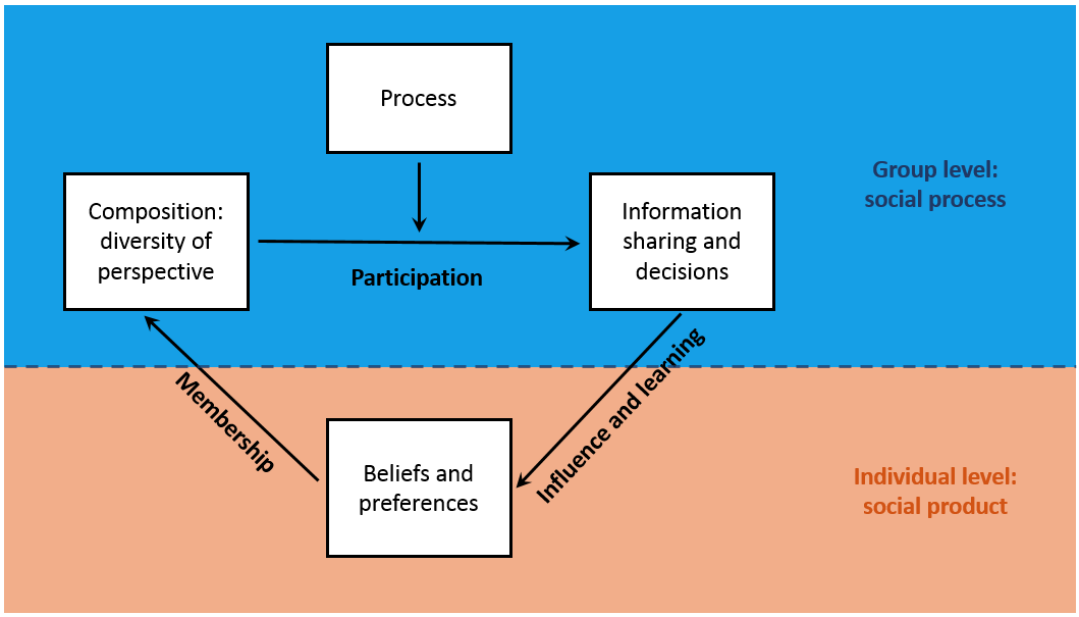

Figure 3: The relationship between group- and individual-level elements of decision-making (adapted from Larrick, 2016)

Larrick points out that social influence occurs directly, when people rely on or conform to others' beliefs, and indirectly, due to the greater attention received by information that is already more popular. Social influence is beneficial when it enhances creativity and boosts the knowledge with which *individuals* can work. albeit the same processes can also lead to similar beliefs or mental models—and thus shared blind spots in *collective* judgments. As a result, social influence contributes to 'groupthink', a key problem in organizational decision-making, which occurs when people conform to and strive for harmony to an extent that is detrimental to decisions. Remedies to excessive convergence in thinking include having group members think for themselves independently before making decisions collaboratively, creating diverse teams from the point of view of both individual knowledge and external relationships, rotating individuals across teams, and even relying on the wisdom of crowds.

According to Larrick, two factors affect the accuracy of decisions made by groups: The people who are involved (composition) and the processes of sharing and using information.

In terms of composition, groups have inherently greater potential than individuals to be accurate, due to the basic principles of error reduction and knowledge aggregation. Consider a sales forecast, for instance. An employee in sales or finance may have her prediction anchored on the previous year's revenues, while a customer insight specialist's guess may be influenced by recent market research findings. One estimate may be too high and the other one too low, and so error reduction occurs when guesses offset each other. Knowledge aggregation, on the other hand, is about the breadth of knowledge. Diverse views can lead to a fuller understanding of the facts, as evident in the decision-making of cross-functional teams. Decisions about a new product, for example, necessarily need to involve people with technical and marketing expertise, and more.

The other factor is the process through which a group shares and uses information. According to Larrick, a good decision-making process broadens the information considered prior to a conclusion being reached. To this end, team members need to explore and share knowledge through equal participation. However, there are both cognitive and relational barriers to exploration. Cognitively, information with statistical dominance tends to gain the upper hand, which is reinforced by prevailing norms. Organizations need to foster norms that encourage debate. Relationally, the dynamics of social influence and preferences mean that disagreement can be costly to individuals. In addition, differences in personality traits, such as extraversion and confidence, mean that some individuals' ideas are more likely to prevail than others. The effect of many these variables vary across cultures.

Larrick posits that conflict can be one way to promote the sharing of diverse information, though this conflict should be built around tasks (e.g. debates about goals) rather than relationships. This means that organizations should build norms about being critical while also building trust to reduce friction.

Larrick concludes his article by outlining possible research directions and practical implications. While some aspects of social decision-making are readily apparent, such as diversity factors, the author suggests that other aspects may be more difficult to see, such as the need to encourage independent thinking, reducing shared blind spots, and the role of teams in individual creativity.

Evidenced-based management

In the field of management, Rynes and Bartunek (2017) have recently published a review of the body of literature advocating the use of evidence-based management (EBMgt), whose influence has risen in parallel with behavioral science over the last decade. EBMgt promotes the use of available evidence from different sources to answer and research practically relevant questions, as well as to assess and apply evidence in decision-making. According to the authors, evidence-based management grew against the backdrop of three other developments: The academic-practice gap, a lack of consensus in academic research, and evidence-based practice in other domains, ranging from medicine to education. In this context, the use of randomized controlled trials (RCTs) has emerged as the recognized gold standard to answer 'what works?' questions. (However, Rynes and Bartunek argue that more empirical research is needed in EBMgt, including RCTs investigating whether organizations that implement EBMgt produce better results than before, or in comparison with other organizations that do not do so).

An article in the *Harvard Business Review*, by the behavioral economist Iris Bohnet (2016; see also Dana, 2017, for related ideas), offers a constructive, evidence-based management view on hiring decisions. Bohnet argues that managers "should stop wasting resources trying to de-bias mindsets and instead start to de-bias… hiring procedures." According to the author, unstructured interviews may be a popular way of assessing candidates, but they are nonetheless full of irrelevant information and bias, and evidence shows that they are less reliable than various tests, such as aptitude or personality assessments. Managers may decide against testing, due to overconfidence in their own experience and expertise and a dislike of structured approaches that outsource human judgment.

Bohnet recommends that managers use work-sample tests, which are related to the tasks the job candidate will have to perform. Alternatively, structured interviews are also helpful. When evaluating answers, interviewers should score each answer immediately after it has been given, which would counteract a number of biases, including those around the vividness of examples (favoring candidates who are good storytellers) and their recency.

The author further advises interviewers to compare candidate responses horizontally; for instance, each of five candidates' answers should be compared on the first question, then the second question, etc., and ideally, each question should be assessed independently of the candidate. Horizontal comparisons also reduce problems with stereotyping, such as gender bias rooted in expectations of typical male or female jobs. Bohnet's research has shown that vertically evaluating candidates leads to more bias than horizontal (joint) evaluations.

Finally, Bohnet encourages managers to abolish panel (group) interviews altogether, as there appears to be no evidence to support this practice. If that is not possible, interviewers need to keep their ratings of candidates as independent of each other as possible.

Field experiments in organizations

As discussed in previous BE Guides, the practice of applying nudge theory to behavior change, as well as using randomized controlled trials (RCTs) to test their effectiveness, has been an important

development in a variety of problem domains, including management. Organizations are becoming increasingly popular settings for research conducted by behavioral scientists.

In the BE Guide 2015, the author of this editorial provided readers with a step-by-step outline of field experimentation (RCTs) for practitioners. A newer article, by Dov Eden (2017), offers an excellent field experiment how-to guide for researchers in organizations. Common topics researched experimentally in organizations, mentioned in the article, include communication, benefits utilization, training, engagement, and performance management. Eden discusses the mechanics, history, and methodological variants of field experiments, along with dos and don'ts for experimenters. He also addresses common misconceptions and how to overcome deterrents to field experimentation (see Table 2).

Overcoming Deterrents to Field Experimentation

1. Refrain from jargon: Don't use the word 'experiment', which some managers may associate with using employees as guinea pigs. Refer to it as a 'study', 'research', or 'project'.

2. Explain randomization: Provide lay managers with a jargon-free explanation of what randomization does, how easy it is to do, and the problems associated with not randomizing.

3. Capitalize on management indifference: Take advantage of situations in which management doesn't care about changes in a process, structure, equipment, or staffing. These may be natural occurrences—experimenters don't have to apply the experimental treatment themselves, as long as the treatment is rendered randomly. Examples of these opportunities include training, the introduction of new technology, reorganizations, and managerial transitions.

4. Consider alignments between randomization and fairness: Remember that there are many contexts in which randomization is fair, because the study involves something desirable to be distributed (e.g. employee wellness) or something undesirable to be endured (e.g. working overtime).

5. Invert the treatment: Certain experimental treatments, such as being subjected to stress, would be unethical. In those cases, the treatment can be inverted. In stress abatement, for example, the harmful phenomenon of interest occurs in the (untreated) control condition and is exposed by averting it in the experimental treatment.

6. Transform delicate data: Field experimentation may require the analysis of sensitive or proprietary data, such as absence rates or units produced. Researchers can overcome by asking the organization to make linear transformations of the data that are still statistically usable but useless to others, such as competitors.

Table 2: Overcoming Deterrents to Field Experimentation (adapted from Eden, 2017)

A unique example of employee behavior change is provided by a recent field experiment conducted in the airline industry (Metcalfe, Gosnell & List, 2016). The researchers aimed to increase fuel-efficient flying behavior among pilots. The experimental participants were informed that their flight and fuel behavior would be monitored for a period of eight months. A *feedback* group was told about their flight performance on a monthly basis. A *target* group was given a performance target 25% above their past performance, in addition to the feedback. Finally, a *prosocial incentives* group was given feedback and a performance target and told also that a small donation would be made on their behalf for meeting the target. The data collected from thousands of flights showed that pilots' awareness of being monitored alone led to a significant improvement in fuel efficiency (the Hawthorne Effect), whilst participants who were given a target had the best performance, regardless of whether a prosocial incentive was provided.

The researchers estimated that their practically costless intervention led to fuel cost savings of $5.4 million for the airline (Virgin Atlantic) and over 21,500 metric tons of carbon dioxide (CO_2) emission reductions for the duration of their study. Moreover, the study appeared to induce a longer-term change in habits, as the captains continued to demonstrate these fuel-efficient behaviors after the study ended (for at least six months).

The Psychology of Financial Decision-Making

Organizational aspects of behavioral science are also one of several dimensions in an excellent review of behavioral finance and related areas written by Frydman and Camerer (2016) in the journal *Trends in Cognitive Sciences*. In the article, the authors discuss financial decision-making in four different domains: Households, individual investors, markets, and managers.

Households, individuals, markets, and managers

In many countries, the responsibility for retirement savings is increasingly shifting away from government and employers to *households*. At the same time, financial literacy levels remain relatively low. Against this backdrop, it is becoming more important to investigate the psychology of—and potential solutions to—common financial mistakes. For example, many people still choose not to invest in a company pension plan that offers a matched contribution by the employer, fail to switch to lower-interest mortgages, or do not know how to spread risk properly between different mutual funds.

One important area mentioned by Frydman and Camerer relates to the attention paid by *individual investors* to different information. They cite recent research that used data from online brokerage accounts, showing that people tend to pay more attention to their portfolio when markets are less volatile or are rising (see also my previous discussion on the ostrich effect). In terms of more specific portfolio information, one study has found that the salience of a stock's purchase price (whether or not it is prominently displayed) influences the disposition effect—the tendency to sell a winning stock and hold on to a losing stock (Frydman & Rangel, 2014). The effect was 25% smaller in a low-saliency condition.

The disposition effect is one prominent illustration that shows that individual investors' behavior does not conform to normative theories. Other well-known tendencies are for people to invest in

local stocks (the home bias), making assumptions about future earnings based on past returns, and overtrading (trading too frequently).

The article continues by presenting evidence on *collective* or market-level forces responsible for asset prices. This is an area where assumptions of efficiency and rationality prevailed until research showed evidence to the contrary, such as investors overreacting to bad news and underreacting to good news, or the formation of price bubbles in the market. Another fascinating topic concerns how stock prices are affected by moods, ranging from the weather to sporting events. Research in neuroeconomics (Kuhnen & Knutson, 2011) indicates that the parts of the brain associated with emotional states also process risk-related information, as well as rewards and punishments. Positive emotions, such as excitement, increase people's tendency to take risks and confidence in their ability to evaluate investment options, whilst the opposite occurs in negative emotional states, such as anxiety.

A theme that may be encountered less frequently in behavioral finance relates to *managerial* financial decision-making. Since executives have a disproportionate amount of power and influence, understanding the psychology of people at the top of organizations helps explain the behaviors of corporations. A key question of interest highlighted by Frydman and Camerer is executive overconfidence, which has been investigated in various ways: Psychometrically, through questionnaires, comparing executives' earnings forecasts to actual earnings, or measuring how long they hold on to stock options in the expectation of a rise. Sometimes, behavior that appears as a corporate leader's confidence may in fact be part of implicit deception. A study by Larcker and Zakolyukina (2012) investigated implicit deception, measured as the difference between optimism during CEOs' earnings calls and accounting problems further down the line. A semantic analysis of the communications showed that deceptive CEOs used more words to express extreme positive emotions, fewer anxiety words, and more references to general knowledge. Their model predicted deception significantly better than a random guess by about 10%.

Parsimony in behavioral economics/finance

A central conclusion reached by Frydman and Camerer suggests that our understanding of financial decision-making could be greatly enriched by bringing together data from behavioral economics and other areas, including neuroscience. This could address numerous questions, one of which is relevant to domains outside of finance: How are different biases correlated statistically? Moreover, can they be explained by a smaller set of core psychological mechanisms? Frydman and Camerer mention the case of the disposition effect (the tendency to sell a winning stock and hold on to a losing stock) in relation to the repurchase effect (the tendency to repurchase a previously sold stock that has decreased in value as opposed to a stock that has increased in value since the last sale). A strong correlation between these effects has been found, supported by the discovery that the same brain areas appear to encode signals that generate the effects.

Fields like personality psychology have already successfully reduced traits into a smaller set of factors, such as the 'Big Five'. An ambitious study by Stango, Yoong, and Zinman (2017) on a sample of more than 1,000 participants investigated whether this might be possible in BE. Their research measured different behavioral preferences (e.g. present-biased discounting, loss aversion, choice inconsistency) and biases (e.g. overconfidence, exponential growth bias, statistical

fallacies), along with control variables and a real-world outcome variable of financial condition (wealth, assets, recent [dis]saving, etc.).

Stango et al.'s statistical analysis shows that measuring many different behavioral variables explains financial outcomes much better than measuring just a few. They also checked whether they could reduce behavioral factors to a small subset of underlying phenomena. In their data, however, most of the behavioral variables could not be statistically assigned to a particular underlying dimension, and for the few variables that did seem to form, a common factor (overconfidence about one's own performance, underestimating the effects of compounding on savings, and having limited memory) could not be explained by any theory. Importantly, there was also no evidence of a link between that common factor and financial outcomes after taking into account observable cognitive skills, as indicated by general intelligence, numeracy, financial literacy, and executive function.

While Stango and colleagues' results do not sound encouraging to those on a quest for the holy behavioral grail, their research is undoubtedly just the beginning, and so future researchers will have to consider their own set of behavioral measures, real-world outcomes, and samples. Evidence from neuroscience may help us formulate hypotheses or corroborate relationships found in behavioral studies. Greater collaboration between academics and applied behavioral science organizations, especially those who collect data on behavioral preferences and biases, would also benefit the search for a more unified BE theory. The applied behavioral economics company Syntoniq, for example, has developed an assessment tool that generates personalized profiles of individuals' biases, behavioral preferences, and blind spots in relation to investing. Future research could investigate relationships between data from such assessments and everyday financial outcomes.

Finally, perhaps more creative approaches may explore underlying patterns and build bridges between theories and applications through the use of abstractions, metaphors, and games. A nice illustration of this is presented by the Common Cents Lab's (2016) bowling-gamified measure of present bias and spending behavior. Participants at a state fair were given 15 balls, which represented their 'budget'. Throwing the balls was akin to 'spending', which they could do over 10 rounds—tempting players to spend too early. Participants had a chance to earn 25 cents for each pin knocked over. Since it is difficult to hit pins when they become sparser, the ideal strategy is to maximize hits by throwing only one or two balls each round and to 'save' the remaining balls for later. The study showed that most people were present-biased and lost out on money as a result. It would be interesting to find out to what extent individuals' scores on this game correlate with spending behavior.

Practitioner Contributions in This Edition

The core of this year's BE Guide once again consists of contributions by practitioners in applied behavioral science, which are presented in the next section:

- Crawford Hollingworth and Liz Barker present new case studies that illustrate the ways in which behavioral economics is being used to help solve behavioral problems and effect behavior change in different domains of life.

- Tim Gohmann, Christian Goy, and Ronald S. Mundy's article continues their previous work in relation to brands by discussing the behavioral economics of brand loyalty and switching.
- Jim Guszcza and Timothy Murphy write about data and behavioral science, using the term 'cognitive collaboration' to describe the relationship between humans and computers.
- Jorge Dryjanski Lerner and Mariana Garza Arias discuss some of the challenges and opportunities for behaviorally-informed public policy that they encountered in relation to a project on increasing organ donations in Mexico.

Three articles in this edition focus on the domain of finance:

- Henry Stott and Ed Nottingham identify flaws in one of the most influential behaviorally informed policies, pensions auto enrollment, and call for behavioral science research to reduce those shortcomings.
- Nathalie Spencer and Ian Bright discuss how financial institutions can help people to make better financial decisions by presenting international financial survey results in relation to key behavioral concepts.
- Finally, Alexander Joshi and Charlotte Duke offer readers insights into studies on choice architecture in retail finance, particularly price frames and the presentation of add-on insurance, which were conducted for UK regulators.

Each of these articles provides their own unique perspective on ways in which practitioners can test, refine or even expand the boundaries of applied behavioral economics. I wish you happy reading.

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PART 2 – APPLICATIONS

Behavioral Science in Practice

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How Behavioural Economics Is Shaping Our Lives

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Behavioural economics (BE) remains a buzzword in organisations, even after breaking into mainstream thinking several years ago. The impact its frameworks and concepts have had in both understanding and changing behaviour means interest is higher than ever.

Over the last few years we have seen and been part of the journey taking behavioural science from the academic world into the real world. There are now established BE conferences[1] and new BE focused books continue to be published - Michael Lewis' *The Undoing Project*, published December 2016, is just one of many.

Inspired by this new model of human behaviour, which identifies and embraces the inherent biases that define what it is to be human, companies, governments and not-for-profit organisations have set to work to try to understand the behaviours of their customers and citizens in order to guide and nudge them towards desired actions, or to improve their experience. In-house behavioural scientists are fast becoming the norm and all over the world there are growing numbers of agencies and consultancies built around the application of BE. Companies using BE include Morningstar, Airbnb, Disney, Walmart, Jawbone, Unilever, Uber, Barclays, Google, eBay, ING, Virgin, Lilly, Financial Times, Swiss Re, Prudential, Boots, AIG, Opower and Tinder - and the list keeps growing. In the public sector, use of behavioural science is also widespread, with multiple governments and institutions applying it in what they do. The OECD recently highlighted how "Behavioural insights can no longer be seen as a fashionable short-term foray by public bodies. They have taken root in many ways across many countries around the world" (Organisation of Economic Co-operation and Development, 2017).

This investment in and commitment to building such a new model of human behaviour is now coming to fruition. The impact of behavioural research undertaken yesterday and the deep behavioural insights gleaned from it are now evident in the products, services and communications we all encounter or use today. **Behavioural science is making a significant difference to our everyday lives, from helping us make better choices in finance and healthcare, to guiding us to work more effectively, to influencing how we shop on the high street and online and nudging us to be more generous.**

Over the last few years, we have watched the concept of 'nudging' mature, as the application of behavioural science has become more sophisticated and effective, building from the original foundation – that of simply applying a few BE concepts to change behaviour - to augment the science in three ways:

[1] For example, the Behavioural Exchange, BSPA and the Ideas42 Behavioral Summit.

1. **BE is now being used to solve more complex behavioural problems:** Practitioners are becoming more ambitious in what they seek to solve using behavioural science; tackling wide-ranging issues such as improving an individual's financial well-being, designing more effective packaging, enhancing users' experiences of online services and gathering better data on the nation's habitual levels of physical activity, to cite some examples. Their aim being not only to steer consumer behaviour, but also to improve product and service design, enhance productivity in the workplace and improve organisational decision-making or negotiations.
2. **Integrating behavioural science with other complementary disciplines to provide a more holistic approach to behavioural change:** Companies and organisations are now seeking to better understand individuals' behaviour and decision-making, be they consumers, employees or patients. And they frequently achieve this by operating in a more holistic way, breaking out of strict disciplines and silos to integrate insights from behavioural science with disciplines such as user-centred design, behaviour-focused qualitative research grounded in anthropology and psychology, data science and analytics and digital technology, in order to first develop a more detailed picture of behaviour and then test different behavioural hypotheses through controlled experiments and trials.
3. **Being more sensitive to how context shapes and sharpens behavioural insights and interventions:** Behavioural scientists and practitioners are also thinking much harder about crucial details such as when and where to nudge people, and what contexts work best with different solutions. For example, some contexts might suit solutions based on defaults and more automatic, System 1-type interventions, whilst other situations might call for more reflective solutions, engaging the individual in a complex decision and facilitating understanding.

Below, we outline a range of global case studies, including some from our own global company, The Behavioural Architects (TBA), which illustrate the three approaches outlined above.

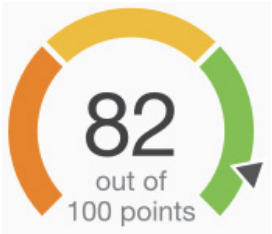
How HelloWallet Is Using Be to Improve Financial Well-Being

HelloWallet – an award-winning US personal financial management software company – was founded in 2009 with a social objective to provide personalised financial management and guidance. It works with companies to help their employees manage their money - a task which involves numerous and often difficult decisions. Their online platform aggregates a user's financial accounts - current account, credit card, loans, savings, retirement savings, health insurance - into a single platform.

Since the platform was launched in 2011 they have gained millions of customers – employees of some of the top Fortune 500 companies, including Vanguard, Aon, Salesforce, Zurich and Samsonite. In 2014, HelloWallet sold for $52.5 million to the investment research provider Morningstar (Perez, 2014).

The HelloWallet platform leverages insights from the behavioural sciences with the goal of improving their customers' immediate and long term financial health. For instance, it prompts users to reflect on their spending behaviour by giving feedback on and categorising spending,

including the option to add 'emotional flags' such as 'Wish I hadn't' [spent that] or 'Glad I did' (HelloWallet, 2017) , to help users reflect rationally on what spending was really necessary and objectively identify how they could change their spending habits. Users are also encouraged to set savings goals, including building up emergency savings and follows progress towards those goals.



Another unique feature guides users toward better financial health via wellness scores for a specific area such as 'spending less than you earn', 'credit card balance' and 'emergency savings' - so that users can see problem areas at a glance (see image). It also lets users know how their peers are performing in different areas, adding an element of social pressure.[2] In a randomised controlled trial which measured the impact of this peer-based feature on how much people save or set aside for emergencies, users who saw their savings wellness scores were lower than their peers saved an average of $600 extra into their savings accounts to catch up and match their peers (Johnson, 2017).

How RWE Used BE to Both Understand and Then De-Bias Organisational Decision-Making

Many organisations are realising the importance of putting strategies and programmes in place to reduce biased decision-making among individuals and teams. Emotional and subjective decision-making can be costly, potentially damaging a company's future for years to come, at huge cost to shareholders, jobs and revenues. RWE - the German utility company - found themselves in exactly this situation and, realising their decision-making errors, set about making radical changes to the way decisions were made across the company.

Around a decade ago, RWE made a near-fatal assumption that conventional power generation would continue as normal, with commodity and power prices continuing to rise. Such normalcy bias - when we find it hard to imagine a different future from the one we live in now - is common among companies. Bill Gates once commented "We always overestimate the change that will occur in the next two years and underestimate the change that will occur in the next ten." Later analysis by RWE also revealed the presence of other biases such as confirmation bias (looking only for evidence to support the investment) - overconfidence, optimism (in that they over-estimated their potential to deliver on such a huge investment), and cultural problems with conformity and groupthink where dissenting opinions and open-mindedness were not encouraged. After rapidly investing more than 10 billion euros in conventional power plants it found itself completely out of step as technological progress in renewables accelerated and the German energy system underwent a green transformation.

To counter bias and improve decision-making processes RWE set about a programme of cultural change from board level down to project managers and experts. Three hundred top level executives attended a two-week course run by external experts on being more self-aware of thought processes and decision-making. For their broader team, they implemented a de-biasing training program, showing how easily we can fall prey to cognitive biases, but how simple strategies can help to reduce this on a daily basis, particularly at the team level. Other strategies included established techniques such as premortem analyses (where, before making a decision, a team imagines they are years down the line looking back at why the project failed), red-teaming

[2] See http://www.hellowallet.com/

(when people are officially nominated to play devil's advocate in a discussion about a decision) and recruiting external experts to provide an outside viewpoint. These strategies are still widely used across the company today.

The initiative has generated good results for RWE, for example, having the courage to break the status quo and split the company into two parts - RWE and Innogy - with the latter being successfully listed on the Frankfurt Stock Exchange in 2016. More generally though, new decision-making norms have been established in the company's culture. It's common for someone to say in a meeting "I think we need some de-biasing here" (McKinsey Quarterly, 2017).

Ten years ago, this sort of cultural change was unheard of. Most people had barely heard of behavioural science, let alone understood what it comprised of and how their own thinking might be refined by it. A company-wide understanding of behavioural science means firms are in a stronger position to make better decisions.

Using BE-Driven Behavioural Research to Understand the Barriers and Triggers to Using Alternative Dispute Resolution

The Behavioural Architects conducted in-depth qualitative research using insights from behavioural science to both frame and structure their investigation into how people might be encouraged to use Alternative Dispute Resolution (ADR) services when they have an eligible complaint against a company.

ADR services provide an important avenue for customers wishing to resolve complaints without paying expensive legal bills. Yet awareness, understanding, ease and use of the services available is relatively low.

To better understand the ADR process and the triggers and barriers prompting or inhibiting people to make use of ADR, TBA conducted several different strands of research:

First, we conducted a literature review of relevant consumer and academic research on ADR and on complaints processes more generally. We also held interviews with a range of academic experts and then analysed the findings from both the review and interviews through a Behavioural Science 'lens' to identify potential triggers and barriers – both psychological and contextual - for entering into an ADR process.

We reviewed and explored these triggers and barriers with our client in a Behavioural Hypotheses Workshop, working with the client's team to refine a strong set of behavioural hypotheses to explore in the next stage of research.

In the second phase, we wanted to get a clearer sense of a consumer's experience of ADR or their experience of making a complaint by conducting in-depth qualitative research with a range of consumers over several weeks. We asked existing ADR users and non-users to take part in a one week 'behavioural detective' mission, which involved retracing the steps of the ADR process so far and/or embarking on the process for the first time, allowing us to collate a detailed picture of the consumer's experience, hiccups and all, and to collate and analyse a range of triggers and barriers. Potential strategies to increase ADR awareness and encourage greater use of ADR were explored in follow up in-depth interviews.

By closely observing the actual ADR process in real time - from becoming aware, to the resolution of a dispute - we were able to highlight a number of BE-inspired opportunities to nudge and steer ADR usage, including:

- Using communications to prime and make ADR more salient prior to having a complaint
- Reframing ADR from a 'last resort' to a 'natural next step' after initial direct discussions with the company involved
- Switching the reference point to the familiar world of customer complaints and care and away from the unfamiliar and daunting world of the courtroom
- Reducing cognitive strain by simplifying communications and chunking the process into steps

These findings were then tested in further research. Only through this in-depth, real time understanding of the ADR process from the consumer's perspective, analysed using insights from behavioural science, was it possible to develop these specific recommendations.

How Google's People Analytics Team Are Using Behavioural Insights, Data Science and Quantitative Research to Improve Workplace Decision-Making and Wellbeing

Google's HR team, better known as its People Analytics Team, is focused on evidence-based organisational change, an approach which sets it ahead of many other organisations. Lazlo Bock, Senior Vice President of People Operations was stunned at the relative lack of informed decision-making and understanding around workplace behaviour among businesses: "We all have our opinions and case studies, but there is precious little scientific certainty around how to build great work environments, cultivate high performing teams, maximize productivity, or enhance happiness,"

Instead, Google start by looking at what is already established in the academic literature, and then, mindful of how context can often alter outcomes, they conduct their own in-house research and experiments across a wide range of areas, including on-boarding new employees, in-house training and development, organisational design, wellbeing and hiring and promotions. Prasad Setty, Google Vice President of People Analytics & Compensation, notes that "Whenever we are faced with a new people issue at Google now, we don't ask ourselves what does successful organization x do with this topic? Instead, we ask ourselves what does the literature say?"[3] , "I wanted us to be hypothesis-driven and help solve company problems and questions with data" (Garvin, 2013).

For example, one initiative looked at how senior management could make more objective, informed and efficient promotion decisions for Google's thousands of software engineers, that would be less subject to emotion, intuition and bias. By analysing their promotion and performance data, and combining their findings with insights from the behavioural sciences, they were able to feed the most relevant parts to each of the committees in charge of making promotions, arming them with better, more accurate information (Nesterak, 2014).

[3] See Google re:Work events: https://www.google.com/events/rework/.

More recently, they have created a de-biasing checklist for making promotions, such as prompting a selection panel to fight stereotype biases by considering if their decision would change if the employee belonged to a different social group, or to be more aware of fundamental attribution error by considering situational factors which may have aided or hindered an employee's performance (Google re:Work, 2017). Ultimately, these initiatives have improved promotion decisions in the company.

Another initiative is based on longitudinal research approaches more often seen in medical and sociological sciences, such as the Framingham Heart Study. In 2012 Google began its own longitudinal study, gDNA, asking 4,000 of its employees to complete two anonymous, optional in-depth surveys each year in order to gain deeper insight into careers and the workplace. Employees are then provided individual feedback which often inspires reflection and behavioural change.

After two years the Google team had already learnt valuable insights into employee decision-making. For example, they found that its engineers were less susceptible to sunk cost biases - when we remain committed to projects and activities that we would be better to write off than continue to commit to - than were its sales people. Another finding was that people who have an innate sense of gratitude tend to remain happier in their jobs. Gratitude often peaks in the honeymoon period of a new job and then falls thereafter. So, Google are looking at ways to prime a sense of gratitude among employees who may not have an innate sense of this and aim to keep it front of mind, prompting them to be more mindful of reasons to be grateful for what they do with the aim that they will be correspondingly happier and more fulfilled.

How a National Retailer Used Behavioural Science to Reduce Perceived Barriers to Healthy Eating and Increase the Habitual Purchase of Fruit and Vegetables

A significant behavioural challenge for the 21st century is how to encourage people to change their eating habits to consume a healthier diet. Healthy eating has many benefits including reducing or preventing obesity, improved clarity of mind and productivity, and reduced likelihood of disease. But changing the habits - often of a lifetime - can be daunting for many. Although consumers often intend to buy and eat healthier foods, their intention does not always translate into action, meaning purchase can be sporadic, if at all. For behaviour change practitioners, a large part of the challenge is knowing where in the consumer journey - at home, in-store, in communications, on social networks or healthcare channels - it is best to intervene and try to steer people towards healthier eating.

Recently, The Behavioural Architects worked with a national retailer to help consumers improve their diet by eating more fruit and vegetables. Stores - both physical and online - offer opportunities to engage and steer consumer behaviour as, although people may buy certain items habitually, a good proportion of purchases are spontaneous. We also wanted to see if we could convert people's good intentions to eat more healthily into actual behaviour, encouraging people not only to purchase more fruit and veg, but also to cook it.

Previous nudges have often concentrated mainly on purchase rather than usage. For example, one initiative created a separate compartment for fruit and veg in the shopping trolley. Although this did increase purchases short term, the extra fruit and veg may not have ended up in people's

mouths since consumers received no recipe or culinary guidance. Over the long term, it is also unlikely that either purchase or eating habits changed.

Our research sought to better understand what existing barriers there were to eating more fruit and veg and how we might reduce these. In-store observation techniques, intercepts with customers, interviews with staff on the shop floor and self-ethnographic research via an online consumer platform revealed two major barriers to buying fruit and veg. Lack of cooking know-how and inspiration for how to use or when to eat often left customers uninspired, unconfident and ultimately unmotivated about buying. Further, consumers lacked awareness of any specific health benefits of different fruit and veg - nutritional information can often be overwhelming and low in cognitive ease.

To counter these barriers, we looked at how the retailer might reduce the first barrier by developing salient in-store messaging and merchandising and empower consumers by giving authoritative advice on cooking and preparation. To reduce the second barrier, we suggested simple shortcuts and primes to communicate health benefits to consumers, such as what foods are high in different vitamins and minerals, high in fibre or low GI or low sugar. We also emphasised the importance of cognitive ease, where communicating in ways consumers could quickly understand and absorb information can help to reduce purchase barriers further. All these measures ultimately made it easier for consumers to convert their good intentions into action and buy and consume fruit and veg more regularly.

Conclusion

This paper has shown how the power of behavioural science has been and continues to be embraced by a myriad of different companies and organisations, becoming a core part of modern day business, from marketing and communications, to HR and innovation. New insights into how and why we behave as we do are now quickly grasped and applied by organisations. Not only has there has been an incredible change in the flow of information from academia, but also an increasing need and appetite from organisations looking to solve problems with the latest insights and understanding (R. Cialdini, personal communication, September 18, 2014). And with this greater knowledge and intention has come the courage to experiment with and pioneer new approaches and solutions to a wide range of problems.

We are already seeing the tremendous impact of this new understanding, but this is still only the beginning and its potential has only just begun to be tapped. Companies, whilst excited by BE are still sometimes unsure how and where to use it in their own organisation. A former behavioural scientist at Microsoft observes that "we need to remove the barriers to implementation until it is applied repeatedly and at scale" (Wallaert, 2017).

Yet we should celebrate just how far we have come in less than a decade and look forward to and encourage even more cross-disciplinary experimentation - bringing together behavioural scientists, qualitative researchers, data scientists and designers - to work together to explore and test hypotheses about behaviour, to develop pilots and trials and ultimately to solve ever more complex behavioural challenges. **What is for sure is that over the next few years the impact of this new behavioural understanding will continue to have a greater and greater impact on all our lives, 24/7.**

The Authors

Crawford Hollingworth is co-Founder of The Behavioural Architects. He was also founder of HeadlightVision in London and New York, a behavioural trends research consultancy. HeadlightVision was acquired by WPP in 2003. He has written and spoken widely on the subject of behavioural economics, including for the Market Research Society, Marketing Society, Market Leader, Aura, AQR, London Business School and Impact magazine.

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A Behavioral Economics Explanation of Brand Loyalty and Switching

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What Is the Goal?

This is the third paper in a series starting with *Toward a Common Behavioral Economics Perspective* (Gohmann, 2015), and *Why Only Behavioral Economics Can Explain Preference* (Gohmann, Mundy & Goy, 2016). In the first paper we proposed a clear goal for using behavioral economics to define a common model. In the second, we described the approach we had taken. In this paper, we hope to answer at least one very basic question — how preference for a brand stays high and supports loyalty, and why it does not and results in brand switching.

If we can answer that question, we are on the road to operationalizing utility, since this elusive construct is believed to be responsible for both loyalty and switching. Loyalty (choice-option perseveration) and switching (choice-option change) are key concepts in the marketer's vocabulary. When these behaviors are understood, more effective interventions to strengthen or lessen loyalty occur. Not only does this allow the marketer to take a more active role in the business of generating more and larger transactions, i.e., selling, it takes behavioral economics out of academics and makes it a useful tool for the practitioner.

Cases

The examples which follow are all based on our behavioral economic model BrandEmbrace® (Figure 1). This model uses the material generated by MINDGUIDE® (Decision Elements, Decision Gates and Decision Systems). MINDGUIDE® is a set of linked data collection and analytic processes which are a reflection of how respondents make real life decisions. It allows the researcher to (1) surface often hidden psychological and economic bases (Decision Elements) used by each individual in decision-making, (2) obtain a common language describing the Decision Elements, (3) obtain the pass-fail heuristics applied to each Element by each respondent, (4) obtain individual Decision Systems specifying how the Elements and heuristics are used, and (5) make real-life choice decisions. On an individual basis, these choice decisions can be understood on the basis of the MINDGUIDE® output alone, but in order to test the choice expectations generated across respondents, BrandEmbrace® is then constructed from each respondent's MINDGUIDE® results.

BrandEmbrace® "normalizes" each respondent's data into a single "score" for each choice alternative evaluated. Early efforts at constructing BrandEmbrace® utilized classical psychometric approaches (regression, principal components, clustering, etc.) to "find" the best fit in establishing predictive validity. This turned out to be an analytic "box canyon." The current approach demonstrating predictive validity does so without the reliance on any of these "external" analysis approaches, but rather reverts to what was learned in the MINDGUIDE® protocols, i.e. reliance on

how decisions appear to be made. The model is constructed and computed identically each time it is applied; there is no "fitting" of an external function to the obtained data, nor an "adjustment" of any kind. Its results consist of a single 'score" for each respondent attached to each choice alternative and varies from -100 to +100. It is this score which is used to test the ability of the model to "predict" preference and purchase. When the components of the model are exposed (Gohmann & Goy, 2016) preference and brand choice are explained.

Figure 1: Behavioral Economics Model (Trademarked by Behavioral Science Lab)

Study 1

BrandEmbrace® was obtained for respondents' current primary bank and also the bank to which they were most likely to switch, regardless of their likelihood of switching. After five months, with no reference to the prior study, respondents were re-contacted and asked to indicate their most preferred bank using the brand preference methodology developed by MSW-ARS.

Loyal customers were defined as those respondents whose regular bank was the same as their most preferred bank five months earlier.

Results (Table 1), explain that loyal customers perceived a large (74 units) advantage in BrandEmbrace® for their current bank.

	Mean Difference in BrandEmbrace® Between Current and Bank to Which Most Likely to Switch
Stayed with Current Bank (Loyal Customers)	74
Switched away from Current Bank (Switchers)	23

Table 1: BrandEmbrace® difference for current bank vs bank to which most likely to switch

Study 2

Using a similar methodology to that of Study 1, BrandEmbrace® was computed on three different hair care appliance brands, "A," "B," and "C," whose summed market share accounted for the majority. Loyal customers and switchers were defined the same as in Study 1.

BrandEmbrace® was much higher for the brand to which customers were loyal than the competitive brands (Table 2). BrandEmbrace® was 25 or more units higher for the brands to which customers were loyal than the competitive brands. This study also explained why loyal customers had substantially higher BrandEmbrace® scores (Goy, 2017).

	Loyal Customer BrandEmbrace®		
Brand Evaluated	*Customer Using Brand A*	*Customer Using Brand B*	*Customer Using Brand C*
A	**71**	42	47
B	28	**92**	23
C	45	67	**81**

Table 2: BrandEmbrace® by brand usage

Study 3

Using a somewhat different methodology, we computed BrandEmbrace® for organization "A" from current members of organization "A" and from former members who had switched away from "A" to another organization.

In addition, for current "A" members we computed BrandEmbrace® for the organization to which they were most likely to switch. For members who switched away, we computed BrandEmbrace® for the organization to which they had switched from organization "A." Then we simply computed the numeric difference.

The organization with the largest relative difference (Table 3) was predictive of the likelihood of either staying with or switching to that organization. In other words, the absolute size of BrandEmbrace® was not predictive of staying or switching, but the relative difference was.

"A" Organization Membership Status	Difference in BrandEmbrace®				
	Advantage to Stay with "A"			*Advantage to Switch away from "A"*	
	41+	*21 to 40*	*0 to 20*	*21 to 40*	*41+*
Switched away	4%	7%	9%	29%	64%
Stayed with	96%	93%	91%	71%	36%

Table 3: BrandEmbrace® differences by membership status / advantage to stay vs switch

Please note that an "advantage" in BrandEmbrace® of at least 20 units was needed to see any substantial difference in the likelihood to stay or leave. Also, please note even with a large difference (41+ units) in favor of leaving, some stayers did not leave.

However, our conclusion from this and all studies with a switching component is that the decision maker selects the choice option delivering the highest relative improvement in utility, not the option with the highest absolute level of utility. Since we understood how decisions to stay or leave were being made, a remedial plan was easy to construct and implement.

Questions and Conclusions

1. Have we fully validated and operationalized utility?

Not completely, but we are extracting the basis of decision-making and building models with predictive validity to the decision-maker populations under study.

2. Have we calibrated utility, i.e., do we know how many BrandEmbrace® units of difference are required to ensure loyalty or switching?

Not entirely, but differences of 25 BrandEmbrace® units are consistently predictive of both.

3. Have we been able to "monetize" decision "styles," content and communication?

Yes, we are able to provide proactive and effective intervention strategies for brand management, product development and market communication.

The Authors

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Damage by Default: The Flaw in Pensions Auto Enrolment

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Executive Summary

Workplace pension auto enrolment means more people are saving for their retirement, and upcoming increases to minimum contributions will dramatically boost the amount being saved.

Since most employees do not actively engage with their pension savings, around £43bn will be invested each year in default funds from 2019.

But default funds cannot meet the varying needs of millions of savers, meaning £9bn (or £700 per employee) will be wasted through contribution misallocation each year.

New behavioural science research can help overcome the engagement barrier and provide recommendations for Government, pension providers and employers to reduce the waste of savings.

A flawed policy

"Automatic enrolment is a policy that works." So said the UK Government when asking employers, employee groups, pension industry professionals, financial advisers and the public to provide views and evidence on the success of the scheme to date (Department for Work and Pensions, 2017a). The Department for Work and Pensions estimates that by 2018, around 10 million out of an eligible population of 11 million people will be newly saving or saving more as a result of auto enrolment (Department for Work and Pensions, 2017a).

But while auto enrolment may have increased the number of people with a workplace pension and the amount they are saving, it risks failing to provide the best outcomes for savers because it places them in default funds. Default funds vary substantially between pension providers, so are unlikely to be appropriate for individual employees. The value of pension savings is being destroyed as a result, and the amount of money mismanaged in this way is about to increase dramatically as auto enrolment is rolled out to all employers, and minimum contributions rise.

The science of saving

Auto enrolment was introduced in 2012 in a bid to counter falling pension scheme participation. The policy requires employers to enrol employees into a workplace pension scheme and make a minimum saving each month unless they choose to opt out.

In many ways, the policy has been highly successful. From 2012 to 2016, the percentage of employees in workplace pensions increased from 47% to 68% (Office for National Statistics, 2017),

and by 2015 the total amount saved each year rose from £75bn to £82bn (Department for Work and Pensions, 2016). This increase was driven by auto enrolment.

However, auto enrolment does not solve the problem of employee disengagement. Instead, it amplifies it by enrolling the most disengaged people. More people may be saving for retirement, but they do not care any more about having a pension than they did about not having one. And they are unlikely to be getting the rate of return from their investment they could be. This is because the vast majority of savers remain in the default fund.

Wasted investment

Our research indicates that around £43bn will be invested in default funds from 2019 as more employers adopt auto enrolment and minimum contribution rates increase. But these default funds cannot adequately meet the varying needs of so many people.

Based on a study of employees' preferences for alternative funds, we estimate that around £9bn of value will be wasted each year from 2019 by the misallocation of savings. If people were to engage with their pension and choose a better fund to invest their money in, each employee could increase the value of their pension pot by an average of around £180,000.

A new kind of success

As part of its review of auto enrolment, the Government is rightly considering how to improve engagement to enable people to maximise their savings. This must include measures to encourage people to change the funds their pension is invested in. And the Government, pension providers and employers all have a role to play.

An Epidemic of Apathy: Why Auto Enrolment Is Not Enough to Solve the Savings Crisis

Pensions is not a sexy subject. Most people find the concept of saving for retirement boring and the financial jargon used to describe the different ways they could do it confusing. Behavioural science shows that, as human beings, we are hard-wired to prefer things that give us instant reward; since pensions epitomise delayed gratification, it's perhaps not surprising we don't pay more attention to them.

In 2012 less than half of UK employees had a workplace pension (Office for National Statistics, 2017). This prompted the Government to significantly reform the pension system, introducing auto enrolment as a behavioural 'nudge' to encourage greater participation, in a manner similar to the famous 'Save More Tomorrow' scheme used to increase 401(k) savings in the US. The theory behind the policy was that since people were apathetic about joining pension schemes, they would be similarly apathetic about leaving them once enrolled.

In many ways, the nudge has been highly successful. From 2012 to 2016, total workplace pension enrolment increased from 47% to 68% (Office for National Statistics, 2017), driven by a surge of auto enrolment in defined contribution (DC) pension schemes. The simultaneous introduction of minimum contribution rates (see Table 1, from The Money Advice Service, 2017) increased the total amount saved by all employees from £75bn to £82bn from 2012 to 2015 (Department for

Work and Pensions, 2016). These figures will continue to increase as auto enrolment is rolled out across the wider workforce (see Table 2 from The Department for Work and Pensions, 2012).

Date	Employee Contribution	Employer Contribution	Total Contribution
2015	1%	1%	2%
2018	3%	2%	5%
2019	5%	3%	8%

Table 1: Workplace pension minimum contributions (Source: Money Advice Service, 2017)

Employer Size	Rollout Deadline
250 or more employees	February 2014
50 to 249 employees	April 2015
30 to 49 employees	October 2015
Less than 30 employees	April 2017

Table 2: Automatic enrolment rollout deadlines (Source: Dept of Work and Pensions, 2012)

However, as the Pensions Minister has acknowledged (Department for Work and Pensions, 2017b), while auto enrolment has been a success, there is much more work to be done if it is to succeed in providing people with a financially secure retirement.

This is not least because auto enrolment, while increasing the number of savers and level of savings, does not solve the problem of low levels of engagement with pensions. Similarly, employees may interpret minimum contribution levels as a recommended rate of saving, therefore dissuading them from saving more.

Those who are automatically enrolled in a scheme are unsurprisingly less engaged than those who actively choose to have a pension. Our recent pension engagement audit of over 900 employees found that:

- 33% of those who have a pension don't know who their pension provider is;
- 80% don't know how much is in their pension pot; and
- 91% don't know what funds their pension is invested in.

Historically, employers provided defined benefit (DB) pension schemes, where employees received a fixed amount of money based on their earnings history, length of service and age. The employer was responsible for investment decisions, but the pension payments were not directly dependent on investment returns.

However, auto enrolment disproportionately places employees in DC pension schemes. This means employees are responsible for investment decisions and have to face the consequences of poor fund choice, as the level of income in retirement is dependent on investment performance

rather than being guaranteed. If employees do not choose the best fund to invest in, they are at risk of losing out on thousands of pounds in retirement.

This comes at a time when millions more employees will be auto enrolled and minimum contributions are set to rise, massively increasing the amount of money at stake. So engagement with pensions is more important than ever.

Damage by Default: Why Savers Should Be Changing Which Fund They Invest in

The Department for Work and Pensions (2016) reported that employees saved just under £82bn in 2015. From this figure, we estimate that the 38% of employees with DC pension schemes contributed around £26bn under auto enrolment in 2016.

This figure is set to rise. Given the trends in DB and DC pension scheme membership and the continuing rollout of auto enrolment we expect 48% of employees to have a DC pension by 2019. Additionally, minimum contributions are will increase substantially, from 2% to 8%. This means that over £53bn will be saved in DC pensions each year from 2019, when enrolment and contributions have reached their peak[1].

	2016	Our Prediction 2019
Employees with DC pensions (% of workforce)	38%	48%
Estimate of amount saved in DC pensions	£26.2bn	£53.5bn
Estimate of amount saved in DC pension default funds	£21.1bn	£43.0bn

Table 3: Our estimation of default fund growth

Our research suggests that 8.5 million of the 11 million people enrolled in these schemes are not managing their pension, so it's likely that around £43bn will be thoughtlessly invested in 'one-size-fits-all' default funds each year from 2019 onwards (see Table 3[2]).

This is a huge problem. All pension professionals would agree that no single fund can meet the needs of over 8 million people. Funds take on different levels of risk, vary in asset allocations and geographies, and can be either actively or passively managed – all of which affects the return on investment. No fund can be all things to all people. But just how much damage is being done to employees who leave their pension savings in default funds?

The cost of apathy

To answer that question, we provided employees with the opportunity to choose their own fund from various risk levels. As they explored their options, we showed them the distribution of annual retirement incomes they could expect to receive if they used their pension pot to purchase an annuity upon retirement.

[1] See our Technical Appendix for details of prediction and other calculations. Available at: http://www.dectech.co.uk/behavioural_science/briefs/dectech_damage_by_default.pdf.

[2] The 38% figure of employees were enrolled in DC or Group Personal/Group Stakeholder pension schemes in 2016 is from the Office for National Statistics Survey of Hours and Earnings Pension Tables (2017).

If a typical employee, earning around £22,000 annually and contributing 8% to their pension for 40 years, chose an amount of risk similar to that of an average default fund, they could expect an annual income of around £11,700 when they retire[3]. In a sustained bull market their income could be as much as £29,320, but if conditions are poor it could be as little as £3,900 (see Table 4). In general, taking more risk results in higher returns, but it can result in lower returns in bear markets; lower risk shields investors from economic downturns.

	Market Conditions		
Fund	Bear	Average	Bull
Average Default Fund	£3,900	£11,704	£29,321
20% Less Risk	£3,865	£9,081	£18,854
20% More Risk	£3,775	£15,107	£45,429

Table 4: Expected return from various funds in different market conditions

Overall, we found that employees preferred funds with a higher level of risk than is achieved by the average default fund (see Figure 1). This means pension providers should increase the risk profile of their default fund in order to meet the risk appetite of the greatest number of employees.

Figure 1: Riskiness of self-made funds

[3] Our typical employee is 25 years old, earning £21,000 before tax, with an 8% pension contribution, retiring at 65, and expecting to receive an annuity for 20 years.

However, it is still crucial that employees are engaged with their workplace pensions. Although employees prefer riskier funds in general, we observe a considerable amount of variation in fund preference. This means it is highly unlikely that employees are investing in the right fund, unless they have actively engaged with their pension.

Furthermore, default funds are far from standardised, but vary substantially across the nine major UK pension providers. Their default funds vary in terms of number of asset classes (ranging from five to twenty), the percentage held in equities (as low as 35% to as much as 85%), and management style (active versus passive) (Aspire Punter Southall, 2016). Employees do not have control over the pension provider their employer chooses, so cannot be sure if the default fund is suitable until they have personally engaged.

This matters, because a relatively small change in risk can result in a dramatic change in pension returns over the long term. Comparing the average self-chosen fund against the average default fund, we found that the self-chosen funds increase expected retirement income by +£4,544 (see Table 5). That's an improvement of 39%.

	Market Conditions		
Fund	Bear	Average	Bull
Average Default Fund	£3,900	£11,704	£29,321
Self-Chosen Fund	£3,710	£16,248	£59,649
Difference	-£190	+£4,544	+£30,328

Table 5: Expected return from default and self-made funds in different market conditions

This additional income has been generated by taking more risk, but even after converting the default fund and self-chosen fund performance into risk equivalent outcomes, the self-chosen fund is still 29% more valuable than the default fund.

Almost a third of the money that's being paid into default funds by young early career employees is being wasted. The amount of value destruction decreases as people get older and closer to retirement, because there is less time for mismanagement to erode the pension pot's value. Overall, for an average employee the value destruction is around 20%. This suggests that of the £43bn that will be invested in default funds each year from 2019 onwards around £9bn, or £700 per employee, will be wasted.

Put another way, by failing to properly engage with their pension employees are likely to retire with a much smaller pension pot than they could have. For example, an employee auto enrolled into a default fund aged 21 in 2020 and saving 8% of their salary could end up with about £180,000

less in their pension pot upon retirement than someone in a similar position who engaged with their pension and chose an appropriate fund[4].

Urgent action is needed. While many people will spend hours on price comparison websites looking for the best energy supplier to save £240 a year, few spend time reviewing their investments – and yet they could save around £700 a year that is currently being wasted in their workplace pension. This discrepancy needs to be addressed.

Smarter Savings: How to Get More out of Auto Enrolment

Despite the success of auto enrolment in increasing the number of people contributing to a workplace pension, as it stands it will not be enough to give most people sufficient savings to effectively replace income upon retirement. So, it is critical that employees engage with their pension and select a more appropriate fund than the default to invest their money in.

But fewer than 10% of the people we contacted knew what their pension pot was invested in. Of the 80% whose money was in default funds, only 4% had tried to change the fund they invest in. Clearly, the lack of engagement that prompted the Government to introduce auto enrolment five years ago remains the biggest barrier to overcome if we are to encourage adequate pension saving.

Behavioural science provides a number of reasons for low levels of engagement with pensions:

- The benefits of pensions are only realised in the distant future at the point of retirement, which undermines the relevancy of any action individuals take and helps them justify procrastination.
- Psychological inertia leads people to avoid decisions they expect to be difficult, causing employees to ignore or postpone any choices related to pensions again and again.
- Employees may perceive default funds to be a recommendation from their employer, pension provider and/or the Government, and therefore believe the default fund is the best place for their savings so there is no need for further engagement with their pension.

Behavioural science can also help overcome these barriers. As part of our pension engagement audit we found that employees are significantly more likely to engage with their pension and switch out of the default fund if they can clearly see the value of doing so. Similarly, making the switching process as easy as possible increases the likelihood of employee engagement. These results, and our expertise in behavioural science, form our recommendations to the Government, pension providers, and employers:

The Government should:

1. Communicate how much money employees are throwing away each day by remaining disengaged with their auto enrolment pension. This will appeal to people's aversion to loss and give the issue a sense of immediacy and relevance.

[4] Our calculation is based on a 21 year old working for 47 years with a starting salary of £20,044, with 8% contribution, 1% salary growth, fund return of 7.5% and fund management charge of 0.15%. Self-chosen fund assumed to provide returns of 8.33%.

2. Emphasise that default funds are not recommendations and better options may be available, to reduce people's complacency.
3. Invest in financial education to undermine psychological inertia, so employees are more familiar with financial concepts and terminology and therefore better equipped to make investment decisions.

Pension providers should:

1. Identify employees who have not accessed their pension accounts or made an active choice about where to invest and send tailored communications to help them understand how much they stand to lose by remaining in the default fund.
2. Improve their website design to make it easy for employees to compare between the fund they are currently investing in and the other options available, with information on rates of return, management fees and risk level etc. But avoid presenting too many funds, to prevent choice overload.
3. Ensure information on their websites is simple and understandable, without jargon, so it is as easy as possible for employees to make investment decisions. Even minor inconveniences can quickly derail decision making.

Employers should:

1. Select pension providers whose default fund best suits the needs of their employees, in case they do not engage, and adapts to employees' life stage.
2. Provide clear guidance for employees about how to create accounts with pension providers, and ensure information on the issues to consider when deciding how to invest their pension savings is readily available.
3. Prompt employees to review their pension on an annual basis and to consider whether their investment funds are meeting their needs.

The Government, pension providers and employers all have a moral responsibility to ensure employees get a good deal from workplace pensions. Clearly there will be a cost associated with improving customer engagement, but it is a cost that is well worth paying. However, some costs can also be offset.

For Government, given increased engagement will reduce the £9bn we predict will be wasted each year from 2019 and increase the average pension pot by £180,000, there will be future savings in social care and other public services as people will have higher incomes in retirement. Pension providers will have the opportunity to promote specialist funds with higher fees as engagement increases, as well as improving their brand reputation through increased customer communication and a smoother online pension management process. And employers can reduce staff turnover and save on recruitment costs by demonstrating they care about the future welfare of their staff and will help them make the most of their pension savings.

Increasing the number of people with a workplace pension and the amount they are saving is a significant success story. But unless engagement is improved and people maximise their savings by investing in the best funds available, auto enrolment will prove little more than a footnote in the story of the UK's retirement finance crisis.

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Cognitive Collaboration: What Data Science Can Learn from Psychology

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We live in an age marked by two revolutions that – on the surface – seem to have little to do with one another. First, there is the "big data" revolution. This is often framed in terms of technological advances: database and parallel processing capabilities, physical devices connected through the internet of things, and artificial intelligence technologies promising to reshape societal and business landscapes. To take but one example, there now exist machine learning algorithms capable of outperforming human experts at identifying dog breeds (He, Zhang, Ren, & Sun, 2015). It is reasonable to expect that similar pattern recognition technologies could someday impact jobs ranging from insurance claims adjuster to radiologist.

Second, and perhaps more familiar to readers of this journal, are the advances in cognitive and social psychology associated with the work of Daniel Kahneman and Amos Tversky. Many believe this work has revolutionized large parts of psychology, and has had comparably profound effects on such neighboring disciplines as economics, law, medicine, HR, and regulation. This work illuminates the systematic nature of the cognitive and behavioral quirks that we all experience but might otherwise brush off as what Richard Thaler called "dumb stuff people do" (Thaler, 2015). Many routinely put off until "tomorrow" important savings and investment decisions in favor of short-term pleasures, let emotional and narrative factors cloud judgments and decisions, and let "social proof" guide behaviors to a surprising extent. As Thaler documents in *Misbehaving*, these discoveries enabled the creation of behavioral economics.

More recently it has given rise to the practical toolkit known as "choice architecture," established as a discipline by Thaler and Cass Sunstein in their influential book *Nudge* (Thaler & Sunstein, 2008). Their seemingly key insight is that we can help prompt desirable behavior change by cleverly designing choice environments to comport with human psychology. If complex language and hassle factors lead people to put off important decisions, we can test the effects of simplifying the language and defaulting them into the options (while enabling them to opt out) they would chose if they had unlimited willpower and computational resources. If people have a hard time sticking to diet and exercise resolutions or complying with their medical treatments, we can test the efficacy of commitment devices or habit-formation techniques.

How do the two revolutions – one technological, the other psychological – relate to one another? It turns out that many important connections could exist. We will sketch one of them below.

Playing Moneyball

While data science and AI are typically – and increasingly – discussed in technological terms, we believe the discipline may be best viewed through the lens of human psychology. This perspective is partially born of personal experience. One of us works in a data science practice that pioneered the design of predictive algorithms to help insurance company underwriters more accurately and efficiently select and price complex commercial insurance risks. Good data scientists that we are, we tested every innovative data source and statistical learning method we could get our hands on. But we were also surprised – and from a data science perspective, disappointed! – by the sheer amount of "low hanging fruit" exhibited in the data. It was clear to us that most insurers were not consistently accounting for such obviously important risk factors as prior claim frequency, the size and complexity of the business seeking insurance, and the number of years since the business changed ownership.

While we were surprised that such obvious risk factors were typically not already reflected in the prices of commercial insurance contracts, we instinctively knew that this was likely because the market for commercial insurance contracts was not efficient. But this instinctive observation begged the obvious question: *Why?* The answer is similar to the point that Cass Sunstein and Richard Thaler made in their review of Michael Lewis' book *Moneyball* (Thaler & Sunstein, 2003). The Oakland A's manager Billy Beane was able to elevate his cash-poor team in the national rankings after he started instructing his scouts to use data, rather than unaided professional intuitions, to select baseball players. Had the market for baseball talent been efficient, Beane's strategy would have been ineffective: the price of the "assets" (the players' salaries) would have already reflected the publicly available information (sabermetric baseball stats) about them. Similarly with our data-driven underwriting approach.

The reason why our data-driven approach to underwriting and Beane's data-driven approach to baseball scouting paid off so well likely had less to do with the technical niceties of our data analyses, and more to do with the fact that commercial insurance underwriters and baseball scouts traditionally relied on systematically biased mental heuristics ("rules of thumb") to make decisions. While such heuristics are usually extraordinarily useful at guiding us through most of the hundreds of decisions we must make more or less automatically every day, it turns out they are often terrible at statistics. For example, as Daniel Kahneman explains in *Thinking, Fast and Slow,* we overgeneralize from small amounts of data, detect patterns and infer causality where none exist, and confuse the ease with which a scenario comes to mind with its probability (Kahneman, 2011a). To compound the problem, we can be overconfident in the quality of our judgments and decisions – meaning that we can be blind to the shortcomings of our "thinking fast" judgments even after they have been pointed out to us!

We see these phenomena everywhere, for example:

- In HR settings, unstructured job interviews can be notoriously poor guides to selecting the right employees. Decisions are often influenced by emotional factors and small numbers of salient traits that happen to stand out during interviews (Bock, 2015; Guszcza, Bersin, & Schwartz, 2016).

- Supply chain professionals are likely to overreact when a small probability of an inventory shortage emerges and under-buy in the face of high probability threats (Cotteleer, Ibanez, & Gibbons, 2014).
- Parole decisions appear to be heavily influenced by the time of day they were reviewed (The Economist, 2011).
- The chief of medicine at Chicago's Cook County Hospital demonstrated that a simple decision tree algorithm combining familiar symptoms enabled emergency room physicians to turn away a greater percentage of false positive patients complaining of chest pain, with no loss of patient safety (Gladwell, 2005).

An often unstated dogma of big data is that the economic value of data is proportionate to "the 3 V's": its volume, velocity, and variety. But *Moneyball*, and our own experience, have taught us that the value of data science is often proportional to the degree to which existing decision processes are affected by the bias and noise characteristic of System 1 "thinking fast."

Extending Human Intelligence

None of this is to suggest that big data – in the "3V" sense – is unimportant. To the contrary, the Artificial Intelligence renaissance that has gained momentum since the 2011 triumph of IBM Watson on the television game show *Jeopardy!* is largely a story of big data. Watson, an information retrieval system, was able to triumph because much of human knowledge is now electronically recorded. Similarly, algorithms are now able to recognize faces in photographs or tumors in x-rays, interpret human speech, translate documents, and drive automobiles. When thinking about such seemingly miraculous advances, "follow the data" can be a useful heuristic: in each case, the classes of algorithms used, most notably deep learning neural networks, have been around for decades. What is new is the availability of web-scale datasets to train them on.

Perhaps, then, our *Moneyball*-informed discussion of algorithms as tools for overcoming System 1 decision traps is outmoded? Isn't the whole point of AI that computers can increasingly outthink humans? This certainly seems to be the implication of the widely publicized triumphs of IBM Deep Blue, IBM Watson, and AlphaGo in chess (1997), Jeopardy (2011), and Go (2016) respectively. And Indeed a World Economic Forum report suggests that millions of jobs will be replaced by AI over the next four years (World Economic Forum, 2016). Some authors even go so far to suggest the medium-term occurrence of a technological "singularity," at which time emerges a form of artificial "superintelligence," capable of generally out-thinking humans (Bostrom, 2014). From this perspective, data science seems less about de-biasing human decisions than *replacing* human decision-makers with algorithms.

While the pace of automation may continue to accelerate, and the economic and societal consequences could surely be profound, the AI renaissance can ultimately extend – rather than upend – the logic of *Moneyball*. While it is striking that algorithms trained on "big data" can outperform humans at a variety of tasks, the phenomenon is not new. Decades before *Moneyball*, credit scoring algorithms trained on the "big data" of their day – individual level purchase and bill-paying behavioral data – eliminated the need for large cadres of bank loan officers to make routing lending decisions. But for more complex banking decisions, algorithms can serve as inputs into – not replacements for – human decision-making. Similarly with the commercial insurance underwriting models described above: many companies use such algorithms to automate routine

underwriting decisions in order that expert underwriters can spend more time on trickier cases. Algorithms can replace humans at the simple tasks, and help them with the more complex tasks (Guszcza, Lewis, & Evans-Greenwood, 2017).

Discussions of cognitive psychology, behavioral economics, and data science tend to focus on the "glass is half empty" aspect of the story: algorithms don't suffer from bounded rationality, cognitive biases, or simple fatigue. But the glass is also half full: humans are also good at things that algorithms are poor at. Humans – even human babies – excel at commonsense reasoning, can form smart hypotheses about the causal process behind appearances, and are capable of empathy and ethical reasoning.[1] Therefore humans and computer intelligence should be viewed as complements, not substitutes. Perhaps "cognitive collaboration" is a more useful tagline than "artificial intelligence" for the emerging relationship between humans and computers.

The prequel to the current AI renaissance – the 1997 defeat of IBM Deep Blue over the chess grandmaster Garry Kasparov – offers a glimpse into the likely surprising possibilities offered by human-computer cognitive collaboration. At first, the story seemed like an instance of today's "technological singularity" narrative: a major newsmagazine made it the cover story entitled, "The brain's last stand." Eight years later, it became clear that the story is considerably more interesting than "machine vanquishes man." A competition called "freestyle chess" was held, allowing any combination of human and computer chess players to compete. The competition resulted in an upset victory that Kasparov later reflected upon:

> The surprise came at the conclusion of the event. The winner was revealed to be not a grandmaster with a state-of-the-art PC but a pair of amateur American chess players using three computers at the same time. Their skill at manipulating and "coaching" their computers to look very deeply into positions effectively counteracted the superior chess understanding of their grandmaster opponents and the greater computational power of other participants (Kasparov, 2010).[2]

He goes on to state what has come to be known as "Kasparov's Law":

> *Weak human + machine + better process is superior to a strong human + machine + inferior process.*

The general implication is that there must be more to AI than automating simple decisions that are performed in stable environments, and associated with suitably complete datasets. In more complex or ethically or emotionally fraught situations, insight into *both* data science *and* human psychology may be necessary to design human-computer collaboration environments. Once again, this chimes with our personal experience: the underwriter companies in the above-

[1] In her edge.org essay "Can machines ever be as smart as three year-olds?" the distinguished cognitive scientist and philosopher Alison Gopnik states that, "One of the fascinating things about the search for AI is that it's been so hard to predict which parts would be easy or hard. At first, we thought that the quintessential preoccupations of the officially smart few, like playing chess or proving theorems—the corridas of nerd machismo—would prove to be hardest for computers. In fact, they turn out to be easy. Things every dummy can do, like recognizing objects or picking them up, are much harder. And it turns out to be much easier to simulate the reasoning of a highly trained adult expert than to mimic the ordinary learning of every baby." This point is sometimes called Moravec's Paradox after Hans Moravec, who wrote in his book *Mind Children* (1990): "It is comparatively easy to make computers exhibit adult-level performance on intelligence tests or playing checkers, and difficult or impossible to give them the skills of a one-year-old when it comes to perception and mobility."

[2] Kasparov extends his discussion in his new book *Deep Thinking*.

mentioned application would not have used our algorithms had they not been complemented with suitable training, documentation of the relevant assumptions and limitations, and "hints" (such as reason messages) indicating *why*, on a case by case basis, the algorithm makes the indication that it does. Simple decisions can be automated *by* algorithms; trickier decisions can be augmented *with* algorithms. Designing the human-computer collaborations process should be part and parcel of effective data science.

A Better Process

Recall that Daniel Kahneman speaks not only of the flaws, but also the "marvels" of intuitive thinking (Kahneman, 2011b). Algorithmic decision-making has a much different set of marvels and flaws. While computers can run circles around human judgment when it comes to consistency, statistical coherence, and brute-force data-crunching power, AI algorithms are only as good as the data they are trained on. Consider that:

- Algorithms do not possess the commonsense reasoning or causal understanding needed to critique the case-specific completeness or accuracy of the data being used to generate an estimate or prediction (Guszcza & Maddirala, 2016).
- While algorithms can reduce bias and noise affecting fraught decisions in areas such as hiring, jurisprudence, and medicine, the view that algorithms are "fair" simply because they are based on hard data seems to be giving way to a more realistic view. If the data contains biases, the algorithms trained on them would reflect these biases. And indeed unchecked use of these algorithms could potentially amplify these biases. Moral reasoning should serve as a check on algorithms, not something algorithms do an end-run around.
- Algorithms can help human professionals personalize services in fields ranging from teaching to sales to health care. In such domains, empathy and emotional connection are inherent to the service being provided. Algorithms can facilitate – but in general not replace – emotionally intelligent service.

For these reasons – and many others (Guszcza, 2015) – data science, cognitive science, and behavioral science will likely come to be viewed as mutually reinforcing sub-disciplines of the greater practice of using data and algorithms to streamline processes and improve decision-making. Yes, many tasks could continue to be automated. But many others might be transformed by human-computer collaboration environments that are informed by both data science and human psychology.

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The Behavioral Change Matrix: A Tool for Evidence-Based Policy Making

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Carefully designed public interventions can reshape communities by encouraging people to behave in ways that are beneficial for the society or the organization they belong to. The ultimate effectiveness of such interventions relies on thorough understanding of the forces that shape behaviors. A multitude of measures can be used to change people's behavior: monetary incentives, fines, legal punishment, educational measures, and the recently popularized "nudges" serve as examples. While all of these measures (and more) can be effective, their relative effectiveness strongly depends on specific contexts, social norms, and individual characteristics of the targeted population. Drawing on the newest research in behavioral economics, the BEA™ Behavioral Change Matrix[1] is a powerful tool for analyzing policy issues and determining the best solutions to the problem at hand.

Two Deciding Drivers of Behavioral Change

Empirical research has shown that contributions to the public good depend on two conditions: *awareness* of a social norm to contribute and the consequences of not following the norm, and the *willingness* to contribute to and thereby follow said norm. These two deciding factors are explained in-depth next.

Awareness

Awareness, or knowledge of the effects one's behavior has on other people, can have a major impact on one's decisions, but empirical evidence indicates that people often have little or no knowledge of how their behavior influences other people and society, whether in positive or negative ways. Until quite recently for example, many smokers severely underestimated the damage they cause to the health of people near them. In addition, it is often not understood that one's behavior also affects the behavior of other people. Individuals might not realize, for instance, that by littering in a park, they encourage other people to follow their example, or that by not paying taxes they further discourage others from paying theirs.

Even if people are generally aware of the negative consequences of their behavior, they do not always take this awareness into account. A car driver might know that speeding endangers both him and the people around him in traffic for instance, but fail to act accordingly when he is late for an important meeting with a prospective employer. Most people might be aware that

[1] The BEA™ Behavioral Change Matrix was developed by Prof. Ernst Fehr of University of Zurich and Gerhard Fehr. It is open for public use under the condition that it is cited as "Behavioral Change Matrix by FehrAdvice."

protection is vital in spontaneous sexual encounters, but forget this knowledge in the heat of the moment. These mismatches of general awareness and situational remembrance have been labeled *"blind spots"* by Bazerman (2011). The cause for these blind spots can be traced back to the mind's two modes of thinking: the intuitive, fast, and impulsive System 1 and the slow, rational, and deliberate System 2, as defined by Nobel Prize winner Daniel Kahneman (2011). People evaluate actions and their consequences thoroughly only when they are in the System 2, the *"cold state"* – something that doesn't happen very often. In most situations, people are in their System 1 or "hot state", in which they rely on simple heuristics and emotions and in which they are prone to forgetting important facts.

Willingness to contribute

Awareness alone is not sufficient to motivate behavior. Even after the health hazards of second-hand smoking had been demonstrated in a multitude of studies, many smokers nevertheless stuck to their public smoking habits, demonstrating an unwillingness to change their behavior. In addition to awareness of the negative consequences of one's behavior, one must be willing to change this behavior accordingly. Willingness, an intention and ability to contribute to societal or organizational goals, is influenced by five main factors: Social norms, burdens, fairness perceptions, economic costs and behavioral preferences.

Social Norms and the Costs of Not Following Them

Beliefs shared by a group or society inform *social norms*, expectations of how the majority of a group would behave in a given situation. Social norm expectation is central to the topic of willingness, as research has shown that people's willingness to contribute is dependent on their belief of how relevant a certain norm is for other people (Krupka & Weber, 2013). The more we think other people behave norm-compliantly, the more we are willing to comply ourselves. The inverse is also true. If, for example, we expect many people to dodge paying a parking fee, we feel much less motivated to pay the fees ourselves than we would if we expected most others to pay. The more people rely on the intuitive System 1 to make decisions, the more they tend to comply with what they believe to be the social norm. Norm-compliance can be increased by a large degree if the possibility to punish those who continue to be non-compliant through *"peer punishment"* exists (Fehr & Gächter, 2002).

This tendency to comply with social norms can help explain why issues such as littering are bigger problems in some contexts than others. In situations where littering is perceived as normal (at a music festival for instance), people are more likely to litter than they otherwise would be because they feel little or none of the otherwise-present anti-littering social pressure. It is important to note that the same person might show very different behavior and follow different social norms depending on the situation they are in. Reigning social norms differ strongly when a teenager is with his friends than when he visits his grandparents, for example (see also: Akerlof & Kranton, 2000).

Burdens and Fairness Perceptions: Psychological Costs

The more burdensome an action is perceived to be, the less people are willing to partake in it. If donating money to a charity includes filling in an annoyingly long form, the form acts to discourage donations. The efforts involved in completing a task are not the only relevant psychological costs, however. Fehr and Schmidt (1999) showed the importance of perceived fairness on behavior. When people feel treated unfairly, they are much more likely to show non-norm-compliant behavior. Fees charged on packaging, meant to reduce litter, can be perceived by consumers as unfair, and serve to spur (not discourage) a littering tendency.

Economic Costs

Economic costs are monetary incentives or punishments for a certain behavior. While they have the power to strongly motivate behavior, research indicates that economic costs are only properly taken into account when people are in the slow and thorough thinking mode of System 2. Due to the fact that many decisions are made in the fast System 1, where people rely more on past experience, habits and norms than a rational analysis of costs, economic costs do not always result in the expected changes in behavior.

BEA^{TM} Preferences

The BEA^{TM} Preferences explain why and how individual people weigh and integrate the abovementioned social, psychological and economic costs in different ways. The BEA^{TM} Preferences include the classic economic preferences for time, patience and risk. Social preferences for positive and negative reciprocity, trust, and altruism are added to the model to form a comprehensive picture of individual behavioral characteristics. While people develop a foundation of these preferences in their early stages of childhood, BEA^{TM} preferences have shown to differ and be manipulable within various different situations and contexts.

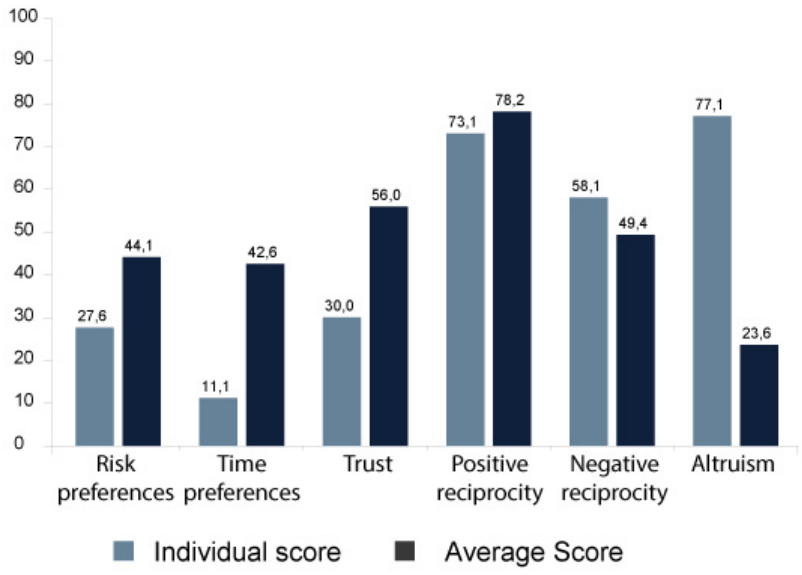

Figure 1: An example comparison between an individual's BEA^{TM} Preferences and those of a population

BEA™ Behavioral Change Matrix

The BEA™ Behavioral Change Matrix developed by FehrAdvice & Partners AG integrates the research insights summarized above in a clear framework (see Figure 2). Taking both awareness and willingness into account, it allows for the identification of measures most likely effective to achieving behavioral change, while also predicting the amount of time necessary to achieve the change goal.

A variety of high-level measures can be used to bring about behavioral changes. The following six approaches are typical measures to strengthen the dimensions of awareness and willingness. Their suitability in individual cases is dependent on the issue at hand and the location it is placed in the matrix. This will be discussed in more detail below.

Communication and education: Strengthens **awareness** of the issue and its negative effects on society.

Negative incentives and control: Increases **willingness** to show the desired behavior by sanctioning its undesired counterpart.

Positive incentives and enabler: Enables and increases **willingness** to show the desired behavior by rewarding it.

Belief Management: Promotes the forming of a desired norm and thereby increases **willingness**.

Preference Management: Influences the building of preferences to positively affect both **awareness** and **willingness**.

Attention Shifting: Aims to steer behavior in the desired direction - often subliminally - and so influence **willingness**.

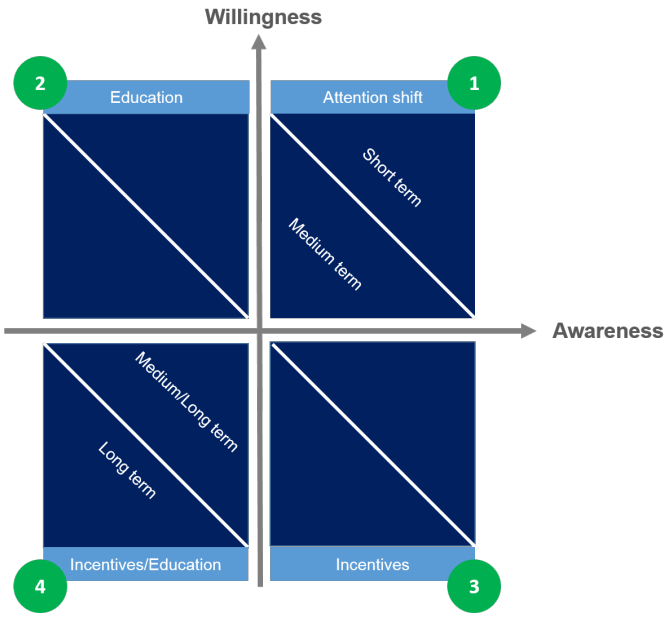

Figure 2: BEA™ Behavioral Change Matrix

*Quadrant 1: **Shift attention** when both awareness and willingness are high*

The first quadrant describes contexts in which people are aware of the consequences of their behavior as well as willing to act responsibly. A lack of norm-compliant behavior in spite of these attitudes is likely to stem from a temporary lack of awareness in certain contexts and situations. The main measure to address issues in this quadrant is *"attention shifting"*, pushing people in a certain direction in the decision moment. Short term nudges include drawing footsteps that lead to trash bins, whereas measures like commitment devices encourage long term adherence to behaviors, especially those that individuals have shown likely to defect from. *"Nudges"* do not transform people; rather they provide cues to affect behavioral change given certain circumstances. They are low cost, generally easy to apply and can achieve results in a short time.

*Quadrant 2: **Educate and communicate** when willingness is high but awareness is* low

In comparison to Quadrant 1, situations that fit into Quadrant 2 exist not because of unwillingness, but because of unawareness of actions' negative consequences. Therefore, problems can best be solved by improving individuals' awareness of actions' consequences. Educational measures and improved communication to increase awareness are therefore the tools of choice. A typical example is the aforementioned education of people on the dangers of second-hand smoking. Depending on the nature of the topic, results for interventions in Quadrant 2 can be expected in the medium or long term.

*Quadrant 3: **Use incentives and punishment** when awareness is high but willingness is low*

In contexts of the third quadrant, people show high awareness of the problem, but are unwilling to change their behavior accordingly. Incentives (positive or negative) and belief management are best implemented to resolve these issues. Examples include offering amnesty for tax violators, or a zero tolerance policy against littering (e.g. in Singapore).

*Quadrant 4: **Educate and create incentives** when both awareness and willingness are low*

The fourth quadrant consists of contexts in which people are neither aware of the consequences of their actions nor willing to modify their behavior. As this necessitates increasing both awareness and willingness, the desired behavioral changes are only achievable in the medium to long term utilizing the full BEA^{TM} Behavioral Change Toolbox.

Case Studies

A civic responsibility project in the Middle East

In 2011, FehrAdvice & Partners AG and the University of Zurich used the BEA^{TM} Behavioral Change Matrix to analyze civic responsibility topics and formulate recommendations for policy interventions in a small Middle Eastern country. A multitude of civic responsibility issues, e.g. "Low adherence of traffic rules", and "Queue Jumping" were identified and positioned in the BEA^{TM} Behavioral Change Matrix using an experimental assessment. Policy recommendations were formulated on the basis of the abovementioned framework. "Queue Jumping" was identified to be a Quadrant 2 issue: people were willing to comply but not sufficiently aware of the consequences of their behavior. A communication campaign highlighting how other people

are harmed by queue-jumpers was recommended. In contrast, "Low adherence to traffic rules" was positioned in Quadrant 3, as people expressed that they were unwilling to comply with traffic rules despite being highly aware of the dangers involved in such breaking. Fortifying the punishment system by accelerating the fine-paying process and closing administrative loopholes to avoid paying the fines were identified as the most effective measures to combat the problem.

A study on littering in Switzerland

In a large online experimental study with more than 15,000 participants in 2013, FehrAdvice & Partners AG used the BEA™ Behavioral Change Matrix to analyze littering behavior in Switzerland. Although the results showed a strong general social norm to not litter in Switzerland, the study uncovered significant differences depending on context, age groups and litter object. For example, whereas "littering of a bottle" was located in Quadrant 1 and can be easily addressed via attention shifting, "littering of cigarettes" activates a much smaller willingness to avoid littering. This difference becomes even more accentuated when taking age into account: young people's awareness and willingness to dispose of cigarette butts in an ashtray rather than on the ground is much lower than that of their older counterparts. The conclusion that littering is a problem of youth, however, would be incorrect. Young people might not consider littering when they are in the vicinity of their parents. Only In the context of an evening gathering with friends in the park, however, where littering suddenly becomes the social norm, their behavior has a strong tendency to change for the worse. Based on the study's results, it is clear that to be effective, policy measures must address the specific contexts in which littering is happening and that an all for one approach cannot bring about the desired results. On the contrary, implementing new general punishment measures like littering taxes could further aggravate the existing problem by undermining the strong social norm against littering that is already in place.

A methodology for compliance management

The BEA™ Behavioral Change Matrix is not only useful in the context of public intervention but also in a business context, most notably in the topic of employee compliance. Awareness of company norms and the consequences of following or violating them on the one hand, and the willingness to comply on the other hand, are of vital importance to understanding employee compliance. The BEA™ Behavioral Change Matrix enables a company to assess differences in compliance with a variety of norms between departments, teams, and hierarchy levels to formulate tailored measures.

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Banking on Behavioural Change

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Introduction

Self-directed behaviour change is hard. Anyone who has let a diet slip, a new year's resolution slide, or even just felt uncomfortable during an organisational shift will not need convincing of that. The same is true for attempting to change behaviour to achieve financial goals, evidenced by the low level of financial capability around the world. The myriad decisions made throughout a year, day, minute all add up, with consequences that can last a lifetime.

With so many people struggling financially, identifying the limitations people face when trying to improve their financial position should be a core research imperative for any financial institution.

In the following paper we make the case for how financial institutions can support people to make smarter financial decisions, why this is so crucial (low levels of financial capability), and highlight where we have seen concepts from behavioural science manifest in financial decision making across 15 countries over the past several years.

'Smarter' Financial Decisions

Much discussion about behaviour change is focused on the individual and implies individuals have the greatest responsibility for making changes that improve their wellbeing. Undoubtedly, personal responsibility plays a role. However, there is a strong argument that the way financial institutions treat their customers – the behaviour of banks, insurance companies, and consumer lending organisations – also needs to change.

Products and services must be designed so people do not choose products that carry risks that are inappropriate for them. This requires more than nudging people in the 'right' direction. It involves better communication of the risks involved and commitments made when taking out a loan, making an investment or buying protection (i.e. insurance) against unfortunate developments.

Financial institutions should not use information asymmetry to their advantage and must avoid practices that exploit the behavioural challenges their customers face. Knowledge of human behaviour was often used to exploitative effect in the past. Too many have considered sharp practices to be good business. But this also led to the mis-selling scandals. These continue to cost the industry dearly[1] and reduce trust in banks and other financial institutions.

[1] The most costly financial mis-selling scandal is probably around Payment Protection Insurance (PPI), which has been estimated to have cost UK banks over £26 billion in compensation payments http://www.financial-ombudsman.org.uk/publications/pdf/Impact-of-PPI-mis-selling-report.pdf.

Regulators are now far more aware of this than in the past and are actively monitoring financial institutions, and enforcing improved behaviour (Erta et al., 2013). Although arguably slow to change (see next article) the culture of many companies has now shifted – and some are using behavioural approaches to the benefit rather than the detriment of their customers.

A typical approach to improving behaviour involves designing products or information to nudge people towards a particular decision. However, this can be problematic when it comes to personal finance because many people (55%) do not have specific financial goals (Motivaction, 2016).

Nevertheless, people do exhibit a clear sense of personal responsibility for their financial decisions. When asked in a 2014 survey to complete the statement "the primary responsibility for my financial decisions lies with ….", 73% indicated themselves (ING, 2014c).

Consider the combined effects of the absence of financial goals, the recognition of personal responsibility and the fragile financial positions of many people. It seems clear that financial products should be designed to help people avoid making mistakes.

Borrowing from medicine's Hippocratic ideals, "do no harm" may be more important than "make me rich". Contrary to what's implied by many mainstream economic models of household and consumer behaviour, optimisation of saving, spending and wealth accumulation is not the main objective for many people. Simply staying out of financial difficulty can be more pressing – and relevant. It can be argued that reducing financial distress frees up the potential for people to initiate change and thrive in other areas of their lives (Spencer, 2016).

Additionally, it is difficult to define nudges and default options that are legitimately working towards people's long-term preferences, given the widespread lack of explicit financial goals. Moreover, what might be the 'right' financial activity for the situation of one person might not be right for another. So a more universal and long-term approach to improving financial wellbeing isn't necessarily about encouraging people to do 'x' or 'y', but about helping people with their own decision making strategies, giving them the opportunity to make smarter financial decisions.

Even when one identifies a given target behaviour which could be encouraged via a nudge, an issue persists: the person being nudged is being acted upon, rather than actively choosing to take one decision over another. This might be appropriate in some contexts but inadequate in others. A complementary and potentially more valuable approach would be to engage people with their own decision making strategies that help them align their behaviour with own goals and desires.

Financial institutions should go beyond asking how products and services could help people or what strategies would encourage people to make better decisions. They should also ask when it is better to outsource decisions (to well-crafted nudges, experts, or AI, for example) and when is it better to let people make their own decisions, while providing opportunities for deeper reflection or deliberation.

Given the context of people having more, and more complex, financial decisions to make, genuinely helping people to make 'smarter' decisions may mean starting with the approaches we outline above.

Financial Capability

Low financial capability has been recognised as a pervasive problem, and many people's financial situations are fragile (OECD, 2015). When asked if they have any available savings, around three in ten people across Europe replied that they have none – and this finding has been consistent for a number of years (ING, 2013, 2014, 2015, 2016, 2017; see Figure 1[2]).

Variations exist between countries, but even in Germany, often thought of as a nation of savers, the difference from the European average is not great. These findings show that financial fragility is widespread – prevalent not just among those who are living in poverty or in a developing country.

Of those who do have savings, about a third have less than the equivalent of three months of take-home pay available (ING, 2017). Personal-finance specialists typically recommend that consumers have at least this amount saved and to hand as a financial safety net.

Percent of respondents indicating they do not have any readily available savings

	2013	2014	2015	2016	2017
European consumer	30%	32%	35%	35%	28%
Austria	21%	23%	30%	29%	24%
Belgium	28%	30%	28%	29%	22%
Czech Republic	33%	28%	35%	30%	26%
France	24%	26%	34%	28%	23%
Germany	30%	30%	33%	32%	32%
Italy	26%	33%	36%	35%	26%
Luxembourg	11%	15%	20%	13%	12%
Netherlands	19%	19%	19%	21%	23%
Poland	28%	39%	42%	47%	27%
Romania	48%	48%	54%	56%	42%
Spain	29%	31%	39%	34%	25%
Turkey	39%	40%	44%	45%	32%
United Kingdom	28%	27%	24%	26%	24%

Figure 1: Respondents with no savings (Source: ING International Survey – Savings, 2013-2017)

Without doubt, low incomes and a high cost of living are major contributors to the widespread financial fragility. Many are unlucky rather than feckless (Frank, 2016). Secure employment that provides sufficient and reliable earnings would improve the financial wellbeing of many.

[2] Note: Numbers in the table for 2015, 2016 and 2017 differ from those in earlier public releases; they have been recalculated for direct comparability to the 2013 and 2014 figures.

These macroeconomic factors cannot be ignored. Nor are they easy to change. Which is perhaps one reason that some try to influence macroeconomic policy while others try to improve people's financial capability in the hope this will help people navigate the landscape where they find themselves.

Poor financial literacy, or knowledge of financial concepts, contributes to low levels of financial capability. The work of Annamaria Lusardi and her colleagues at the Global Financial Literacy Excellence Centre shows that many people around the world cannot answer fairly simple questions about interest rates on savings, risk diversification and how mortgages work (see GFLEC).

But as discussed in more detail below, financial capability is the product of many different factors. Therefore, even if macroeconomic conditions improved and financial literacy levels rose markedly, this would not necessarily be enough to guarantee financial wellbeing.

Behavioural Factors at Play

By now it should be no great surprise that financial decision making does not follow the standard economic models traditionally used by economists holed away in a financial institution's research department.

Rather, the decisions that people make about their money are the product not just of financial literacy but also of the situational, social, and psychological factors of the decision. For example, the macroeconomic landscape, one's social networks, whether decisions are made jointly (e.g. families, households, or work colleagues), the choice architecture of the given decision, and the many psychological factors – explored in depth by academics in the field of behavioural science – all come into play.

These deviations from traditional economic models, often identified in laboratory experiments, are also supported by the findings of large-scale international surveys. While there are obvious limitations in the typical survey methodology, such as the reliance on accurate self-assessment and self-reporting of preferences or decision-making processes, we have nevertheless found surveys a useful way to gauge people's perceptions about their financial decision making.[3]

Inertia in the face of changing macro trends

Economic theory predicts that lowering interest rates on savings makes saving less rewarding and borrowing more attractive. In theory people will not save as much and instead borrow to make investments. However, we found that while some people did change their savings behaviour in such a situation, 56% said low interest rates on savings had not changed their savings behaviour at all (ING, 2017).

The cognitive resource required to deliberately change one's behaviour could be used elsewhere – perhaps on something ultimately more fulfilling than keeping track of interest rates, scouring

[3] The ING International Survey (IIS) has been produced annually since 2012, asking a sample of nearly 15,000 about savings, homes, mobile banking and new tech, money secrets, holiday spending, and other personal-finance related topics.

alternatives for where to hold one's money (assuming there is excess which needs holding), and taking action to change one's existing saving procedure, even if the actions involved are relatively easy.

This is a clear example of 'satisficing'. Sticking with current behaviour might not bring the highest monetary return, but it reduces the effort needed to search for and evaluate all the available options, and for many it is deemed 'good enough' when weighing up the marginal potential return against the requisite investment of time and energy. Given that satisficing can improve our satisfaction with the decision (Schwartz et al., 2002), these trade-offs are particularly relevant when exploring what makes a decision a 'smarter' one.

Greater comfort despite lack of savings

From 2016 to 2017, the comfort people felt with their level of savings rose from roughly a quarter (26%) to roughly a third (34%) across Europe (ING, 2016a, 2017).

This rise in comfort could be seen as a welcome development; however, comfort is subjective and doesn't necessarily reflect the actual level of savings that people have. Other research reports that 69% of Americans surveyed are comfortable with their savings although many also concede they cannot cover an unexpected expense of $400 without selling something or borrowing money (US Federal Reserve, 2016).

Notably, eight percent of people say they are comfortable with their level of savings yet have no savings at all (ING, 2017). Here again behavioural science may shed some light: these respondents may be overly optimistic that no unexpected expense will pop up, overconfident that they can find money if needed, or possibly just fatalistic.

The reasons can't be determined from the survey, but it is important to recognise that some seem to be comfortable despite an absence of even the smallest buffer. This group may be hard to reach with financial capability initiatives; people who feel comfortable may not recognise their financial vulnerability and be less likely to seek or accept help.

The ostrich effect with respect to personal debt

In the same survey, 10% of people with personal debt said they don't even know how much they owe (ING, 2017). Here the standard economic assumption that more information is better falls short.

The appropriately named 'ostrich effect', referred to earlier in this guide's editorial, is the tendency to avoid potentially psychologically distressing information. It can be easier to avoid learning some information, if there is a chance that it is bad news (see e.g. Karlsson et al., 2009). It's true that perhaps these respondents simply don't have the skills to access the information. But another possibility is they stick their heads in the sand to avoid confronting potential issues.

Co-holding as a commitment device

Nearly three in ten people in Europe hold personal debt while also having some savings, which presumably could pay off some of the debt they owe. This figure rises to 49% in the USA (ING, 2017). Here again we see evidence of people's (self-reported) behaviour deviating from standard

economic expectations. Interest rates incurred on borrowing are often higher than interest earned on savings; paying down debt with your savings can therefore be costly. Indeed, the average UK household was found in one study to incur approximately £650 (€729) in unnecessary charges every year (Gathergood & Weber, 2014).

Some people might 'co-hold' debt and savings due to an information or knowledge deficit: they may not realise it is effectively costing them money. For others, perhaps those who find it hard to curb spending, the strategy might be reasonable because they fear that paying down debt will lead them down a slippery slope, enabling yet more purchases. Similarly, if people find it difficult to squirrel away savings, they may be reluctant to dip in for anything less than an emergency or another savings goal. In this case, the higher cost might actually incentivise people to clear their debts.

Salience and confirmation bias influence house price expectations

The housing decision is packed with emotion. Housing is a status indicator. Peer pressure, endowment effects and views of our future self may all come into play. However, even when trying to make a decision based on financial criteria, people can still be led astray, perhaps by the salience of news stories discussing high housing costs, potentially bolstered still further by the confirmation bias. Many seem unaware of the risk that house prices can fall.

When presented with the statement "house prices never fall" about 40% of respondents across 13 European countries "agree" or "strongly agree" (ING, 2016b). Agreement with the statement tends to increase as house prices rise, irrespective of falls in previous years. The graph below shows a national house price index expressed in levels versus the percentage of responses, weighted for age, region and gender, agreeing with the statement "house prices never fall".

For the Netherlands, agreement virtually tripled from 11% in 2014 to 30% in 2016. This is despite persistent price falls in the five immediately preceding years (mid-2008 to mid-2013) and with the national house price index at the start of 2016 still 14% below the mid-2008 peak. Myopia seems to take hold fairly quickly once prices start rising from a trough (see Figure 2). The evidence suggests many may underestimate the risks associated with buying a house as a result.

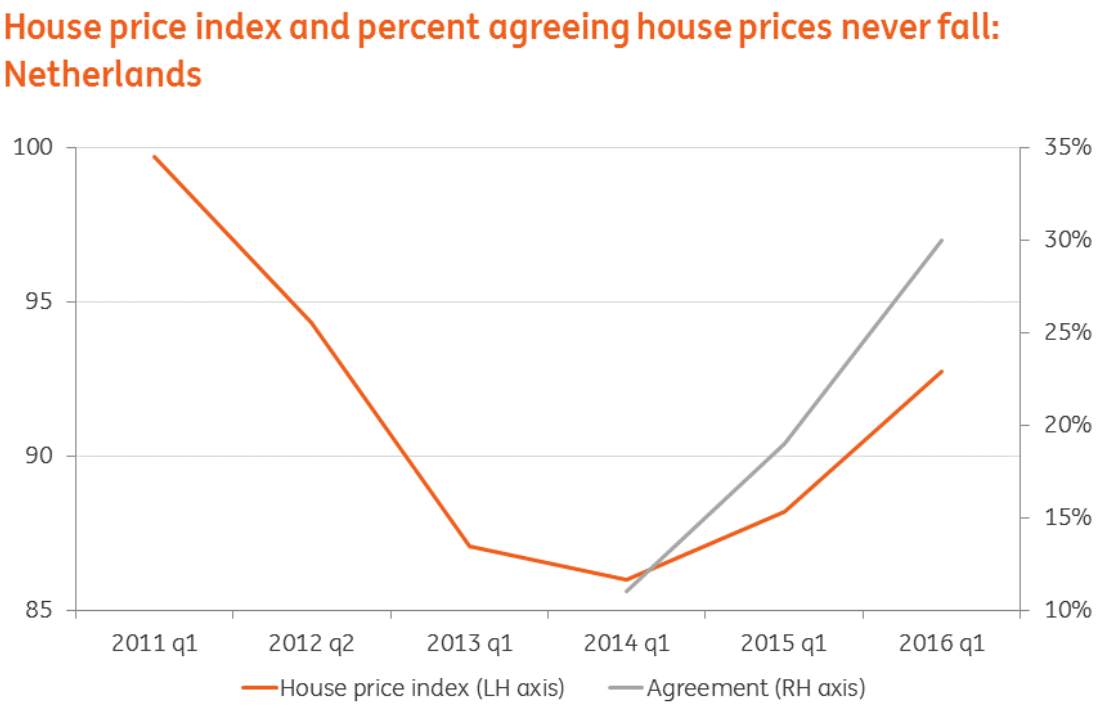

Figure 2: House price trend and beliefs about trend (Sources: Eurostat and ING International Survey – Homes and Mortgages, 2014-2016)

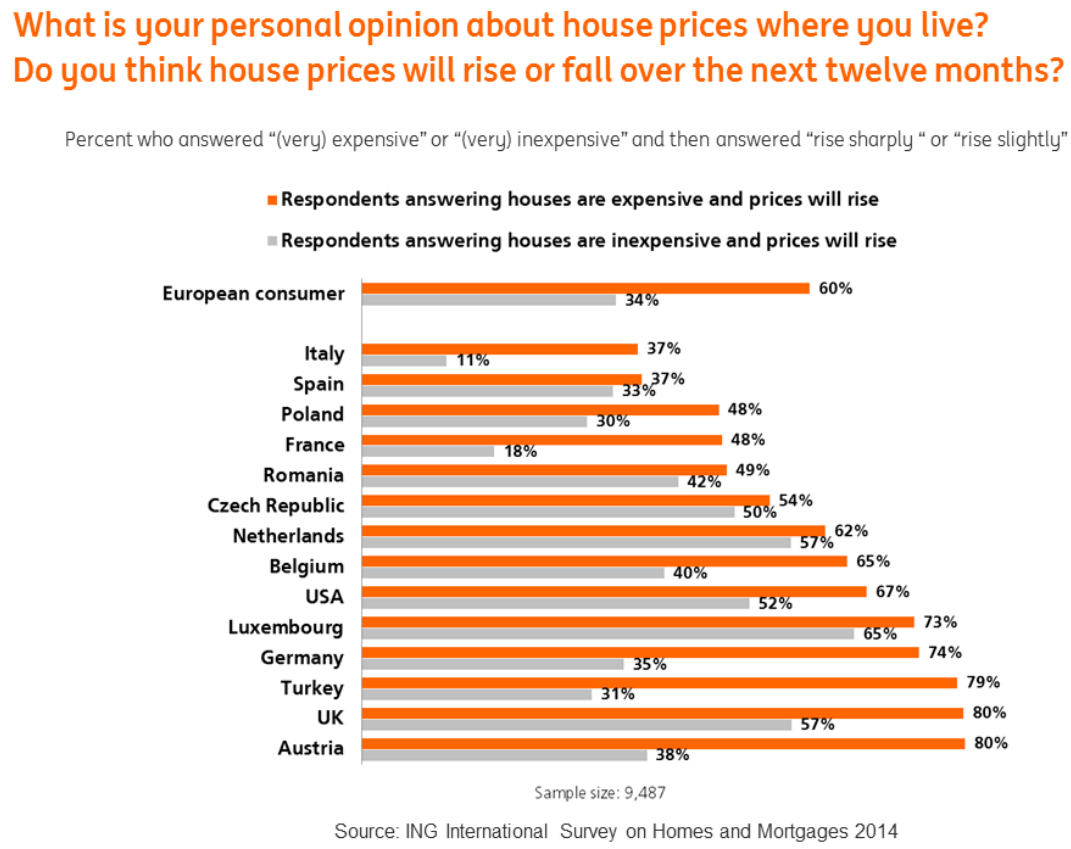

Figure 3: House price perceptions and predictions (Source: ING International Survey – Homes and Mortgages, 2014)

Over several years, survey respondents have also been asked whether they believe houses where they live are expensive or cheap. They are also asked separately whether they expect house prices to rise or fall in the next 12 months. Figure 3 compares expectations relative to whether they currently perceive housing to be expensive or cheap in their area.

A majority in most countries consider houses where they live to be expensive. However, 60% of these people also expect house prices to rise in the next 12 months. By implication, they believe houses will become even more expensive. It may be rational to think that expensive products will become more costly over time. Dysfunctional housing markets in many countries may explain this, as might a persistent shortage of supply compared with demand. Nevertheless, this raises a question for standard economics.

Consider the group who think house prices are cheap. Fewer in this group expect house prices to rise in the next 12 months than in the group who consider house prices expensive. Arguably one might expect the greater price expectations among the group who consider house prices inexpensive.

Our evidence presented above may suggest strong price momentum in a significant asset market. It may also reflect the persistence of bubble psychology in the housing markets of many countries, fitting Robert Shiller's (2013) definition of a bubble.[4] Understandably, many in such a psychological state could agree with the statement "house prices never fall".

The implications of rising house prices and the expectation that house prices will continue to rise suggest that people are taking on more financial risk over time. But as people need somewhere to live, they may be taking on more risk than they are really comfortable with as well.

The Road Ahead

Much has changed in the financial services industry with respect to the adoption of a more behavioural science-based approach. There is still some way to go. Given the prevalence of behavioural hurdles to financial capability, questions about people's (lack of) financial goals, and nuance around the best use of nudges, it is clear that financial industries should explore how to improve financial decision making. Newer technologies may create products which work with people rather than against them; however, a deeper understanding of human behaviour will be needed to make the best use of these opportunities.

[4] In his 2013 Nobel speech Robert Shiller discussed asset price bubbles and noted a definition of bubbles outlined in the second edition of his book *Irrational Exuberance*: "A situation in which news of price increases spurs investor enthusiasm which spreads by psychological contagion from person to person, in the process amplifying stories that might justify the price increase and bringing in a larger and larger class of investors, who, despite doubts about the real value of the investment, are drawn to it partly through envy of others' successes and partly through a gambler's excitement."

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Five Reasons Financial Institutions Can No Longer Ignore Behavioural Approaches

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It took some time for observations about consumer behaviour to seep into thinking about how people manage money. Arguably those working in and thinking about financial markets and investment realised the value of this first.

Why the Delay?

Robert Shiller (1990) was among many who had long wondered why major stock markets were more volatile than appeared rational, given the relative stability of dividend yields. Fads, as he called them, seemed to play a particular role in market movements.

His work gained particular prominence with the publishing of his book *Irrational Exuberance* – just before the bursting of the tech market bubble in that same year (Shiller 2000). Among practitioners, James Montier's (2002) book *Behavioural Finance: Insights into Irrational Minds and Markets* was an early contribution to summarising information in an easily accessible way about how to use behavioural approaches when managing investment portfolios.

However, when it came to the everyday life of the public, these observations seemed far-fetched and technical. It made no contribution to giving the public a better idea of how much they should spend and save and how they could meet financial goals. Yet observations from behavioural science can in fact have a direct and positive influence on the way people manage money.

Furthermore, banks and other financial institutions serving retail, rather than professional or business clients, faced organisational obstacles to incorporating behavioural approaches. Changing the design of forms, for example, so they present information in a different way can be non-trivial. Regulatory factors and computer infrastructure can also complicate things.

Arguably, institutions did not feel a need to change. Banks and other financial groups made (and continue to make) good money from people's money mistakes, which often reflect thinking traps commonly recognised in behavioural science.

For example, a lack of attention paid to spending and earning patterns can result in a person falling into overdraft and incurring unnecessary fees. Inertia encourages people to stay with accounts that pay below-average interest rates or investments with repeatedly poor returns. Peer pressure may encourage people to buy a more expensive house, with a larger mortgage. This larger mortgage earns the bank more interest income.

Getting with the Programme

Nowadays, the resistance of banks and other financial institutions to adopting behaviourally informed approaches is beginning to weaken. There are probably five contributing factors.

First, the global financial crisis and the persistently low interest rates have meant that banks need to differentiate themselves by providing better services to customers.

Second, regulators are increasingly using lessons from behavioural science to ensure customers are served properly, monitoring the behaviour of banks, other financial institutions and even utility providers.

Third, existing and new technologies are making it possible to design products that can more easily incorporate learnings from behavioural science. For example, mobile banking apps mean people can be alerted quickly when their accounts get close to their overdraft limits. They also can transfer available funds from savings to a current account almost immediately, no matter where they are.

Fourth, tech-savvy entrants to banking, insurance and other financial industries can build new businesses fairly quickly that incorporate behavioural approaches and challenge the incumbent service providers.

Fifth, senior management and leaders in the industry may wish to build businesses that are more ethical and sustainable than in the past. For many of these leaders, customer-centricity is more than just a response to the forces outlined above: it is also a desire to gain societal acceptance. People, even leaders of industry, want to be liked.

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Nudging in Developing Nations

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In this article, we draw on our experience as behavioral economics consultants in Mexico to discuss some of the challenges and opportunities for behaviorally-informed public policy in our country, which we believe applies to other developing nations as well. To illustrate those points, we chronicle and analyze the issues we faced while creating a case study for this Guide, in which we partnered with a local NGO to increase organ donation in the country.

Background

In the past few years, behavioral economics (BE) has outgrown its origins as an obscure, yet ground-breaking academic pursuit. Once considered to be just an interesting intellectual curiosity, it is now a respected field of study with relevant insights and influence in virtually every area where human behavior is involved. Companies are beginning to use behavioral science in many of their operations: improving product design, creating more persuasive marketing, improving strategic decision-making and helping their employees be healthier, happier and more productive.

BE's newfound influence can also be noticed in the way governments and non-profits are using its insights and research methods to solve social issues. Lately, there has been an eruption of new organizations around the world whose main objective is applying BE to advance the social good. Some of these organizations are becoming very skilled at employing behavioral frameworks and have revolutionized social development and public policy programs with their work. Their success is bringing BE closer to the mainstream in social development models.

Most of those organizations use a framework for applying BE based on three platforms:

1. Sound understanding of human behavior
2. Strong data analysis
3. Use of randomized controlled trials (RCT)

Organizations can be divided in two distinct groups based on their differences with respect to the types of problems they solve, how and where they operate, and how they finance their activities. They could be named after the most influential book that represents each approach: the "Poor Economics" group and the "Nudge Units".

	"Poor Economics" Group	"Nudge Units"
Seminal book:	*Poor Economics* by Esther Duflo and Abhijit B. Banerjee (2011)	*Nudge* by Richard H. Thaler and Cass R. Sunstein (2009)
Specialized in:	Creating evidence based solutions to social development through RCTs	Improving the efficiency and effectiveness of public policy programs, mostly by "nudging" citizens into better decision-making
Representative institution:	The J-PAL Poverty Lab at M.I.T. (J-PAL)	Behavioural Insights Team (BIT)
How they are financed:	Grants, endowments, donations	Publicly or quasi-publicly financed, grants
Where they operate:	All around the world, especially in areas of great need	Inside or beside the government, mostly in advanced nations
Presence in developing nations:	A majority of their studies are made in developing nations	Limited studies in developing nations
Presence in Mexico:	Yes	No

Table 1: Comparing the "Poor Economics" group and "Nudge Units"

Despite the general spread of BE and its particular applications to public policy, it has not gained the same traction everywhere in the world. The following graph shows the results from a survey performed by the OECD in 2016 (Organisation of Economic Co-operation and Development, 2017). The study analyzed BE case studies in public policy areas in member countries.

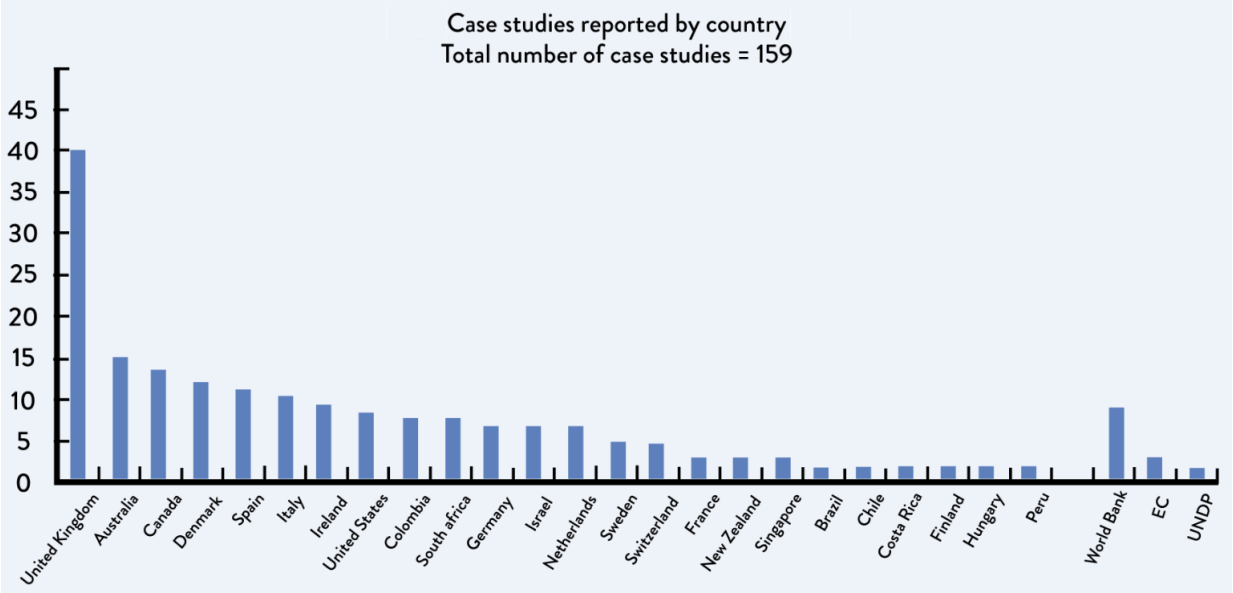

Figure 1: Case studies reported by OECD member countries (Source: OECD 2016 Behavioral Insights case study survey dataset)

Results show that almost half the observations came from English-speaking countries (U.K., Australia, Canada, U.S.A. and New Zealand). Additionally, European nations were also very well represented. Meanwhile, less than 10% of the cases came from developing nations and there were none from Mexico.

Implementing BE into many public policy areas could be an efficient and inexpensive way to reach key governmental objectives. Nevertheless, the multiple challenges faced by making a small case study are an illustration of why this has not been the case in Mexico, despite its very positive implications. Additionally, many of these arguments are likely to be representative of many other developing nations as well. Hopefully, this exercise will be instructive to other practitioners of BE who are not part of the aforementioned organizations, but nonetheless want to use their skills to help their societies. The selected subject for this particular case study is commonly associated with the BE community: increasing organ donation (Johnson & Goldstein, 2004)

Organ Donation in Mexico

Donating and transplanting organs has been legally and technically feasible in Mexico since 1963. However, this area has had some deficiencies since then, despite the strides made in the past decade in infrastructure and human resources. Nowadays, possibly one of the biggest challenges has been finding enough donors to meet organ demand. Only about 3.6 out of every hundred thousand people in Mexico are organ donors, a very low percentage considering that more than 21,000 people in the country need transplants today. At this rate, about 1 out of every 3 people on the waiting list will receive the organ they need (Cenatra, 2014; Fundación Carlos Slim, 2015).

Educational Campaigns

Currently, there are ongoing efforts by some non-profits to create educational campaigns to raise awareness and increase the donor's rate in Mexico. Their efforts have increased organ donations

by 8% in the past year (Notimex, 2016). A 2012 survey, showed that 59% of Mexicans declared their support for organ donation (Parametría, 2012), which indicates a very wide intention-action gap. Therefore, it is reasonable to assume that at least some of the problems have behavioral roots rather than an educational or cultural ones. This suggests that making an effort to "nudge" citizens into agreeing to become organ donors could be very effective. To find the moment where a nudge could be most effective, it is important to understand the legal implications around organ donation, and the context where people decide whether to donate or not.

Legal Standing

The Mexican government recently passed a legislation to make organ donation the default. Basic BE theory indicates that this new default will become the path of least resistance (Samuelson & Zeckhouser, 1988), substantially increasing the supply of new donors. In practice, however, the choice to be an organ donor is far from being the default. In fact, there are three possible "opt-in" mechanisms to become a donor:

1. Get a governmentally issued "official donor" letter signed by an authorized official. This is a complicated process, with multiple steps and ambiguities (it is unclear who is an "authorized official" in this case), which makes it hard to follow through.
2. Notarize a letter stating your desire to become a donor. This is another time consuming process, as well as an expensive one for many people.
3. Print an "organ donor card", which states your intention to donate but it is not legally binding. This card functions a commitment device, both from yourself and your family.

There is no available data to quantify the number of people that select any one of those options, but it's commonly believed that it is a small number. Therefore, the decision to donate for most people falls on the following moments, where an "active choice" in two key moments ultimately decides your status as a donor:

1. As in many places around the world, the driver's license office is where most people decide whether to become an organ donor. In most Mexican cities, people do not fill out the information forms themselves, but rather give the required information to a clerk, who is in charge to fill in the forms. So whether and how to ask people about organ donation falls on civil servants with mostly no clear directive about how to approach this issue.
2. In every hospital, there is one certified hospital official tasked to ask the closest family member of a recently deceased individual to give their active consent for organ donation. If said official is not at hand, or the family member chooses not to, the individual might not become a donor event though they might have consented to be one while they were alive.

Even if the law stipulates that all Mexican citizens become organ donors by default, the de facto choice architecture setup is stacked against people who desire to do so, which might explain the low donation rates in the country.

Planning the Case Study

The experimental design for measuring and nudging people into signing "donor cards" or "official letters" was too complex due to the lack of available data. Nudging the families to decide on behalf of their relatives in a hospital would probably make for a thorny project. Therefore, trying to get people to declare themselves organ donors as they renewed their driver's license was the best path forward.

To obtain the necessary permissions, it was important to make the case study as easy to explain, apply and measure as possible – learning from previous research was considered paramount. Ultimately, an unobtrusive RCT was devised, partially based on an online exercise made by the BIT in 2013 (Behavioural Insights Team, 2013). The trial measures the effectiveness of four different persuasive messages to people renewing their licenses, urging them to register as organ donors. The messages are based on well-known behavioral insights: social proof, reciprocity, loss aversion and a simple request to register.

Despite the fact that this small study could help their citizens and would incur virtually no costs, finding a government official who would agree to implement it in an office under their jurisdiction proved much harder than expected. As Daniel Kahneman (2011) explains in his book *Thinking, Fast and Slow*, the inside view of the viability, probability and timeline of a complex project will usually be overly optimistic. Alas, we did underestimate the resistance and indifference we would find at all levels of government.

A Nation In-Between

As the term "developing nation" indicates, Mexico is a country in-between stages. A good portion of the country is in dire need of basic social development, which makes it ripe for "Poor Economics" style research, which has indeed been effective in the country (Poverty Action Lab, 2017). In the rest of the country, better public programs and services could make a big difference as well, but the lack of basic infrastructure, knowledge and appreciation of behavioral and data science make "Nudge Unit"-type projects hard to do. A cruel paradox of developing nations is that their lack of development tends to prevent the implementation of the very same ideas and programs that could help accelerate it. The implementation of BE in public policy falls squarely in this paradox. However, there are some signs that this may not be the case much longer, as new opportunities for BE are beginning to arise.

Challenge: The Public Policy Establishment and Its Status Quo

The ideas and principles that many of us reading this Guide take for granted are still very counterintuitive to most of the population, especially in developing nations and its institutions. Most civil servants still believe that decisions are solely a function of culture and/or education, and many just advised us to "just do a survey or something"—outside of their offices. Resistance to innovation in government is a recurring subject in developing nations, where change happens very slowly, if it happens at all, and that experience will probably resonate with almost all BE practitioners in government, or even in the private sector of developing nations.

Opportunity: Higher Education Will Begin to Turn the Tide Soon

Academia usually leads governments towards innovative applications of new research and ideas for public policy. Until very recently, higher education in developing nations had not adopted BE at all, which was one of the reasons why governments have been slow to adopt it as well. While full BE courses are still hard to find (and there are no degrees or credential program in the subject in Spanish), there are some encouraging signs that this is starting to change. Anecdotal evidence suggests that some graduate programs are beginning to teach the subject in their economics, business and marketing classes, and the Universidad Anahuac in México is creating the first official online credential program in BE in Spanish with our collaboration. As more institutes of higher learning begin to teach and research BE, influencing their professors and students, the interest in BE and "nudging" will increase in both the private and public sectors.

Challenge: The Never-Ending Bureaucracy

Another roadblock to a successful case study can be the political and bureaucratic complexities of a country. In Mexico, the policies regarding organ donations and transplants are overseen by the Health Department. Driver's licenses are state-issued, while each office issuing licenses is administered at the city level. Getting two, or all three levels of government on board for a case study like this is very complicated, especially if they are in control by different political parties.

The need for good sample sizes and experimental designs makes BE research special, but it also makes it very complex. Without the approval of a sufficiently large and/or powerful government entity, making even modestly sized trial can become very challenging. That same governmental friction, nonetheless, gives BE practitioners a natural ally that has arisen and grown a great deal because of this situation.

Opportunity: Creating Strategic Alliances with Non-Profits

There are some areas of social development that governments are unable to address adequately through public policy due to lack of resources. This sometimes leaves non-profits as de facto providers of some public goods, services and education in some areas. For example, two non-profits are responsible for almost all the public education on organ donation in Mexico; they also lobby the government for changes in legislation, and even enhance public programs in the country.

Since they are passionate organizations about their specific social development goals, non-profits are more willing to try new ideas that could help them advance their agendas. This, and their close relationship to government, makes collaborating with these organizations a good way forward for BE in developing nations. Conducting successful pilots for influential non-profits can showcase the benefits of BE, which can further the conversation about BE in the public sphere. Our organ donation pilot study sparked a collaboration with one of those non-profits, who are now helping to scale this case study in some of the states where they have most influence.

Challenge: BE Is an Anti-Populist Measure

The goals of BE in government involve reducing public costs while making public policy programs more efficient; helping citizens live better by the application of non-intrusive interventions. This

can be unattractive for many public servants, who may prefer bigger, headline friendly options, even if they are costlier and less effective. Applying BE in public policy is, in a way, anti-populist, and that may be partly why BE has not taken hold in the public policy sector of developing nations.

Opportunity: Just Start Somewhere!

After all the challenges, months of negative answers and a deep reserve of patience and perseverance, the pilot is now taking place in a driver's license office in the north of the country. We are collaborating with a local government to apply a smaller scale pilot* than originally planned. We hope that the results will catch the attention of public servants willing to help us develop larger studies in the future.

Ideally, all developing nations would understand the potential benefits of BE for their policies and their citizens, and would create their own institution to apply it across their agencies. However, instead of waiting for each of our governments to create a top-down department akin to the BIT, we want to encourage other practitioners and researchers in developing countries to apply BE to public issues they are passionate about; creating a group of smaller "Nudge Units" dedicated to expanding the reach of BE in our nations, especially developing ones.

We believe that many people reading this Guide are interested in using BE as a tool for social good, either professionally or as a side project. By sharing our experiences and creating a community of professionals facing similar challenges, we can help and support each other, increasing the visibility and viability of our discipline everywhere.

*The full methodology and results of this case study will not be available in time for the publication of this Guide, but they will be shared as soon as possible.

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Choice Architecture in Retail Finance: An Applied Perspective

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It has long been recognised that behavioural biases affect consumers in all markets. Behavioural biases can impact all stages of the consumer decision-making process from accessing information, through assessment, comparison and final product choice. However, these biases can become particularly prevalent in retail financial markets due to the nature of the decision process and the attributes of the products. These reasons include:

- The complexity of financial products;
- The bundling/multi-part aspect of products;
- The understanding and ability to assess risk and uncertainty required for many decisions;
- The emotional feelings that financial decisions can cause have the ability to crowd out rational decision-making;
- Many financial products require the careful trade-off between present and future time periods which are difficult due to the need for self-control; and
- Many financial decisions are taken very infrequently (e.g. choosing a mortgage), which leaves little opportunity for learning for future decisions.

Understanding consumer decision-making and using behavioural insights became more important to financial regulators in the wake of the financial crisis, in which consumers of financial products were severely affected, making their financial decisions and their protection more important than ever. As a result, providers of financial products have been increasingly required to illustrate that practices and products do not take advantage of consumer behavioural biases.

While the use of behavioural insights by regulators has grown rapidly, there is also an increasing trend in retail providers using behavioural economics to improve customer understanding of products and promoting better financial management by customers.

How is Behavioural Economics Actually Applied?

At London Economics we use the principles of behavioural economics to study consumer decision-making in a wide variety of domains, and we use a wide variety of the most innovative techniques in behavioural and experimental economics.

The first of these are laboratory experiments, where participants undertake incentivised tasks on a computer in controlled conditions. Control in this context means that the individual decisions made are induced by the incentives created in the experiment and by no other factors. In the experiment we then use different 'treatments', which are changes to the experiment environment, features of a policy, or incentives offered, to identify how individual decisions change as a result, thus, establishing true causality. In other words, we can identify which specific features lead to changes in behaviour.

The second technique is online experiments, which are similar to laboratory experiments but can be accessed online by participants on their home computers or tablets. The benefit of this is that it allows us to conduct behavioural experiments with much larger samples than we could recruit in a laboratory, and it allows us to test differences in behaviour across countries. This is particularly useful for large projects where we are analysing a European market for example, and are keen to understand differences between consumers in different member states. In many cases behavioural experiments are combined with qualitative focus groups, as well as surveys, to better understand the reasoning behind the decisions taken by participants, and add richness to the experimental data.

The final technique we employ is the randomised control trial (RCT). In an RCT, interventions are tested in the field, with subjects randomly allocated between a control group (the business as usual case) and a treatment group (where the intervention is tested). Ensuring that participants in the trial are randomly allocated between control and treatment, means that the groups will be balanced across variables that might have an impact on the trial outcome (for example, age or gender). Ensuring a balance means that the impact of the intervention can be 'cleanly' assessed.

We outline below two landmark experiments conducted by London Economics for regulators in the United Kingdom. These examples illustrate how regulators are increasingly using behavioural experiments to inform remedies within markets.

Testing the Impact of Price Frames for the Office of Fair Trading (OFT)

One of the first uses of behavioural experiments to inform regulation within the United Kingdom was our 2009 experiment conducted as part of the OFT's *'Advertising of Prices Market Study'.*[1] This behavioural experiment tested the effect that different pricing practices have on consumer behaviour (Office of Fair Trading, 2010).[2]

The experiment

In this experiment, 166 University College London students were tasked as shoppers in a simulated game. They were presented with a choice between two stores selling the same good, and had to choose which shop to visit first. Going to a shop involved a (monetary) search cost, reflecting the time costs of search on the internet or the actual travel costs in the case of visiting physical stores. Participants received a monetary payoff (reflecting consumption utility; the satisfaction one derives from the consumption of a good) for each unit of each good they bought, but, they were also required to pay the price that the shops charged. Shoppers received a pay-off for each purchase. The greater the difference between the points awarded for owning the good and the prices they paid, the wiser their purchases, and the higher the overall pay-off.

[1] The OFT closed in April 2014. Its responsibilities have been passed to a number of organisations including the Financial Conduct Authority and the Competition and Markets Authority,

[2] This study was conducted by London Economics in association Steffen Huck (University College London) and Brian Wallace (University College London) for the UK Office of Fair Trading.

The aim of the experiment was to test whether or not the way prices are presented or 'framed' to consumers has effects on consumer decision making and consumer welfare. The treatments tested involved:

- Partitioned, or 'drip' pricing, where price increments 'drip' through during the buying process;
- 'Baiting sales', where only some products are available at the discount price and consumers may ultimately purchase a full priced product;
- 'Reference prices', where there is a relatively high reference price compared to sale price, for example 'was £50, now £20', or '50% off';
- Time-limited offers, such as sales which finish at the end of the month or special prices which are available for one day only; and
- Complex pricing, where it is difficult for consumers to assess an individual price, for example 'three-for-two' or 'non-inclusive' prices.

Results

The experiment showed that, in contrast to the predictions of classical economic theory (where a careful comparison of costs and benefits will bring about an optimal decision), price frames do impact upon decision-making and welfare. Subjects in the experiment were found to make more errors and achieve lower consumer welfare when presented with the price frames compared to a situation in which prices were clearly shown for each unit of a product bought. The price frame that brought about the greatest welfare loss was drip pricing, followed by time limited offers. In these price frames subjects also made the most errors, such as buying at the first shop at prices which were too high, whereas they should have continued searching.

Examining these results through a behavioural lens, we provide the following explanations for the results.

***Drip pricing**:* If consumers see a low base price and they make the decision to buy the good, they shift their reference point because they imagine already possessing the good. Later, when they realise that there are additional costs and charges, it is more difficult for them to give up the good which they already have 'in their basket'. Therefore, they purchase the good despite the increase in price. This is in line with what is known in the literature as the endowment effect, which also links to loss aversion. Subjects in the experiment reported in a follow-up questionnaire feeling disappointed in this frame because they felt they were receiving a good deal when they saw the base price. Subjects reported that they still bought the good after they found out the additional charges, but felt cheated and annoyed because their pay-off was reduced.

***Time-limited offers**:* Consumers believe erroneously that if they leave the store then the prices will go up (note: the prices could go up or down in the experiment), as such they have a tendency to buy at the first store they go to; or, if they do not buy at the first store, they will buy at the second store if the price at the second store is at all profitable. This erroneous pre-conception is self-enforcing. As subjects do not return to the first shop they cannot learn that their beliefs are false. The main behavioural issue in this frame is, hence, of a cognitive nature. The subjects' responses to the follow-up questionnaire again support this finding. Subjects reported that they felt 'compelled to buy' or it was 'something not to be missed'. Some reported they were enticed to buy

without further searching. Many reported being confused and those who did venture back to the first shop reported finding it strange that the price upon return may have been lower than when they first visited.

Improving Consumer Outcomes in Retail Finance for Regulators: Add-On General Insurance

The United Kingdom Financial Conduct Authority (FCA) used a behavioural experiment in its first Market Study into General Insurance Add-ons launched in 2012. We worked closely with the FCA to design and implement an online behavioural experiment to specifically assess how sales practices in this market impact consumers (London Economics & YouGov, 2014).[3]

The problem in the market

General Insurance products are sold alongside primary products such as holidays, computers and motor vehicles. Previous work by the FCA identified that GI add-ons generally led to poor outcomes for consumers (Financial Services Authority, 2012). Similarly, the Competition Commission in 2010, (now the Competition and Markets Authority) banned point-of-sale of payment protection insurance (PPI) alongside other financial products such as unsecured loans, credit cards and mortgages (Competition Commission, 2010a). The Competition Commission found that selling PPI at the same time as other financial products had adverse effects on competition (Competition Commission, 2010b).

A growing body of economic research suggests that the way in which information is presented to consumers can have profound effects on the way in which consumers will behave. Marketing techniques are often targeted to exploit the way in which consumers are affected by such framing exercises and this can result in substantial consumer detriment, as was shown in our OFT experiment.

What the client wanted to find out

In light of the findings, the FCA tasked London Economics with examining to what extent the way in which add-on insurance is presented to consumers can affect important market processes and outcomes, such as the extent of shopping around for insurance, take-up of insurance, the price paid for insurance, and the likelihood of consumer errors from choosing strictly worse bundles (primary products and insurance) among the available alternatives. The experiment conducted in September 2013 with 1,514 UK residents, provided evidence as part of the wider FCA study on the effect of add-on insurance products on market outcomes for consumers.

Our behavioural experiment

London Economics responded to the brief through the design and implementation of an online behavioural experiment. The experiment was set up as a simplified online experience of shopping around for and 'purchasing' either primary products (a home boiler, a tablet computer, a laptop computer, a luxury holiday and car hire) or insurance policies or both, depending on the experimental treatment subjects were assigned to. These products varied in a number of

[3] This study was conducted by London Economics and YouGov in association with Steffen Huck and Brian Wallace of University College London.

dimensions such as price of the primary product, the likelihood of an adverse event happing and cost of the adverse event.

After subjects/respondents selected a primary product and/or an insurance product there was a possibility they might encounter an 'adverse event'. Whether the adverse event occurred was randomly determined, based on the probability of said event occurring. Respondents were informed of the probability of this event occurring, as well as the amount of money they would lose in this case, before they were asked to purchase anything.

The respondent 'traded in' the primary product they had purchased against a predetermined value at the end of an experiment round, meaning there were incentives for the respondent to select the cheapest primary product during the task. However, if the respondent had decided not to purchase insurance, the cost of the adverse event (if it occurred) was deducted from the respondent's payment for the purchase of the primary product. Incentives to purchase insurance in the experiment were therefore aligned with the incentives of purchasing insurance in the real world: by paying a smaller fee up-front, the respondent could avoid a higher loss which occurs with a given probability. Respondents were asked to repeat this process five times, each time purchasing a different primary product.

Treatments

Each respondent was randomly allocated to one of the following treatments:

- 'Insurance only': Respondents searched for and potentially bought standalone insurance for a product they already owned.
- 'Up-front add-on': Respondents searched for and bought a primary product (e.g. a tablet computer) and they also had the option to purchase add-on insurance for the product. Each primary product was associated with an add-on insurance offer and this add-on insurance offer was displayed next to the offer of the primary product.
- 'Add-on at the POS': This treatment was identical to the 'Up-front add-on' treatment with the difference that the add-on insurance offer was only revealed once the respondent had clicked on the 'Buy' button for the primary product. Respondents could return and view insurance offers for primary products already searched for at no cost.
- 'Add-on at the POS + easy alternatives': This treatment was identical to the 'Add-on at the POS' treatment with the exception that respondents could also search for alternative standalone insurance. The standalone insurance offers were displayed next to the primary and POS add-on such that the consumer could easily compare the POS add-on and the alternative stand-alone insurance offers.
- 'Add-on at the POS + hard alternatives': This treatment was identical to the 'Add-on at the POS + easy alternatives' treatment with the exception that when searching for an alternative standalone insurance, the respondent could no longer see the offers for the primary product with the add-on insurance. This set-up meant that it was more difficult for consumers to compare the POS add-on and the alternative standalone offers.

In addition to these experimental treatments, respondents were also allocated to different price frames, including a 'Yearly price frame' where respondents saw the offer for insurance priced as a

lump sum, and 'Monthly price frame' where they saw the offer displayed in its 'monthly equivalent' price.

Results

The research found strong evidence that the structure of the add-on transaction has substantive impacts on consumer behaviour in various areas such as the willingness to shop around, deciding whether to buy insurance at a particular price, and identifying best deals available. Here we focus on the ability to identify the best deal available, and how it is affected by the structure of the add-on insurance transaction.

The experiment found that when consumers were buying the insurance product separately from the primary product, 1 in 20 did not correctly identify the cheapest deal for themselves. When the insurance was added on to the purchase process up-front, the proportion failing to identify the cheapest deal rose to 4 out of 20; and, when the add-on price was revealed after the main product was selected, the proportion failing to identify the cheapest deal rose to 5 out of 20. Further, when prices for an annual contract were presented as monthly prices, consumers were less likely to shop around, more likely to accept the first offer without looking any further, were more confused about the total cost for the contract and paid higher prices for insurance. This lead to more than a 50% loss for respondents in the experiment.

The Growing Use of Behavioural Insights in Policy Making

The case studies contained in this chapter provide just a brief overview of how behavioural experiments are being used by policymakers. The OECD recently examined how behavioural insights have been used by governments and other public policy organisations within their consumer policy making process and policy initiatives (Organisation of Economic Co-operation and Development, 2017), [4] as the number of policymakers using behavioural economics across the globe, and the contexts in which they apply it, continue to increase in number. In the UK, the FCA has played a key role in the use of behavioural economics within policymaking. Their work has involved a study into PPI redress from a consumer perspective (Financial Conduct Authority, 2015a), and a randomised control trial investigating the effects of different reminder letters on savings account switching behaviour at the time of an interest rate decrease (Financial Conduct Authority, 2015b). The rationale was that consumers taking out savings accounts often do not transfer their money to another account when the rate falls, with this lack of switching potentially caused in part by behavioural biases such as limited attention and present bias.

London Economics has used behavioural economics in a variety of other contexts such as testing additional standards for price comparison websites that compare High Cost Short Term Credit products for the FCA (London Economics & YouGov, 2015). This experiment formed part of the evidence base used by the FCA in its recommendations for additional standards in response to the Competition and Markets Authority's final report on payday lending. We have also examined particular markets in which consumers have been found to encounter difficulties in their decision-

[4] The OECD report is informed by discussion at the OECD's Behavioural Economics Roundtable, at which LE's Dr Charlotte Duke was an invited speaker on her experience in using behavioural economics to test and design consumer policy.

making, such as non-life insurance, where we examined how the the presentation of information within Product Information Documents for non-life insurance products affected understanding, for the European Insurance and Occupational Pensions Authority (LE Europe, Ipsos MORI, & Academy Design Partners, 2016), and the design of the Key Information Document for Package Retail and Insurance-based Investment Products for the European Commission (LE Europe & Ipsos MORI, 2015).

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PART 3 – RESOURCES

Selected Behavioral Science Concepts

Alain Samson *

Affect heuristic

The affect heuristic represents a reliance on good or bad feelings experienced in relation to a stimulus. Affect-based evaluations are quick, automatic, and rooted in experiential thought that is activated prior to reflective judgments (see **dual-system theory**) (Slovic, Finucane, Peters, & MacGregor, 2002). For example, experiential judgments are evident when people are influenced by risks framed in terms of counts (e.g. "of every 100 patients similar to Mr. Jones, 10 are estimated to commit an act of violence") more than an abstract but equivalent probability frame (e.g. "Patients similar to Mr. Jones are estimated to have a 10% chance of committing an act of violence to others") (Slovic, Monahan, & MacGregor, 2000). Affect-based judgments are more pronounced when people do not have the resources or time to reflect. For example, instead of considering risks and benefits independently, individuals with a negative attitude towards nuclear power may consider its benefits as low and risks as high, thereby leading to a more negative risk-benefit correlation than would be evident under conditions without time pressure (Finucane, Alhakami, Slovic, & Johnson, 2000). The affect heuristic has been used as a possible explanation for a range of consumer judgments, including the **zero price effect** (Samson & Voyer, 2012), and it is considered another general purpose heuristic similar to **availability** and **representativeness** in the sense that affect serves as an orienting mechanism akin to similarity and memorability (Kahneman and Frederick, 2002).

Anchoring (heuristic)

Anchoring is a particular form of priming effect whereby initial exposure to a number serves as a reference point, influencing subsequent judgments about value. The process usually occurs without our awareness (Tversky & Kahneman, 1974), and sometimes occurs when people's price perceptions are influenced by reference points. For example, the price of the first house shown to us by a real estate agent may serve as an anchor and influence perceptions of houses subsequently presented to us (as relatively cheap or expensive). These effects have also been shown in consumer behavior whereby not only explicit slogans to buy more (e.g. "Buy *18* Snickers bars for your freezer"), but also purchase quantity limits (e.g. "limit of 12 per person") or 'expansion anchors' (e.g. "101 uses!") can increase purchase quantities (Wansink, Kent, & Hoch, 1998).

Asymmetrically dominated choice

See **Decoy effect**

* The author would like to thank Roger Miles and Connor Joyce for their valuable contributions.

Availability heuristic

Availability is a heuristic whereby people make judgments about the likelihood of an event based on how easily an example, instance, or case comes to mind. For example, investors may judge the quality of an investment based on information that was recently in the news, ignoring other relevant facts (Tversky & Kahneman, 1974). Similarly, it has been shown that individuals with a greater ability to recall antidepressant advertising estimated that the prevalence of depression is more prevalent, as against those with low recall (An, 2008). Elsewhere, research established that less knowledgeable consumers use the ease with which they can recall low-price products as a cue to make judgments about overall store prices (Ofir, Raghubir, Brosh, Monroe, & Heiman, 2008). The availability of information in memory also underlies the **representativeness heuristic**.

Bias

See **Cognitive bias**

Bounded rationality

Bounded rationality is a concept proposed by Herbert Simon that challenges the notion of human rationality as implied by the concept of ***homo economicus***. Rationality is bounded because there are limits to our thinking capacity, available information, and time (Simon, 1982). Bounded rationality is similar to the social-psychological concept that describes people as "cognitive misers" (Fiske & Taylor, 1991) and is one of the psychological foundations of behavioral economics. (See also **satisficing**.)

Certainty/possibility effects

Changes in the probability of gains or losses do not affect people's subjective evaluations in linear terms (see also **prospect theory** and **zero price effect**) (Tversky & Kahneman, 1981). For example, a move from a 50% to a 60% chance of winning a prize has a smaller emotional impact than a move from a 95% chance to a 100% (certainty) chance. Conversely, the move from a 0% chance to a 5% possibility of winning a prize is more attractive than a change from 5% to 10%, for example. People over-weight small probabilities, which explains lottery gambling—a small expense with the possibility of a big win.

Choice architecture

This term coined by Thaler and Sunstein (2008) refers to the practice of influencing choice by changing the manner in which options are presented to people; for example, by setting **defaults, framing,** or adding **decoy** options.

Choice overload

Also referred to as 'overchoice', the phenomenon of choice overload occurs as a result of too many choices being available to consumers. Choice overload may refer to either choice attributes or alternatives. The greater the number or complexity of choices offered, the more likely a consumer will apply heuristics. Overchoice has been associated with unhappiness (Schwartz, 2004), **decision fatigue**, going with the **default** option, as well as choice deferral—avoiding making a decision

altogether, such as not buying a product (Iyengar & Lepper, 2000). Choice overload can be counter-acted by simplifying choice attributes or the number of available options (Johnson et al., 2012).

Cognitive bias

A cognitive bias (e.g. Ariely, 2008) is a systematic (non-random) error in thinking, in the sense that a judgment deviates from what would be considered desirable from the perspective of accepted norms or correct in terms of formal logic. The application of **heuristics** is often associated with cognitive biases, some of which, such as those arising from **availability** or **representativeness**, are 'cold' in the sense that they do not reflect a person's motivation and are instead the result of errors in information processing. Other cognitive biases, especially those that have a self-serving function (e.g. **optimism bias**), are more motivated. Finally, some biases, such as **confirmation bias**, can be motivated or unmotivated (Nickerson, 1998).

Cognitive dissonance

Cognitive dissonance, an important concept in social psychology (Festinger, 1957), refers to the uncomfortable tension that can exist between two simultaneous and conflicting ideas or feelings—often as a person realizes that s/he has engaged in a behavior inconsistent with the type of person s/he would like to be, or be seen publicly to be. According to the theory, people are motivated to reduce this tension by changing their attitudes, beliefs, or actions. For example, smokers may rationalize their behavior by holding 'self-exempting beliefs', such as "The medical evidence that smoking causes cancer is not convincing" or "Many people who smoke all their lives live to a ripe old age, so smoking is not all that bad for you" (Chapman et al., 1993). Arousing dissonance can be used to achieve behavioral change; one study (Dickerson et al., 1992), for instance, made people mindful of their wasteful water consumption and then made them urge others (publicly **commit**) to take shorter showers. Subjects in this 'hypocrisy condition' subsequently took significantly shorter showers than those who were only reminded that they had wasted water or merely made the public commitment.

Commitment

Commitments (see also **Precommitment**) are often used as a tool to counteract people's lack of willpower and to achieve behavior change, such as in the areas of dieting or saving—the greater the cost of breaking a commitment, the more effective it is (Dolan et al., 2010). From the perspective of social psychology, individuals are motivated to maintain a consistent and positive self-image (Cialdini, 2008), and they are likely to keep commitments to avoid reputational damage and/or **cognitive dissonance** (Festinger, 1957). The behavior change technique of 'goal setting' is related to making commitments (Strecher et al., 1995), while **reciprocity** involves an implicit commitment.

Confirmation bias

Confirmation bias occurs when people seek out or evaluate information in a way that fits with their existing thinking and preconceptions. The domain of science, where theories should advance based on both falsifying and supporting evidence, has not been immune to bias, which is often associated with people trying to bolster existing attitudes and beliefs. For example, a consumer who likes a particular brand and researches a new purchase may be motivated to seek out customer reviews on the internet that favor that brand. Confirmation bias has also been related to unmotivated processes, including primacy effects and **anchoring**, evident in a reliance on information that is encountered early in a process (Nickerson, 1998).

Control premium

In behavioral economics, the control premium refers to people's willingness to forego potential rewards in order to control (avoid delegation) of their own payoffs. In an experiment, participants were asked to choose whether to bet on another person or themselves answering a quiz question correctly. Although individuals' maximizing their rewards would bet on themselves in 56% of the decisions (based on their beliefs), they actually bet on themselves 65% of the time, suggesting an aggregate control premium of almost 10%. The average study participant was willing to sacrifice between 8 and 15% of expected earnings to retain control (Owens et al., 2014). (See also **overconfidence**.)

Decision fatigue

There are psychological costs to making decisions. Since choosing can be difficult and requires effort, just like any other activity, long sessions of decision making can lead to poor choices. Similar to other activities that consume resources required for executive functions, decision fatigue is reflected in self-regulation, such as a diminished ability to exercise self-control (Vohs et al., 2008). (See also **choice overload** and **ego depletion**.)

Decision staging

When people make complex or long decisions, such as buying a car, they tend to explore their options successively. This involves deciding what information to focus on, as well as choices between attributes and alternatives. For example, when people narrow down their options, they often tend to screen alternatives on the basis of a subset of attributes, and then they compare alternatives. **Choice architects** may not only break down complex decisions into multiple stages, to make the process easier, but they can also work with an understanding of sequential decision making by facilitating certain comparisons at different stages of the choice process (Johnson et al., 2012).

Decoy effect

Choices often occur relative to what is on offer rather than based on absolute **preferences**. The decoy effect is technically known as an 'asymmetrically dominated choice' and occurs when people's preference for one option over another changes as a result of adding a third (similar but less attractive) option. For example, people are more likely to choose an elegant pen over $6 in cash if there is a third option in the form of a less elegant pen (Bateman, Munro, & Poe, 2008).

Default (option)

Default options are pre-set courses of action that take effect if nothing is specified by the decision maker (Thaler & Sunstein, 2008), and setting defaults is an effective tool in **choice architecture** when there is **inertia** or uncertainty in decision making (Samson, 2014). Requiring people to opt-out if they do not wish to donate their organs, for example, has been associated with higher donation rates (Johnson & Goldstein, 2003).

Delusion of competence (Dunning-Kruger effect)

This is the case whereby, either socially or pathologically, a person lacks reflexive acknowledgement that they are not equipped to make a decision or to act appropriately in relation to the demands of a situation. Kruger and Dunning (1999) observed a divergence between perceived and actual competence which explains a range of unsound decision-making. The effect explains why, among other real-world difficulties, management boards decide to promote products whose working they don't understand, and why talent show contestants are unaware of their inability to sing, until ejected by the judges. (The prevalence of this bias has made the producers of certain talent shows very wealthy.)

Dictator game

The dictator game is an experimental game (see **behavioral game theory**) designed to elicit altruistic aspects of behavior. In the **ultimatum game**, a proposing player is endowed with a sum of money and asked to split it with another (responding) player. The responder may either accept the proposer's offer or reject it, in which case neither of the players will receive anything. Since expressed preferences in the ultimatum game may be due to factors other than altruism (e.g. fear of envy), the dictator game is played without the responder being able to decide whether to accept the offer or not (Camerer, 2003). As a result, it only involves one actual player and is not strictly a game. Whether or not these games really better measure altruism, or something else, forms part of an interesting debate (e.g. Bardsley, 2008) (See also **trust game**.)

Discounting

See **Time discounting**

Disposition effect

The disposition effect refers to investors' reluctance to sell assets that have lost value and greater likelihood of selling assets that have made gains (Shefrin & Statman, 1985). This phenomenon can be explained by **prospect theory** (**loss aversion**), **regret avoidance** and **mental accounting**.

Diversification bias

People seek more variety when they choose multiple items for future consumption simultaneously than when they make choices sequentially, i.e. on an 'in the moment' basis. Diversification is non-optimal when people overestimate their need for diversity (Read & Loewenstein, 1995). In other words, sequential choices lead to greater experienced **utility**. For example, before going on

vacation I may upload classical, rock and pop music to my MP3 player, but on the actual trip I may mostly end up listening to my favorite rock music. (See also **projection bias**).

Dual-self model

In economics, dual-self models deal with the inconsistency between the patient long-run self and myopic short-run self. With respect to savings behavior, Thaler and Shefrin (1981) introduced the concepts of the farsighted *planner* and myopic *doer*. At any point in time, there is a conflict between those selves with two sets of **preferences**. The approach helps economic theorists overcome the paradox created by self-control in standard views of **utility**. The more recent dual-self model of impulse control (Fudenberg & Levine, 2006) explains findings from the areas of time discounting, risk aversion, and self-control (see also **intertemporal choice**). More practically-oriented research on savings behavior has attempted to make people feel more connected to their future selves, making them appreciate that they are the future recipients of current savings. In an experiment, participants who were exposed to their future (as opposed to present) self in the form of an age-progressed avatar in virtual reality environments allocated twice as much money to a retirement account (Hershfield et al., 2011).

Dual-system theory

Dual-system models of the human mind contrast automatic, fast, and non-conscious (System 1) with controlled, slow, and conscious (System 2) thinking. Many **heuristics** and **cognitive biases** studied by behavioral economists are the result of intuitions, impressions, or automatic thoughts generated by System 1 (Kahneman, 2011). Factors that make System 1's processes more dominant in decision making include cognitive busyness, distraction, time pressure, and positive mood, while System 2's processes tend to be enhanced when the decision involves an important object, has heightened personal relevance, and when the decision maker is held accountable by others (Samson & Voyer, 2012; Samson & Voyer, 2014).

Ego depletion

Ego depletion is a concept emanating from self-regulation (or self-control) theory in psychology. According to the theory, willpower operates like a muscle that can be exercised or exerted. Studies have found that tasks requiring self-control can weaken this muscle, leading to ego depletion and a subsequently diminished ability to exercise self-control. In the lab, ego depletion has been induced in many different ways, such as having to suppress emotions or thoughts, or having to make a range of difficult decisions. The resulting ego depletion leads people to make less restrained decisions; consumers, for example, may be more likely to choose candy over 'healthy' granola bars (Baumeister et al., 2008). Some studies now suggest that the evidence for this resource depletion model of self-control has been overestimated (e.g. Hagger & Chatzisarantis, 2016).

Elimination-by-aspects

Decision makers have a variety of **heuristics** at their disposal when they make choices. One of these effort-reducing heuristics is referred to as 'elimination-by-aspects', and when it is applied, decision makers gradually reduce the number of alternatives in a choice set, starting with the

aspect that they see as most significant. One cue is evaluated at a time until fewer and fewer alternatives remain in the set of available options (Tversky, 1972); for example, a consumer may first compare a number of television sets on the basis of brand, then screen size, and finally price, etc., until only one option remains.

(Hot-cold) Empathy gap

It is difficult for humans to predict how they will behave in the future. A hot-cold empathy gap occurs when people underestimate the influence of visceral states (e.g. being angry, in pain, or hungry) on their behavior or preferences. In medical decision making, for example, a hot-to-cold empathy gap may lead to undesirable treatment choices when cancer patients are asked to choose between treatment options right after being told about their diagnosis. Even low rates of adherence to drug regimens among people with bipolar disorder could be explained partly by something akin to a cold-to-hot empathy gap, while in a manic phase, patients have difficulty remembering what it is like to be depressed and stop taking their medication (Loewenstein, 2005).

Endowment effect

This bias occurs when we overvalue a good that we own, regardless of its objective market value (Kahneman, Knetsch, & Thaler, 1991). It is evident when people become relatively reluctant to part with a good they own for its cash equivalent, or if the amount that people are **willing to pay** for the good is lower than what they are **willing to accept** when selling the good. Put more simply, people place a greater value on things once they have established ownership. This is especially true for goods that wouldn't normally be bought or sold on the market, usually items with symbolic, experiential, or emotional significance. The endowment effect is an illustration of the **status quo bias** and can be explained by **loss aversion**.

Extrapolation bias

See **Representativeness heuristic**

Fast and frugal

Fast and frugal decision-making refers to the application of ecologically rational **heuristics**, such as the **recognition heuristic**, which are rooted in the psychological capacities that we have evolved as human animals (e.g. memory and perceptual systems). They are 'fast and frugal' because they are effective under conditions of **bounded rationality**—when knowledge, time, and computational power are limited (Goldstein & Gigerenzer, 2002).

Fear of missing out

Social media has enabled us to connect and interact with others, but the number of options offered to us through these channels is far greater than what we can realistically take up, due to limited time and practical constraints. The popular concept of FoMO, or Fear of Missing Out, refers to "a pervasive apprehension that others might be having rewarding experiences from which one is absent" (Przybylski et al., 2013). People suffering from FoMO have a strong desire to stay continually informed about what others are doing (see also **scarcity**, **regret aversion**, and **loss aversion**).

Framing effect

Choices can be worded in a way that highlights the positive or negative aspects of the same decision, leading to changes in their relative attractiveness. This technique was part of Tversky and Kahneman's development of **prospect theory**, which framed gambles in terms of losses or gains (Kahneman & Tversky, 1979a). Different types of framing approaches have been identified, including risky choice framing (e.g. the risk of losing 10 out of 100 lives vs. the opportunity to save 90 out of 100 lives), attribute framing (e.g. beef that is described as 95% lean vs. 5% fat), and goal framing (e.g. motivating people by offering a $5 reward vs. imposing a $5 penalty) (Levin, Schneider, & Gaeth, 1998).

Gambler's fallacy

The term 'gambler's fallacy' refers to the mistaken belief held by some people that independent events are interrelated; for example, a roulette or lottery player may choose not to bet on a number that came up in the previous round. Even though people are usually aware that successive draws of numbers are unrelated, their gut feeling may tell them otherwise (Rogers, 1998).

(Behavioral) Game theory

Game theory is a mathematical approach to modeling behavior by analyzing the strategic decisions made by interacting players (Nash, 1950). In standard experimental economics, the theory assumes a rational maximizer, ***homo economicus***. *Behavioral* game theory extends standard (analytical) game theory by taking into account how players feel about the payoffs other players receive, limits in strategic thinking, as well as the effects of learning (Camerer, 2003). Games are usually about cooperation or fairness. Well-known examples include the **ultimatum game**, **dictator game** and **trust game**.

Habit

Habit is an automatic and rigid pattern of behavior in specific situations, which is usually acquired through repetition and develops through associative learning (see also System 1 in **dual-system theory**), when actions become paired repeatedly with a context or an event (Dolan et al., 2010). 'Habit loops' involve a cue that triggers an action, the actual behavior, and a reward. For example, habitual drinkers may come home after work (the cue), drink a beer (the behavior), and feel relaxed (the reward) (Duhigg, 2012). Behaviors may initially serve to attain a particular goal, but once the action is automatic and habitual, the goal loses its importance. For example, popcorn may habitually be eaten in the cinema despite the fact that it is stale (Wood & Neal, 2009). Habits can also be associated with **status quo bias**.

Halo effect

This concept has been developed in social psychology and refers to the finding that a global evaluation of a person sometimes influences people's perception of that person's other unrelated attributes. For example, a friendly person may be considered to have a nice physical appearance, whereas a cold person may be evaluated as less appealing (Nisbett & Wilson, 1977). Halo effects have also been applied in other domains of psychology. For example, a study on the 'health halo'

found that consumers tend to choose drinks, side dishes and desserts with higher calorific content at fast-food restaurants that claim to be healthy (e.g. Subway) compared to others (e.g. McDonald's) (Chandon & Wansink, 2007).

Hedonic adaptation

People get used to changes in life experiences, a process which is referred to as 'hedonic adaptation' or the 'hedonic treadmill'. Just as the happiness that comes with the ownership of a new gadget or salary raise will wane over time, even the negative effect of life events such as bereavement or disability on subjective wellbeing tends to level off, to some extent (Frederick & Loewenstein, 1999). When this happens, people return to a relatively stable baseline of happiness. It has been suggested that the repetition of smaller positive experiences ('hedonic boosts'), such as exercise or religious practices, has a more lasting effect on our wellbeing than major life events (Mochon, Norton, & Ariely, 2008).

Herd behavior

This effect is evident when people do what others are doing instead of using their own information or making independent decisions. The idea of herding has a long history in philosophy and crowd psychology. It is particularly relevant in the domain of finance, where it has been discussed in relation to the collective irrationality of investors, including stock market bubbles (Banerjee, 1992). In other areas of decision-making, such as politics, science, and popular culture, herd behavior is sometimes referred to as 'information cascades' (Bikhchandi, Hirschleifer, & Welch, 1992).

Heuristic

Heuristics, which are commonly defined as cognitive shortcuts or rules of thumb that simplify decisions, represent a process of substituting a difficult question with an easier one (Kahneman, 2003). Heuristics can also lead to **cognitive biases**. There are divisions regarding heuristics' relation to bias and rationality. In the **'fast and frugal'** view, the application of heuristics (e.g. the **recognition heuristic**) is an "ecologically rational" strategy that makes best use of the limited information available to individuals (Goldstein and Gigerenzer, 2002). Furthermore, while heuristics such as **affect, availability,** and **representativeness** have a general purpose character, others developed in social and consumer psychology are more domain-specific, examples of which include brand name, price, and scarcity heuristics (Shah & Oppenheimer, 2008).

Hindsight bias

This bias, also referred to as the 'knew-it-all-along effect', is a frequently encountered judgment bias that is partly rooted in **availability** and **representativeness** heuristics. It happens when being given new information changes our recollection from an original thought to something different (Mazzoni & Vannucci, 2007). This bias can lead to distorted judgments about the probability of an event's occurrence, because the outcome of an event is perceived as if it had been predictable. It may also lead to distorted memory for judgments of factual knowledge. Hindsight bias can be a problem in legal decision-making. In medical malpractice suits, for example, jurors' hindsight bias tends to increase with the severity of the outcome (e.g. injury or death) (Harley, 2007).

Homo economicus

The term *homo economicus,* or 'economic man', denotes a view of humans in the social sciences, particularly economics, as self-interested agents who seek optimal, utility-maximizing outcomes. Behavioral economists and most psychologists, sociologists, and anthropologists are critical of the concept. People are not always self-interested, nor do they have consistent preferences or be mainly concerned about maximizing benefits and minimizing costs. We may make decisions with insufficient knowledge, feedback, and processing capability (**bounded rationality**); we overlook and are constrained by uncertainty; and our preferences change, often in response to changes in context and to noting others' preferences.

Hot and cold states

See **Empathy gap**

Hyperbolic discounting

See **Time discounting**

IKEA effect

While the **endowment effect** suggests that mere ownership of a product increases its value to individuals, the IKEA effect is evident when invested labor leads to inflated product valuation (Norton, Mochon, & Ariely, 2012). For example, experiments show that the monetary value assigned to the amateur creations of self-made goods is on a par with the value assigned to expert creations. Both experienced and novice do-it-yourselfers are susceptible to the IKEA effect. Research also demonstrates that the effect is not simply due to the amount of time spent on the creations, as dismantling a previously built product will make the effect disappear. The IKEA effect is particularly relevant today, given the shift from mass production to increasing customization and co-production of value. The effect has a range of possible explanations, such as positive feelings (including feelings of competence) that come with the successful completion of a task, a focus on the product's positive attributes, and the relationship between effort and liking. The *effort heuristic* is another concept that proposes a link between perceived effort and valuation (Kruger, Wirtz, Van Boven, & Altermatt, 2004).

Inequity aversion

Human resistance to "unfair" outcomes is known as 'inequity aversion', which occurs when people prefer fairness and resist inequalities. In some instances, inequity aversion is disadvantageous, as people are willing to forego a gain, in order to prevent another person from receiving a superior reward. Inequity aversion has been studied through **experimental games**, such as **dictator**, **ultimatum**, and **trust games** (Fehr & Schmidt, 1999), and the concept has been applied in business and marketing, including research on customer responses to exclusive price promotions (Barone & Tirthankar, 2010).

Inertia

In behavioral economics, inertia is the endurance of a stable state associated with inaction and the concept of **status quo bias** (Madrian & Shea 2001). In social psychology the term is sometimes also used in relation to persistence in (or **commitments** to) attitudes and relationships. Decision inertia is frequently counter-acted by **setting defaults**.

Information avoidance

Information avoidance in behavioral economics (Golman et al., 2017) refers to situations in which people choose not to obtain knowledge that is freely available. Active information avoidance includes physical avoidance, inattention, the biased interpretation of information (see also **confirmation bias**) and even some forms of forgetting. In behavioral finance, for example, research has shown that investors are less likely to check their portfolio online when the stock market is down than when it is up, which has been termed the ostrich effect (Karlsson et al., 2009). More serious cases of avoidance happen when people fail to return to clinics to get medical test results, for instance (Sullivan et al., 2004). While information avoidance is sometimes strategic, it usually has immediate hedonic benefits for people if it prevents the negative (usually psychological) consequences of knowing the information. It usually carries negative utility in the long term, because it deprives people of potentially useful information for decision making and feedback for future behavior. Furthermore, information avoidance can contribute to a polarization of political opinions and media bias.

Intertemporal choice

Intertemporal choice is a field of research concerned with the relative value people assign to payoffs at different points in time. It generally finds that people are biased towards the present (see **present bias**) and tend to discount the future (see **time discounting** and **dual-self model**).

Less-is-better effect

When objects are evaluated separately rather than jointly, decision makers focus less on attributes that are important and are influenced more by attributes that are easy to evaluate. The less-is-better effect suggests a preference reversal when objects are considered together instead of separately. One study presented participants with two dinner set options. Option A included 40 pieces, nine of which were broken. Option B included 24 pieces, all of which were intact. Option A was superior, as it included 31 intact pieces, but when evaluated separately, individuals were willing to pay a higher price for set B. In a joint evaluation of both options, on the other hand, Option A resulted in higher willingness to pay (Hsee, 1998).

Licensing effect

Also known as 'self-licensing', the licensing effect is evident when people allow themselves to do something bad (e.g. immoral) after doing something good (e.g. moral) first (Merritt, Effron & Monin, 2010). Well-publicized research in Canada asked participants to shop either in a green or a conventional online store. In one experiment, people who shopped in a green store shared less money in a dictator game (see **game theory**). Another experiment allowed participants to lie (about their performance on a task) and cheat (take more money out of an envelope than they

actually earned) and showed more lying and cheating among green shoppers (Mazar & Zhong, 2010).

Loss aversion

Loss aversion is an important BE concept associated with **prospect theory** and is encapsulated in the expression "losses loom larger than gains" (Kahneman & Tversky, 1979a). It is thought that the pain of losing is psychologically about twice as powerful as the pleasure of gaining, and since people are more willing to take risks to avoid a loss, loss aversion can explain differences in risk-seeking versus aversion. Loss aversion has been used to explain the **endowment effect** and **sunk cost fallacy**, and it may also play a role in the **status quo bias**. The basic principle of loss aversion is sometimes applied in behavior change strategies, and it can explain why penalty **frames** are sometimes more effective than reward frames in motivating people (Gächter, Orzen, Renner, & Starmer, 2009). The website *Stickk* allows people to publicly **commit** to a positive behavior change (e.g. give up junk food), which may be coupled with the fear of loss—a cash penalty in the case of non-compliance. (See also **regret aversion**.)

Mental accounting

Mental accounting is a concept associated with the work of Richard Thaler (see Thaler, 2015, for a summary). According to Thaler, people think of value in relative rather than absolute terms. For example, they derive pleasure not just from an object's value, but also the quality of the deal—its transaction **utility** (Thaler, 1985). In addition, humans often fail to consider fully opportunity costs (tradeoffs) and are susceptible to the **sunk cost fallacy**.

Why are people willing to spend more when they pay with a credit card than cash (Prelec & Simester, 2001)? Why would more individuals spend $10 on a theater ticket if they had just lost a $10 bill than if they had to replace a lost ticket worth $10 (Kahneman & Tversky, 1984)? Why are people more likely to spend a small inheritance and invest a large one (Thaler, 1985)? According to the theory of mental accounting, people treat money differently, depending on factors such as the money's origin and intended use, rather than thinking of it in terms of the "bottom line" as in formal accounting (Thaler, 1999). An important term underlying the theory is fungibility, the fact that all money is interchangable and has no labels. In mental accounting, people treat assets as less fungible than they really are. Even seasoned investors are susceptible to this bias when they view recent gains as disposable "house money" (Thaler & Johnson, 1990) that can be used in high-risk investments. In doing so, they make decisions on each mental account separately, losing out the big picture of the portfolio. (See also **partitioning** and **pain of paying** for ideas related to mental accounting.)

Mindless eating

Various cues non-consciously affect the amount and quality of people's consumption of food. Cues often serve as benchmarks in the environment, and they may include serving containers, packaging, people, labels, and atmospheric factors. They suggest to the consumer what and how much is normal, appropriate, typical, or reasonable to consume. Perceptual biases contribute to a distorted sense of consumption; for example, people underestimate calories in larger servings and tend to serve themselves more when using larger utensils, plates, or bowls (Wansink et al., 2009).

Myopic loss aversion

Myopic **loss aversion** occurs when investors take a view of their investments that is strongly focused on the short term, leading them to react too negatively to recent losses, which may be at the expense of long-term benefits (Thaler et al., 1997). This phenomenon is influenced by narrow framing, which is the result of investors considering specific investments (e.g. an individual stock or a trade) without taking into account the bigger picture (e.g. a portfolio as a whole or a sequence of trades over time) (Kahneman & Lovallo, 1993).

Naive allocation

Decision researchers have found that people prefer to spread limited resources evenly across a set of possibilities (see also **1/N heuristic**). This can be referred to as 'naive allocation'. For example, consumers may invest equal amounts of money across different investment options regardless of their quality. Similarly, the **diversification bias** shows that consumers like to spread out consumption choices across a variety of goods. Research suggests that **choice architects** can work with these tendencies due to decision makers' partition dependence. For instance, by separating healthy food menu options into different menu categories (e.g. 'fruits', 'vegetables') and combining unhealthy options into one single menu category (e.g. 'candies and cookies'), one can steer consumers toward choosing more healthy options and fewer unhealthy options (Johnson et al., 2012).

Nudge

According to Thaler and Sunstein (2008, p. 6), a nudge is

> any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives. To count as a mere nudge, the intervention must be easy and cheap to avoid. Nudges are not mandates. Putting the fruit at eye level counts as a nudge. Banning junk food does not.

Perhaps the most frequently mentioned nudge is the setting of **defaults**, which are pre-set courses of action that take effect if nothing is specified by the decision-maker. (See also **choice architecture**.)

Questions about the theoretical and practical value of nudging have been explored (Kosters & Van der Heijden, 2015). Nudges need to be assessed with respect to their ability to produce lasting behavior change (Frey & Rogers, 2014). Critics have noted that the philosophy behind nudging (liberal paternalism) assumes a human lack of rationality and agency (Gigerenzer, 2015). There may also be limits to nudging due to non-cognitive constraints and population differences, such as a lack of financial resources if nudges are designed to increase savings (Loibl et al., 2016). The limits of nudging speak to the value of field experimentation in order to test behavioral interventions prior to their implementation.

1/N (heuristic)

1/N is a trade-off heuristic, one that assigns equal weights to all cues or alternatives (Gigerenzer & Gaissmaier, 2011). Under the 1/N rule, resources are allocated equally to each of N alternatives.

For example, in the (one-shot) **ultimatum game**, participants most frequently split their money equally. Similarly, people often hedge their money in investments by allocating equal amounts to different options. 1/N is a form of **naive allocation** of resources.

Optimism bias

People tend to overestimate the probability of positive events and underestimate the probability of negative events. For example, we may underestimate our risk of being in a car accident or getting cancer relative to other people. A number of factors can explain unrealistic optimism, including self-serving biases, perceived control, being in a good mood, etc. A possible cognitive factor that has been identified in optimism bias is the **representativeness heuristic** (Shepperd, Carroll, Grace & Terry, 2002).

Ostrich effect

See **Information avoidance**

Overconfidence (effect)

The overconfidence effect is observed when people's subjective confidence in their own ability is greater than their objective (actual) performance. It is frequently measured by having experimental participants answer general knowledge test questions. They are then asked to rate how confident they are in their answers on a scale. Overconfidence is measured by calculating the score for a person's average confidence rating relative to the actual proportion of questions answered correctly. Overconfidence is similar to **optimism bias** when confidence judgments are made relative to other people. A big range of issues have been attributed to overconfidence, including the high rates of entrepreneurs who enter a market despite the low chances of success (Moore & Healy, 2008). The **planning fallacy** is another example of overconfidence, where people underestimate the length of time it will take them to complete a task, often ignoring past experience (Buehler, Griffin, & Ross, 1994).

Over-justification effect

This effect occurs when a person's intrinsic interest in a previously unrewarded activity decreases after they engage in that activity as a means to achieving an extrinsic goal (e.g. financial reward) (Deci et al., 1999). As a result, the number of hours worked by volunteers, for instance, may be negatively affected by small financial rewards (Frey & Goette, 1999).

Pain of paying

People don't like to spend money. We experience pain of paying, because we are **loss averse**. This pain is thought to be reduced in credit card purchases, because plastic is less tangible than cash, the depletion of resources (money) is less visible, and payment is deferred. Because different personality types experience different levels of pain of paying, this can affect spending decisions. Tightwads, for instance, experience more of this pain than spendthrifts, which leads to different outcomes for these groups when payments are made by cash versus card (Rick, Cryder & Loewenstein, 2008; Thomas, Desai & Seenivasan, 2011). (See also **mental accounting**).

Partition Dependence

See **Naive allocation**

Partitioning

The rate of consumption can be decreased by physically partitioning resources into smaller units, for example cookies wrapped individually or money divided into several envelopes. When a resource is divided into smaller units (e.g. several packs of chips), consumers encounter additional decision points—a psychological hurdle encouraging them to stop and think. In addition to the cost incurred when resources are used, opening a partitioned pool of resources incurs a psychological transgression cost, such as feelings of guilt (Cheema & Soman, 2008). Related research has found that separate mental payment accounts (i.e. envelopes with money) can disrupt a shopping momentum effect that may occur after an initial purchase (Dhar, Huber, & Khan, 2007). (For related ideas, see also **mental accounting**).

Peak-end rule

According to the peak-end rule, our memory of past experience (pleasant or unpleasant) does not correspond to an average level of positive or negative feelings but to the most extreme point and the end of the episode (Kahneman & Tversky, 1999). The rule developed from findings that showed that evaluations of a past episode seem to be determined by a weighted average of 'snapshots' of an experience, thus neglecting its actual duration. These prototypical moments are related to the judgments made when people apply a **representativeness heuristic** (Frederickson & Kahneman, 1993).

Planning fallacy

Originally proposed by Kahneman and Tversky (1979b), the planning fallacy is the tendency for individuals or teams to underestimate the time and resources it will take to complete a project. This error occurs when forecasters overestimate their ability and underestimate the possible risk associated with a project. Without proper training teams of individuals can exacerbate this phenomena causing projects to be based on the team's confidence rather than statistical projections. One way to combat the planning fallacy is to use a method termed Reference Class Forecasting (Flyvbjerg, Skamris Holm, & Buhl, 2005; Kahneman & Tversky, 1979b). This method begins by creating a benchmark using data on similar projects. Then estimates are built based on variances from the benchmark, depending on variables related to the project at hand. For example, a construction company might estimate that building a house will take five weeks instead of the average reference class time of six weeks, because the team at hand is larger and more skilled than previous project teams. (See also **optimism bias**, **overconfidence.**)

Possibility effect

See **Certainty/possibility effects**

Precommitment

Humans need a continuous and consistent self-image (Cialdini, 2008). In an effort to align future behavior, being consistent is best achieved by making a commitment, especially if it is done publicly. Thus, precommitting to a goal is one of the most frequently applied behavioral devices to achieve positive change. The 'Save More Tomorrow' program, aimed at helping employees save more money, illustrates this concept (Thaler & Benartzi, 2004). The program gives employees the option of precommitting to a gradual increase in their savings rate in the future, each time they get a raise. The program also avoids the perception of **loss** that would be felt with a reduction in disposable income, because consumers commit to saving future increases in income. People's **inertia** makes it more likely that they will stick with the program, because they have to opt out to leave. (See also **commitment**.)

Preference

In economics, preferences are evident in theoretically optimal choices or real (behavioral) choices when people decide between alternatives. Preferences also imply an ordering of different options in terms of expected levels of happiness, gratification, **utility**, etc. (Arrow, 1958). Measurement of preferences may rely on **willingness-to-pay (WTP) and willingness-to-accept (WTA)**. Preferences are sometimes elicited in survey research, which may be associated with a range of problems, such as the hypothetical bias, when stated preferences are different from those expressed in actual choices, or response effects, when subjects return the answer that they perceive the researcher 'expects'. Armin Falk and colleagues have developed cross-culturally valid survey questions that are good predictors of preferences in behavioral experiments. These include questions about risk taking (see **prospect theory**), **social preferences** (e.g. about **reciprocity**) and **time discounting** (Falk, Becker, Dohmen, Huffman, & Sunde, 2012).

Preference reversal

Preference reversal refers to a change in the relative frequency by which one option is favored over another in behavioral experiments, as evident in the **less-is-better-effect** or **ratio bias**, for example, or **framing effects** more generally. The preferred ordering of a pair of choices is often found to depend on how the choice is presented; this effect contradicts the predictions of rational choice theory. (See also **transitive/intransitive preferences.**)

Present bias

The present bias refers to the tendency of people to give stronger weight to payoffs that are closer to the present time when considering trade-offs between two future moments (O'Donoghue, &, Rabin, 1999). (See also **time discounting.**)

Priming (Conceptual)

Conceptual priming is a technique and process applied in psychology that engages people in a task or exposes them to stimuli. The prime consists of meanings (e.g. words) that activate associated memories (schema, stereotypes, attitudes, etc.). This process may then influence people's performance on a subsequent task (Tulving, Schacter, & Stark, 1982). For example, one study primed consumers with words representing either 'prestige' US retail brands (Tiffany,

Neiman Marcus, and Nordstrom) or 'thrift' brands (Wal-Mart, Kmart, and Dollar Store). In an ostensibly unrelated task, participants primed with prestige names then gave higher preference ratings to prestige as opposed to thrift product options (Chartrand, Huber, Shiv, & Tanner, 2008). Conceptual priming is different from processes that do not rely on activating meanings, such as perceptual priming (priming similar forms), the mere exposure effect (repeated exposure increases liking), affective priming (subliminal exposure to stimuli, evoking positive or negative emotions) (Murphy & Zajonc, 1993), or the perception-behavior link (e.g. mimicry) (Chartrand & Bargh, 1999).

(Myopic) Procrastination

People are shortsighted and often put off decisions, which may be partly due to **inertia**, the complexity of decision-making (see **choice overload**) and **present bias**. Choice architects can help by providing a limited time window for action (see also **scarcity**) or a focus on **satisficing**.

Projection bias

In behavioral economics, projection bias refers to people's assumption that their own tastes or **preferences** will remain the same over time. For example, people may overestimate the positive impact of a career promotion due to an under-appreciation of **(hedonic) adaptation**, put above-optimal variety in their planning for future consumption (see **diversification bias**), or underestimate the future selling price of an item by not taking into account the **endowment effect**. Differences between present and future valuations should be particularly underappreciated for durable goods, where satisfaction levels are likely to fluctuate over time. Finally, consumers' under-appreciation of **habit** formation (associated with higher consumption levels over time) may lead to projection bias in planning for the future, such as retirement savings (Loewenstein, O'Donoghue, & Rabin, 2003).

Prospect theory

Prospect theory, which is a behavioral model that shows how people decide between alternatives that involve risk and uncertainty (e.g. % likelihood of gains or losses), demonstrates that people think in terms of expected **utility** relative to a **reference** point (e.g. current wealth) rather than absolute outcomes. Prospect theory was developed by **framing** risky choices, and it indicates that people are **loss-averse**, and since individuals dislike losses more than an equivalent gain, they are more willing to take risks, in order to avoid a loss. Due to the biased weighting of probabilities (see **certainty/possibility effects**) and loss aversion, the theory leads to the following pattern in relation to risk (Kahneman & Tversky, 1979a; Kahneman, 2011):

	GAINS	LOSSES
HIGH PROBABILITY *(Certainty Effect)*	95% chance to win $10,000 Fear of disappointment RISK-AVERSE	95% chance to lose $10,000 Hope to avoid loss RISK-SEEKING
LOW PROBABILITY *(Possibility Effect)*	5% chance to win $10,000 Hope of large gain RISK-SEEKING	5% chance to lose $10,000 Fear of large loss RISK-AVERSE

Ratio bias

We find it harder to deal with proportions or ratios than with absolute numbers. For example, when asked to evaluate two movie rental plans with a contracted scale (e.g. 7 and 9 new movies per week for Plans A and B, respectively) as opposed to an equivalent offering with an expanded scale (364 and 468 movies per year, respectively), consumers favor the better plan (Plan B) more in the scale expansion than contraction condition (Burson, Larrick, and Lynch 2009). This is because our experiential system—unlike the rational system—encodes information as concrete representations, and absolute numbers are more concrete than ratios or percentages (Kirkpatrick and Epstein 1992). (See also **framing**, **dual-system theory**, **affect heuristic**.)

Reciprocity

Reciprocity is a **social norm** that involves in-kind exchanges between people—responding to another's action with another equivalent action. It is usually positive (e.g. returning a favor), but it can also be negative (e.g. punishing a negative action) (Fehr & Gächter, 2000). Reciprocity is of interest to behavioral economists because it does not involve an economic exchange, and it has been studied by means of experimental games (see **game theory**). Charities often take advantage of reciprocity when including small gifts in solicitation letters, while supermarkets try to get people to buy by offering free samples. Reciprocity is also used as a social influence tool in the form of 'reciprocal concessions', an approach also known as the 'door-in-the-face' technique, which occurs when a person makes an initial large request (e.g. to buy an expensive product), followed up by a smaller request (e.g. a less expensive option), if the initial request is denied by the responder. The responder then feels obligated to 'return the favor' by agreeing to the conceded request (Cialdini, Vincent, Lewis, Catalan, Wheeler, & Darby, 1975).

Recognition heuristic

While a core heuristic in the *heuristics and biases* tradition of Tversky and Kahneman is **availability**, a conceptually similar heuristic proposed in Gigerenzer's *fast and frugal* tradition is

recognition. In the fast and frugal view, the application of heuristics is an "ecologically rational" strategy that makes best use of the limited information available to individuals (Goldstein & Gigerenzer, 2002). Recognition is an easily accessible cue that simplifies decision-making and indicates that sometimes less knowledge can lead to more accurate inferences. In one experiment, participants had to judge which one of two cities had the greater population size. Results showed that the vast majority of choices were based on recognition of the city name. What's more, the study indicated a less-is-more effect, whereby people's guesses are more accurate in a domain of which they have little knowledge than one about which they know a lot. American participants did better on German cities, while German participants had higher scores on American cities (Goldstein and Gigerenzer, 2002). (See also **satisficing**.)

Reference dependence

Reference dependence is one of the fundamental principles of **prospect theory** and behavioral economics more generally. In prospect theory (Kahneman & Tversky, 1979a), people evaluate outcomes relative to a reference point, and then classify gains and losses (see also **loss aversion**, **endowment effect**). Reference dependence can apply to any decision involving risk and uncertainty. Online privacy research, for example, has shown that identical privacy notices do not always result in the same levels of disclosure (Adjerid et al., 2013). Consumers evaluate privacy notices relative to the status quo—their current level of protection. When privacy notices are preceded by notices that are less protective, people disclose more compared to those who have experienced no change in privacy protection. The converse is the case if preceding privacy notices are more protective.

Regret aversion

When people fear that their decision will turn out to be wrong in hindsight, they exhibit regret aversion. This bias is associated with risk aversion. Regret-averse people may fear the consequences of both errors of omission (e.g. not buying the right [optimal] investment property) and commission (e.g. buying the wrong [suboptimal] investment property) (Seiler et al., 2008). (See also **loss aversion** and **sunk cost fallacy**.)

Regulatory focus theory

The psychological theory of regulatory focus (Florack et al., 2013; Higgins, 1998) holds that human motivation is rooted in the approach of pleasure and the avoidance of pain, i.e. it differentiates a promotion focus from a prevention focus. The former involves the pursuit of goals that are achievement- or advancement-related, characterized by eagerness, whereas the latter focuses on security and protection, characterized by vigilance. For example, a person can become healthy by either engaging in physical activity and eating organic food, or refraining from bad habits such as smoking or eating junk food. Prevention and promotion orientations are a matter of both enduring dispositions and situational factors.

According to *regulatory fit* theory, messages and **frames** that are presented as gains are more influential under a promotion focus, whereas those presented as non-gains or **losses** carry more weight in a prevention focus. For example, research by Lee and Aaker (2004) found that 'gain frames' in advertising ("Get energized") lead to more favorable attitudes when the body of the

advertising message is written in promotional terms (e.g. emphasizing the energy benefits of drinking grape juice), whilst 'loss frames' ("Don't miss out on getting energized!") have a more favorable effect when the main body of the ad focuses on prevention (e.g. stressing the cancer reduction benefits of drinking grape juice).

Representativeness heuristic

Representativeness is one of the major general purpose **heuristics**, along with **availability** and **affect**, and it is used when we judge the probability that an object or event A belongs to class B by looking at the degree to which A resembles B. When we do this, we neglect information about the general probability of B occurring (its base rate) (Kahneman & Tversky, 1972). Consider the following problem:

Bob is an opera fan who enjoys touring art museums when on holiday. Growing up, he enjoyed playing chess with family members and friends. Which situation is more likely?

A. Bob plays trumpet for a major symphony orchestra

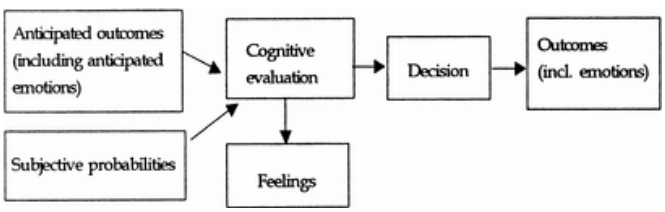
B. Bob is a farmer

A large proportion of people will choose A in the above problem, because Bob's description matches the stereotype we may hold about classical musicians rather than farmers. In reality, the likelihood of B being true is far greater, because farmers make up a much larger proportion of the population.

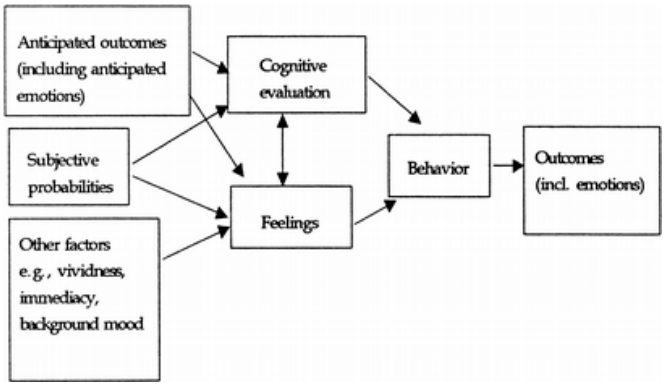
Similarity- or prototype-based evaluations more generally are a common cognitive shortcut across domains of life. For example, a consumer may infer a relatively high product quality from a store (generic) brand if its packaging is designed to resemble a national brand (Kardes, Posavac, & Cronley, 2004). In finance, investors may prefer to buy a stock that had abnormally high recent returns (the extrapolation bias) or misattribute a company's positive characteristics (e .g., high quality goods) as an indicator of a good investment (Chen et al., 2007).

Risk-as-feelings

'Consequentialist' perspectives of decision-making under risk or uncertainty (risky-choice theories, see e.g. **prospect theory**) tend to either focus on cognitive factors alone or consider emotions as an *anticipated* outcome of a decision:



The risk-as-feelings hypothesis (Loewenstein et al., 2001), on the other hand, also includes emotions as an *anticipatory* factor, namely feelings at the moment of decision-making:



In contrast to theories such as the **affect heuristic**, where feelings play an informational role helping people to decide between alternatives, risk-as-feelings can account for cases where choices (e.g. refusal to fly due to a severe anxiety about air travel) diverge from what individuals would objectively consider the best course of action.

Satisficing

According to Herbert Simon, people tend to make decisions by satisficing (a combination of sufficing and satisfying) rather than optimizing (Simon, 1956); decisions are often simply 'good enough' in light of the costs and constraints involved. As a **heuristic**, satisficing individuals will choose options that meet their most basic decision criteria. A focus on satisficing can be used by **choice architects** when decision makers are prone to procrastination (Johnson et al., 2012).

Scarcity (heuristic)

When an object or resource is less readily available (e.g. due to limited quantity or time), we tend to perceive it as more valuable (Cialdini, 2008). Scarcity appeals are often used in marketing to induce purchases. An experiment (Lee & Seidle, 2012) that used wristwatch advertisements as stimuli exposed participants to one of two different product descriptions "Exclusive limited edition. Hurry, limited stocks" or "New edition. Many items in stock". They then had to indicate how much they would be willing to pay for the product. The average consumer was willing to pay an additional 50% if the watch was advertised as scarce.

Scarcity can be used as an effective strategy by **choice architects** to get people who put off decisions (myopic procrastinators) to act (Johnson et al., 2012).

Scarcity (psychology of)

People have a "mental bandwidth," or brainpower, made up of attention, cognition, and **self-control** (Mullainathan & Sharif, 2013), which consists of finite resources that may become reduced or **depleted**. The scarcity mindset entails a feeling of not having enough of something. According to Mullainathan and Sharif, anyone can experience cognitive scarcity, but it is particularly pronounced for people living in poverty. On the positive side, this may induce limited focus that can be used productively. The downside is 'tunneling', which inhibits the cognitive power needed to solve problems, reason, or retain information. Reduced bandwidth also impairs executive control, compromising people's ability to plan and increasing

impulsiveness whereby the focus becomes immediate—put food on the table, find shelter, or pay the utility bill.

The financial and life worries associated with poverty, and the difficult tradeoffs low-income individuals must make on a regular basis, all reduce their cognitive capacity. Limits on self-control or planning may lead some individuals to sacrifice future rewards in favor of short-term needs. Procrastination over important tasks is also more likely, as is avoidance of expressing negative emotions.

Self-control

Self-control, in psychology, is a cognitive process that serves to restrain certain behaviors and emotions vis-a-vis temptations and impulses. This aspect of self-regulation allows individuals to achieve goals (Diamond, 2013). (See also **inter-temporal choice**, **present bias**, **dual-self model**, **dual-system theory**, **ego depletion**, and **decision fatigue**.)

Social norm

Social norms signal appropriate behavior and are classed as behavioral expectations or rules within a group of people (Dolan et al., 2010). Social norms of exchange, such as **reciprocity**, are different from market exchange norms (Ariely, 2008). Normative feedback (e.g. how one's energy consumption level compares to the regional average) is often used in behavior change programs (Allcott, 2011). Feedback utilized to induce behavior change can either be *descriptive*, representing majority behavior for the purpose of comparison, or *injunctive*, communicating approved or disapproved behavior. The latter is often more effective when an undesirable behavior is prevalent (Cialdini, 2008).

Social preferences

Social preferences are one type of **preference** investigated in behavioral economics and relate to the concepts of **reciprocity**, altruism, **inequity aversion**, and fairness.

Social proof

The influence exerted by others on our behavior can be expressed as being either normative or informational. Normative influence implies conformity in order to be accepted or liked (Aronson, Wilson, & Akert, 2005), while informational influence occurs in ambiguous situations where we are uncertain about how to behave and look to others for information or cues. Social proof is an informational influence (or descriptive norm) and can lead to **herd behavior**. It is also sometimes referred to as a **heuristic**. Research suggests that receiving information about how others behave (social proof) leads to greater compliance among people from collectivist cultures, whereas information on the individual's past behavior (consistency/**commitment**) is associated with greater compliance for people from individualist cultures (Cialdini, Wosinska, Barrett, Butner, & Gornik-Durose, 1999).

Status quo bias

Status quo bias is evident when people prefer things to stay the same by doing nothing (see also **inertia**) or by sticking with a decision made previously (Samuelson, & Zeckhauser, 1988). This may happen even when only small transition costs are involved and the importance of the decision is great. Field data from university health plan enrolments, for example, show a large disparity in health plan choices between new and existing enrollees that could not be explained by unchanging **preferences.** One particular plan with significantly more favorable premiums and deductibles had a growing market share among new employees but a significantly lower share among older enrollees. Samuelson and Zeckhauser note that status quo bias is consistent with **loss aversion**, and that it could be psychologically explained by previously made **commitments** and **sunk cost** thinking, cognitive dissonance, a need to feel in control and regret avoidance. The latter is based on Kahneman and Tversky's observation that people feel greater regret for bad outcomes that result from new actions taken than for bad consequences that are the consequence of inaction (Kahneman & Tversky, 1982).

Sunk cost fallacy

Individuals commit the sunk cost fallacy when they continue a behavior or endeavor as a result of previously invested resources (time, money or effort) (Arkes & Blumer, 1985). This fallacy, which is related to **status quo bias**, can also be viewed as bias resulting from an ongoing **commitment**. For example, individuals sometimes order too much food and then over-eat 'just to get their money's worth'. Similarly, a person may have a $20 ticket to a concert and then drive for hours through a blizzard, just because s/he feels that s/he has to attend due to having made the initial investment. If the costs outweigh the benefits, the extra costs incurred (inconvenience, time or even money) are held in a different **mental account** than the one associated with the ticket transaction (Thaler, 1999).

System 1/2

See **Dual-system theory**

Take-the-best (heuristic)

Take-the-best is a simple decision-making shortcut that people may apply when choosing between alternatives. It is a one-reason decision rule, a type of **heuristic** where judgments are based on a single "good" reason only, ignoring other cues (Gigerenzer & Gaissmaier, 2011). Using the take-the-best heuristic, a decision maker will base the choice on one attribute that is perceived to discriminate most effectively between the options (Gigerenzer & Goldstein, 1996). One study investigated voters' perceptions of how US presidential candidates would handle the single issue that voters regarded as most important. A model based on this issue (as a take-the-best attribute used by potential voters) correctly chose the winner of the popular vote in 97% of all predictions (Graefe & Armstrong, 2012).

Take-the-first (heuristic)

Take-the-first is a fluency **heuristic**. Fluency-based decision-making strategies occur when different alternatives are recognized, but the one that is recognized faster is given higher value

with respect to a criterion (Gigerenzer & Gaissmaier, 2011). In the case of take-the-first, decision-makers simply choose the first alternative that comes to mind (Johnson & Raab, 2003). Similar to other **fast and frugal** approaches, this strategy is most suitable in situations that present limitations to people's ability to analyze information carefully. When experienced handball players were asked to decide between taking a shot or passing the ball in video sequences, the first option that came to mind tended to be superior to later options or a condition under which when they had more time to analyze the situation.

Time (temporal) discounting

Time discounting research, which investigates differences in the relative valuation placed on rewards (usually money or goods) at different points in time, by comparing its valuation at an earlier date with one for a later date (Frederick, Loewenstein, & O'Donoghue, 2002), shows that present rewards are weighted more heavily than future ones. Once rewards are very distant in time, they cease to be valuable. Delay discounting can be explained by impulsivity and a tendency for immediate gratification, and it is particularly evident for addictions such as nicotine (Bickel, Odum, & Madden, 1999). *Hyperbolic discounting* theory suggests that discounting is not time-consistent; it is neither linear nor occurs at a constant rate. It is usually studied by asking people questions such as "Would you rather receive £100 today or £120 a month from today?" or "Would you rather receive £100 a year from today or £120 a year and one month from today?" Results show that people are happier to wait an extra month for a larger reward when it is in the distant future. In hyperbolic discounting, values placed on rewards decrease very rapidly for small delay periods and then fall more slowly for longer delays (Laibson, 1997).

Transitive/intransitive preferences

Preference transitivity is a hallmark of rational choice theory. It holds that if, out of a set of options, A is preferred to B and B to C, then A must also be preferred to C (e.g. von Neumann & Morgenstern, 1947),. Intransitive preferences (i.e. C is preferred to A) violate the transitivity assumption and are sometimes used to indicate **System 1 vs 2** decision-making (Gallo et al., 2016). (See also **preference reversal** and **decoy effect**.)

Trust game

Similar to the **dictator game**, this game asks participants to split money between themselves and someone else. However, the trust game first asks Player A to determine an initial endowment of zero or a higher value (e.g. $5). The money is then multiplied (e.g. tripled to $15) by the experimenter and given to Player B, who is then asked to return an amount of zero or a higher value back to Player A. The game is about **reciprocity** and trust, because Player A must decide how much of the endowment to give to Player B in the hope of receiving at least the same amount in return. In the original experiment (Berg et al., 1995), 30 out of 32 first players sent money, and 11 of these 30 decisions resulted in a payback that was greater than the initial amount sent. This finding confounds the prediction offered by standard economic assumptions (see ***homo economicus***) that there would be no trust. However, as with other games, critics have raised questions about what the trust game actually measures (Brülhart & Usunier, 2012). (See also **ultimatum game.**)

Ultimatum game

The ultimatum game is an early example of research that uncovered violations of standard assumptions of rationality (see ***homo economicus***). In the experiment, one player (the proposer/allocator) is endowed with a sum of money and asked to split it between him/herself and an anonymous player (the responder/recipient). The recipient may either accept the allocator's proposal or reject it, in which case neither of the players will receive anything. From a traditional game-theoretic perspective, the allocator should only offer a token amount and the recipient should accept it. However, results showed that most allocators offered more than just a token payment, and many went as far as offering an equal split. Some offers were declined by recipients, suggesting that they were willing to make a sacrifice when they felt that the offer was unfair (see also **inequity aversion**) (Guth et al., 1982). (See also **dictator game** and **trust game**.)

Utility

In economics, utility refers to the benefits (satisfaction or happiness) consumers derive from a good, and it can be measured based on individuals' choices between alternatives or **preferences** evident in their **willingness to pay or accept.** Behavioral economists have questioned past assumptions that utility is always maximized, and they have worked with both traditional and new utility measures.

- *Expected utility* has been used in economics as well as game and decision theory, including **prospect theory**, and is based on choices with uncertain outcomes.
- *Discounted utility* is a form of utility used in the **intertemporal choice** domain of behavioral economics (Berns et al., 2007).
- *Experience utility* relates to actual (hedonic) experiences associated with an outcome which is associated with theories on forecasting errors like the **diversification bias.**
- *Remembered utility* suggests that people's choices are also based on their memories of past events and is invoked in the **peak-end rule.**
- *Instant utility* and *forecasted utility* have been used in the area of **intertemporal choice**, such as research on the **empathy gap**, showing that forecasted utility is biased in the direction of instant utility (Camerer & Loewenstein, 2004).
- *Procedural utility* is relevant if people value not only outcomes, but also the processes that lead to these outcomes (Frey, Benz, & Stutzer, 2004).
- *Social utility* has been proposed in relation to **game theory**, where players not only always act self-interestedly, but also show concerns about the perceived intentions of other players and fairness (Camerer, 1997).
- *Transaction utility* accounts for perceived merit or quality of a deal, rather than just the value of a good or service relative to its price captured by *acquisition utility* (Thaler, 1985).

Willingness to pay (WTP) / willingness to accept (WTA)

In economics, willingness to accept (WTA) and willingness to pay (WTP) are measures of preference that do not rely on actual choices between alternative options. Instead, they ask individuals to specify monetary amounts. WTA is a measure of the minimum financial compensation that a person would need in order to part with a good or to put up with something undesirable (such as pollution or crime). Willingness to pay (WTP) is the opposite—the maximum amount of money someone is willing to pay for a good or to avoid something undesirable. According to standard

economic intuition, WTP should be relatively stable across decision contexts and WTA should be very close to WTP for a given good. However, behavioral economics has shown that WTP and WTA may be context-dependent; for example, Thaler (1985) found evidence that people presented with a hypothetical scenario of lying on a beach and craving a beer would be willing to pay significantly more for a beer purchased at a resort hotel as opposed to a rundown grocery store (see also **transaction utility** and **mental accounting**). In addition, sometimes the average WTA for a good exceeds its WTP, which may be indicative of an **endowment effect**, i.e. people value something more if they already own it. Research has also shown that the farther a good is from being an ordinary private (market) good, the more likely it is that WTA exceeds WTP. The WTA-to-WTP ratio is particularly high for health/safety and public/non-market goods (Horowitz & McConnel, 2002).

Zero price effect

The zero price effect suggests that traditional cost-benefits models cannot account for the psychological effect of a free good. A linear model assumes that changes in cost are the same at all price levels and benefits stay the same. As a result, a decrease in price will make a good equally more or less attractive at all price points. The zero price model, on the other hand, suggests that there will be an increase in a good's intrinsic value when the price is reduced to zero. The change in demand as a result of price changes is not linear, and there will be some switching from high-value to low-value goods. In addition, free goods have extra pulling power, as a reduction in price from $0.14 to zero is more powerful than a reduction from $0.15 to $0.01. A core psychological explanation for the zero price effect has been the **affect heuristic**, whereby options that have no downside (no cost) trigger a more positive affective response (Shampanier, Mazar, & Ariely, 2007).

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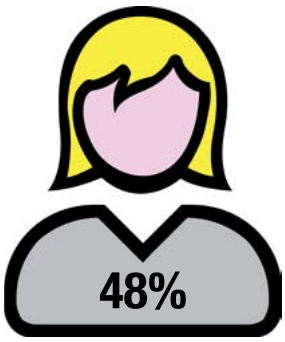

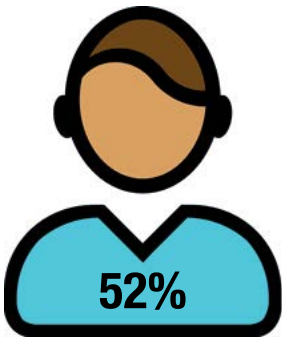

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- Behavioural Science and Policy
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- Goals and Motivation for Individuals and Teams
- Research Methods for Behavioural Science
- Policy Appraisal and Impact Assessment
- Philosophy and Public Policy

After the taught courses are completed in April, students work on their dissertation, which is then submitted in November. The dissertation is an opportunity for you to pursue an independent piece of research within the field of behavioural science. The dissertation is a quantitative or qualitative investigation in the field and can be either a theoretical or empirical piece of research.

What are the entry requirements?

- A UK 2:1 degree (or overseas equivalent) in any discipline
- Two references, one academic and one professional. If you graduated before January 2013, two professional references will suffice.
- Personal statement (2-3 pages in length)
- If your first language is not English and if your previous degree has not been taught entirely in English, you will be required to provide evidence of your English language ability
- A resume or CV outlining your work experience
- And most importantly a passion for Behavioural Science!

For more information, please visit **lse.ac.uk/MScBehaviouralScience**

Or contact us via **behavioural.science@lse.ac.uk**

WARWICK
THE UNIVERSITY OF WARWICK

MSc in Behavioural and Economic Science

The Departments of Psychology and Economics at the University of Warwick offer innovative new courses in the growing area of decision science and behavioural economics. The MSc draws on the excellent, ground-breaking research being undertaken in the departments of Psychology, Economics and the Warwick Business School.

The MSc will suit those with a quantitive background (e.g. maths, sciences, economics, psychology).

Further Details:
Email: **E.Stilwell@warwick.ac.uk** Tel: **+44 (0)24 7657 5527**

www.warwick.ac.uk/bes

WARWICK
THE UNIVERSITY OF WARWICK

MSc in Behavioural and Economic Science

Why should I take this course?

This inter-disciplinary course emphasises both theoretical foundations and real-world applications of Behavioural Science, and is aimed at those intending to work in business, public policy implementation or research.

Modules will include

- A thorough grounding covering both the theory and real-world application, in behavioural economics and the cognitive science of judgement and decision making.
- Modules on the design, conduction and analysis of behavioural experiments and the analysis of large-scale datasets.
- An empirical research project.

Our previous students have gone on to take positions at The Busara Center for Behavioral Economics, The UK Behavioural Insights Team, Google, Frontier Economics, Facebook, Ogilvy Change and more.

Further Details:

Email: **E.Stilwell@warwick.ac.uk** Tel: **+44 (0)24 7657 5527**

www.warwick.ac.uk/bes

WARWICK
THE UNIVERSITY OF WARWICK

Why Warwick?

You will be taught by leading researchers from the Departments of Psychology and Economics and Warwick Business School.

Three leading departments in this area of research.

Warwick has been ranked top of the specialist subject table for Economics in The Times and the Sunday Times University League Tables for 2015. Behavioural Science was identified as an area of significant academic achievement in the Research Excellence Framework.

Warwick is a global community. Our students come from all over the world, including South America, Asia, Europe, USA and the Middle East and from many backgrounds including undergraduate study, industry and the public sector.

Find out more about Postgraduate Study at Warwick
www.warwick.ac.uk/study/postgraduate

Further Details:
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Rethinking Marketing and Insights: Behavioral Economics Immersion.

NOVEMBER 14–16, 2017

Yale School of Management New Haven, Connecticut, USA

Master Behavioral Economics with Leading Yale Scholars

Gain insights from cutting-edge behavioral research, and apply that knowledge to drive business results through

- **deeper consumer engagement**
- **impactful brand-building**
- **innovative product development**
- **research that generates real insights**

Why you need behavioral economics

Marketing and product departments spend billions to understand and influence consumers—with mixed results. Behavioral economics brings to bear psychology, economics, and marketing to better understand the often-hidden factors that really influence consumer behavior.

Expertise : Engage with World-Renowned Scholars of Behavioral Economics

Among the most productive and cited scholars in the field, the YCCI faculty team utilizes decades of cutting-edge research to help address the challenges of today's marketing, innovation, and research organizations.

Impact : Forge Leading Theory into Effective Practice

Grounded in the YCCI Decision Framework, the course systematically uncovers the fundamental behavioral insights that can be put to use to drive business results. Throughout the program, faculty share the current thinking in behavioral economics, moderate discussions, and guide work sessions to ensure learning in our classroom leads to action in your boardroom.

Praise from prior participants

"Full of insights rooted in a framework that is easy to take back and apply to multiple businesses. Also packs a lot of leading info into a thorough, enjoyable experience."

"It's introduced me to a fundamental shift in thinking that has implications across the organization—for marketing, product development, advertising, technology and research."

Return on learning

- Lead your organization informed by new ways of thinking about consumers based on the latest behavioral science research—uncovering the real drivers of consumer choice.
- Develop a deep understanding of how behavioral economics can immediately help solve pressing business challenges.
- Champion a culture of experimentation throughout your organization based on test-and-learn theory and practice.

Who should attend

The immersion program is crafted for executives with at least 10 years of experience who lead functional teams in such areas as marketing, branding, insights, innovation, product management, technology, strategy, and communications.

Curriculum

Day 1 : The foundations of behavioral economics

A hidden system of decision-making lies beneath our awareness. Day 1 will give you fundamental knowledge about the sometimes-surprising ways in which consumers decide whether to buy, when to buy, and how much to consume.

- A Behavioral Economics Framework: Beliefs, Goals, and Choices
- A Two-System Theory of Choice
- Designing Choice Architecture
- Framing Brand Value

Day 2 : Putting behavioral economics to work

In the second module, we turn our focus to how the latest ideas from behavioral economics can be used to solve your most pressing business challenges.

- Framing Price
- Understanding Consumer Experiences
- Communications: Mindsets and Self-Control
- Overcoming Consumer Inertia to Choice

Day 3 : Learning a better way to learn

Behavioral economics can help you not only understand what consumers do, but it can also show you how to learn about what they do. The final module focuses on the lessons of behavioral economics for conducting market research and experimentation in order to build a renewed culture of experimentation.

- The Value of Experimentation
- Designing Experimentation
- Behavioral Lens on Consumer Research

Faculty will include:

Ravi Dhar

George Rogers Clark Professor of Management and Marketing

Director of the Center for Customer Insights

Shane Frederick

Professor of Marketing

An expert in preference, framing effects, and decision-making under uncertainty

Yale SCHOOL OF MANAGEMENT
Executive Education

Yale SCHOOL OF MANAGEMENT
Center for Customer Insights

DATES : NOVEMBER 14-16, 2017

Investment

$6,850 (includes meals and lodging). Groups of four or more from the same company receive a 15% discount.

Venue

Yale School of Management New Haven, CT, USA

Contact

molly.nagler@yale.edu or tracy.sheerin@yale.edu

University	School/Department	Program
United States		
Brown University	School of Public Health	Master in Behavioral and Social Health Sciences
	Department of Economics	PhD in Economics (see also Brown Experimental and Economic Theory Group)
California Institute of Technology (Caltech)	Division of the Humanities and Social Science	PhD in Behavioral & Social Neuroscience
Carnegie Mellon University	Dietrich College of Humanities and Social Science	PhD in Social and Decision Sciences
	Department of Social and Decision Sciences	(see also Dynamic Decision Making Laboratory and Center for Behavioral and Decision Research)
Claremont Graduate University	School of Social Science, Policy, and Evaluation	PhD in Economics (see also Center for Neuroeconomics Studies)
Columbia University	Columbia Business School	MBA, MS, and PhD in Business (See also Center for Decision Sciences)
Cornell University	The Charles H. Dyson School of Applied Economics and Management	PhD in Applied Economics and Management Master of Professional Studies (MPS) in Applied Behavioral Economics and Individual Choice (see also Cornell Center for Behavioral Economics in Child Nutrition Programs)
Duke University	The Fuqua School of Business	PhD in Decision Sciences MBA and PhD in Marketing
Franklin University	College of Arts, Sciences & Technology	Master's in Business Psychology
Georgetown University	McDonough School of Business	MBA and Executive MBA (see also Behavioral Research Laboratory)
Georgia State University	Andrew Young School of Policy Studies	PhD in Economics MA in Economics (see also Experimental Economics Center)

Harvard University	Department of Economics	PhD in Economics
	School of Public Health	Master of Science Program
		Master (MPH) and Doctor of Public Health (DrPH)
Johns Hopkins University	Johns Hopkins Bloomberg School of Public Health	PhD in Social and Behavioral Sciences
Massachusetts Institute of Technology	Department of Brain and Cognitive Sciences	PhDs in Brain & Cognitive Sciences
	MIT Sloan School of Management	Masters in Management, Analytics, Applied Economics
		(see also MIT Sloan Neuroeconomics Laboratory)
New York University	Graduate School of Arts & Science	MAs and PhDs in Economics, Politics and Psychology
		(see also Center for Experimental Social Science)
		(see also Institute for the Interdisciplinary Study of Decision Making)
Northwestern University	Kellogg Business School	PhD in Managerial Economics & Decision Sciences
		MBA focus in Managerial Economics & Decision Science
Ohio State University	Department of Psychology	PhD in Psychology (Decision Psychology)
San Francisco State University	College of Business	Master of Business Administration (MBA) (see also Decision Sciences Collaborative)
Stanford University	School of Engineering	PhD in Management Science and Engineering
		MS in Management Science and Engineering
		(see also Stanford Decisions and Ethics Center)
The Chicago School of Professional Psychology		MA in Behavioral Economics
University of Arizona	Eller College of Management	PhD in Economics
		(see also Institute for Behavioral Economics)
University of Chicago	Booth School of Business	PhD in Behavioral Science
		(see also Center for Decision Research)
University of California, Berkeley		PhDs in Marketing, Psychology and Economics

		(see also Berkeley Decision Science Research Group)
University of California, San Diego	Randy School of Management	MBA and PhD in Management (see also Rady Behavioral Lab)
University of California, Santa Barbara	College of Letters & Science	PhD in Economics (see also Experimental and Behavioral Economics Laboratory)
University of Colorado	Business School	MS in Decision Sciences
University of Kansas	College of Liberal Arts and Sciences	MA in Applied Behavioral Science PhD in Behavioral Psychology (see also KU Applied Behavioral Economics Laboratory)
University of Maryland	College of Behavioral & Social Sciences	PhD in Social, Decision, and Organizational Sciences
University of Oregon	College of Arts and Science	MA and PhD in Psychology (see also Institute of Cognitive and Decision Sciences)
University of Pennsylvania	School of Arts & Sciences	Master of Behavioral and Decision Sciences
University of Pittsburgh	Katz Graduate School of Business	PhD in Marketing and Business Economics
University of Southern California	Dana and David Dornsife College of Letters, Arts, and Sciences	PhD in Economics (see also Los Angeles Behavioral Economics Laboratory)
University of Wisconsin	School of Human Ecology	MS and PhD in Human Ecology: Consumer Behavior and Family Economics (see also Behavioral Research Insights Through Experiments Lab)
Washington University in St. Louis	School of Arts and Sciences	PhD in Behavior, Brain and Cognition
Yale	Yale School of Management	Doctoral Programs in Financial Economics, Marketing, and Organizations and Management (See also Yale-Ipsos Consumer Marketing & Behavioral Economics Think Tank)

United Kingdom

City University London	Interdisciplinary	MSc in Behavioural Economics
	School of Arts and Social Sciences	PhDs in Economics and Psychology (see also Decision Making and Behavioural Economics Research Group)
Durham University	Durham University Business School	MSc in Experimental Economics
Goldsmiths College	Institute of Management Studies	MSc in Consumer Behaviour
Kingston University	Faculty of Arts and Social Sciences	MSc in Behavioural Decision Science
Lancaster University	Management School	PhD Behavioural and Experimental Economics
London School of Economics and Political Science	Departments of Social Policy and Management	Executive MSc in Behavioural Science See pp. 116-118
		PhDs in Management Science, Social Policy, Economics and Psychology (see also LSE Behavioural Research Lab)
Middlesex University	Business School	MSc in Behavioural Economics in Action
Queen Mary University of London	School of Economics and Finance	MSc in Behavioural Finance
Ulster University	Coleraine campus	MSc in Applied Behaviour Analysis
University College London	Division of Psychology And Language Sciences	Executive Programme in Behavioural Science
	Division of Psychology And Language Sciences	MSc in Cognitive and Decision Sciences PhD in Experimental Psychology
University of Cambridge (Judge Business School)	Judge Business School	MBA, Executive MBA and PhDs in Business Economics, Marketing, etc.
	Faculty of Economics	PhD in Economics

		(see also Cambridge Experimental and Behavioural Economics Group)
University of East Anglia	Department of Economics	MSc in Behavioural and Experimental Economics (see also Centre for Behavioural and Experimental Social Science)
University of Essex	Department of Economics	MSc in Behavioural Economics
University of Exeter	School of Business	MSc in Behavioural Economics and Finance
University of Leeds	Leeds University Business School	MSc in Business Analytics and Decision Sciences (see also Centre for Decision Research)
University of Nottingham	School of Economics	MSc in Behavioural Economics PhD in Economics (see also Centre for Decision Research and Experimental Economics)
University of Oxford	Department of Economics	DPhil in Economics (see also Behavioural Economics Research Group) (see also Nuffield Centre for Experimental Social Sciences)
University of Reading	Henley Business School	MSc Behavioural Finance
University of Stirling	Stirling Management School	MSc in Behavioural Science for Management (see also Behavioural Science Centre)
University of Warwick (Warwick Business School)	Interdisciplinary	MSc in Behavioural and Economic Science See pp. 119-121
	Department of Psychology	PhD in Psychology (see also Behavioural Science Group) (see also Decision Research at Warwick)

The Netherlands

Erasmus University Rotterdam	Erasmus School of Economics	Master in Economics and Business (Behavioural Economics specialization)

Leiden University	Institute of Psychology	Master in Psychology (Economic and Consumer Psychology)
Maastricht University	School of Business and Economics	Master in Human Decision Science
Radboud University Nijmegen	Department of Social Science	Master in Behavioural Science
Tilburg University	Department of Social Psychology School of Social and Behavioral Sciences Tilburg University Graduate Schools	Master in Social Psychology (Economic Psychology Track) Research Master in Social and Behavioral Sciences Research Master and PhDs in Economics, Business and Social & Behavioural Sciences (see also Tilburg Institute for Behavioural Economics Research)
University of Amsterdam (Amsterdam Business School / School of Economics)	Business School and School of Economics	Master and PhD in Economics (Research Priority Area Behavioural Economics)
University of Groningen	Faculty of Behavioural and Social Sciences	Masters Behavioural and Social Sciences
Utrecht University	Graduate School of Social and Behavioural Sciences	PhD in within the school (see also Behaviour in Social Context)

Germany

Friedrich-Schiller University Jena	Interdisciplinary	PhD in "Human Behaviour in Social and Economic Change" (interdisciplinary)
International Max Planck Research School on Adapting Behaviour in a Fundamentally Uncertain World (Uncertainty School), Berlin	Jena Graduate School Human Behaviour in Social and Economic Change	PhDs in Economics, Law and Psychology
Ludwig-Maximilians University Munich	Munich Graduate School of Economics	PhD in Economics (see also Munich Experimental Laboratory for Economic and Social Sciences)
University of Bonn	Bonn Graduate School of Economics	PhD in Economics

		(see also Center for Economics and Neuroscience and Bonn Laboratory for Experimental Economics)
University of Kassel		MSc in Economic Behaviour and Governance
University of Konstanz	Graduate School of Decision Sciences	PhDs at the Graduate School of Decision Sciences (interdisciplinary)

Other Countries

Australia

Monash University	Faculty of Business and Economics	Master of Business Economics
	School of Business, Monash University Malaysia.	PhDs in Management and Economics (see also Monash Laboratory for Experimental Economics) (see also Monash Business Behavioural Laboratory)
University of Queensland	School of Economics	Master and PhD in Economics (see also Risk and Sustainable Management Group)

Austria

University of Vienna	Faculty of Business, Economics, and Statistics	PhD in Economics MSc in Economics (see also Vienna Center for Experimental Economics)

Canada

University of Toronto	School of Management	MBAs and PhDs in Marketing and Business Economics (see also Behavioural Economics in Action)
University of British Columbia	UBC Sauder School of Business	PhD in Marketing and Behavioural Science

Finland

Oulu University in Finland	Business School	Master's program in Economics

France

Paris School of Economics	School of Economics	Masters and PhDs in Economics

		(see also Parisian Experimental Economics Laboratory)
University of Paris Panthéon-Sorbonne / University Paris Descrates		Master in Economics & Psychology

Israel

Hebrew University of Jerusalem	The Federmann Center for the Study of Rationality	PhDs at the Federman Center for the Study of Rationality (interdisciplinary)

Ireland

University College Dublin	School of Economics	MSc Behavioural Economics

Italy

Catholic University of the Sacred Heart, Milan	Graduate School In Public Economic	PhD in Economics (see also Behavioral and Experimental Economics Research Group)
LUISS (Libera Università Internazionale degli Studi Sociali Guido Carli)	LUISS School Of European Political Economy	Master in Behavioral Science and Administration
University of Chieti-Pescara	School of Advanced Studies	PhD in Business and Behavioural Sciences
University of Trento	Doctoral School of Sciences	PhD in Economics and Management (Behavioural Economics)

Norway

Norwegian School of Economics	School of Economics	MSc in Economics, Business and Marketing PhD in Business and Management Science (see also the Choice Lab)

Singapore

National University of Singapore	NUS Business School	MBA and PhDs in Management, Decision Sciences and Economics (see also Centre for Behavioural Economics)

Sweden

University of Gothenburg	School of Business, Economics, and Law	PhD in Economics (Behavioral Economics concentration)

Switzerland

University of Zurich (Zurich Graduate School of Economics)	Department of Economics	PhD in Economics and Neuroeconomics (see also Laboratory for Experimental and Behavioral Economics)

Popular (Behavioral) Science Books

Popular Books (By Publication Year)

Title	Author(s)	Pub. Year	Average (Mean) Rating*	Number of Ratings*
Irresistible: The Rise of Addictive Technology and the Business of Keeping Us Hooked	Alter, Adam	2017	3.81	506
The Enigma of Reason	Mercier, Hugo & Dan Sperber	2017	4.08	12
The Knowledge Illusion: Why We Never Think Alone	Sloman, Steven & Philip Fernbach	2017	3.86	99
Payoff: The Hidden Logic that Shapes our Motivations	Ariely, Dan	2016	3.73	965
What Works: Gender Equality by Design	Bohnet, Iris	2016	4.09	116
Pre-Suasion: A Revolutionary Way to Influence and Persuade	Cialdini, Robert	2016	4.06	1155
Smarter Faster Better: The Secrets Of Being Productive In Life And Business	Duhigg, Charles	2016	3.88	10761
On Being Human: Why Mind Matters	Kagan, Jerome	2016	4.25	16
The Undoing Project: A Friendship That Changed Our Minds	Lewis, Michael	2016	4.02	11313
Superforecasting: The Art and Science of Prediction	Tetlock, Philip & Dan Gardner	2016	4.14	4766
The Mind Club: Who Thinks, What Feels, And Why It Matters	Wegner, Daniel & Kurt Gray	2016	3.88	291
Phishing for Phools: The Economics of Manipulation and Deception	Akerlof, George & Robert Shiller	2015	3.42	791
The Smarter Screen: Surprising Ways to Influence and Improve Online Behavior	Benartzi, Shlomo & Jonah Lehrer	2015	4.12	100
Work Rules!: Insights from Inside Google That Will Transform How You Live and Lead	Bock, Laszlo	2015	4.15	4784
Inside the Nudge Unit: How Small Changes Can Make a Big Difference	Halpern, David	2015	3.98	163
When to Rob a Bank	Levitt, Steven & Stephen Dubner	2015	3.47	7276
Mindware: Tools for Smart Thinking	Nisbett, Richard	2015	3.78	691
Social Physics: How Social Networks Can Make Us Smarter	Pentland, Alex	2015	3.50	674
The Last Mile: Creating Social and Economic Value from Behavioral Insights	Soman, Dilip	2015	4.17	12
Choosing Not to Choose: Understanding the Value of Choice	Sunstein, Cass	2015	3.48	23
Why Nudge? The Politics of Libertarian Paternalism	Sunstein, Cass	2015	3.44	90
Misbehaving: The Making of Behavioral Economics	Thaler, Richard	2015	4.13	3735
Happiness by Design: Change What You Do, Not How You Think	Dolan, Paul	2014	3.56	894
Everything I Ever Needed to Know about Economics I Learned from Online Dating	Oyer, Paul	2014	3.58	218
Wiser: Getting Beyond Groupthink to Make Groups Smarter	Sunstein, Cass & Reid Hastie	2014	3.56	216
Decoded: The Science Behind Why We Buy	Barden, Phil	2013	4.08	269
Make Your Brain Work: How to Maximize Your Efficiency, Productivity and ...	Brann, Amy & Kogan Page	2013	3.32	44
Thinking: The New Science of Decision-Making, Problem-Solving and Prediction	Brockman, John	2013	3.75	487
The Art of Thinking Clearly: Better Thinking, Better Decisions	Dobelli, Rolf	2013	3.79	10321
Risk Savvy: How to Make Good Decisions	Gigerenzer, Gerd	2013	3.96	601

The Why Axis: Hidden Motives and the Undiscovered Economics of Everyday Life	Gneezy, Uri & John List	2013	3.58	616
Focus: Use Different Ways of Seeing the World for Success and Influence	Grant Halvorson, Heidi & E. Tory Higgins	2013	3.93	489
Decisive: How to Make Better Choices in Life and Work	Heath, Chip & Dan Heath	2013	3.96	8446
The Rational Animal: How Evolution Made Us Smarter Than We Think	Kenrick, Douglas & Vladas Griskevicius	2013	3.90	231
You Are Now Less Dumb: How to Conquer Mob Mentality, How to Buy Happiness, and ...	McRaney, David	2013	3.91	2642
Scarcity Why Having Too Little Means So Much	Shafir, Eldar & Sendhil Mullainathan	2013	3.89	2347
Designing for Behavior Change: Applying Psychology and Behavioral Economics	Wendel, Stephen	2013	4.05	125
The Honest Truth About Dishonesty: How We Lie to Everyone — Especially Ourselves	Ariely, Dan	2012	3.91	9349
Save More Tomorrow: Practical Behavioral Finance Solutions to Improve 401(k) Plans	Benartzi, Shlomo	2012	4.07	27
The Psychology of Price: How to use price to increase demand, profit and customer satisfaction	Caldwell, Leigh	2012	4.12	42
The Signal and the Noise: Why So Many Predictions Fail — but Some Don't	Silver, Nate	2012	3.96	29390
Willpower: Rediscovering the Greatest Human Strength	Baumeister, Roy & John Tierney	2011	3.95	13496
The Social Animal: The Hidden Sources of Love, Character, and Achievement	Brooks, David	2011	3.82	16241
The Power of Habit: Why We Do What We Do in Life and Business	Duhigg, Charles	2011	4.02	163865
Incognito: The Secret Lives of the Brain	Eagleman, David	2011	3.98	17408
Adapt: Why Success Always Starts with Failure	Harford, Tim	2011	3.87	2782
Thinking, Fast and Slow	Kahneman, Daniel	2011	4.07	139894
You Are Not So Smart: Why You Have Too Many Friends on Facebook, Why Your ...	McRaney, David	2011	3.85	21454
Grand Pursuit: The Story of Economic Genius	Nasar, Sylvia	2011	3.77	1128
Everything is Obvious: Once You Know the Answer	Watts, Duncan	2011	3.80	3336
Identity Economics: How Our Identities Shape Our Work, Wages, and Well-Being	Akerlof, George & Rachel Kranton	2010	3.44	288
The Upside of Irrationality: The Unexpected Benefits of Defying Logic at Work and at Home	Ariely, Dan	2010	3.99	22211
Carrots and Sticks: Unlock the Power of Incentives to Get Things Done	Ayres, Ian	2010	3.20	268
The Invisible Gorilla: How Our Intuitions Deceive Us	Chabris, Christopher & Daniel Simons	2010	3.87	10488
Secrets of the Moneylab: How Behavioral Economics Can Improve Your Business	Chen, Kay-Yut & Marina Krakovsky	2010	3.57	44
Switch: How to Change Things When Change Is Hard	Heath, Chip & Dan Heath	2010	4.01	29365
The Art of Choosing	Iyengar, Sheena	2010	3.83	4384
The Little Book of Behavioral Investing: How Not to be Your Own Worst Enemy	Montier, James	2010	4.07	726
Priceless: The Myth of Fair Value	Poundstone, William	2010	3.81	1141
The Buying Brain: Secrets for Selling to the Subconscious Mind	Pradeep, A. K.	2010	3.56	200
Cognitive Surplus: Creativity and Generosity in a Connected Age	Shirky, Clay	2010	3.82	4254
Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism	Akerlof, George & Robert Shiller	2009	3.72	3163

The Age of the Infovore: Succeeding in the Information Economy	Cowen, Tyler	2009	3.31	509
Herd: How to Change Mass Behaviour by Harnessing Our True Nature	Earls, Mark	2009	3.75	247
Emotionomics: Leveraging Emotions for Business Success	Hill, Dan	2009	3.47	89
How We Decide	Lehrer, Jonah	2009	3.81	33162
SuperFreakonomics: Global Cooling, Patriotic Prostitutes And Why Suicide Bombers Should Buy Life Insurance	Levitt, Steven & Stephen Dubner	2009	3.95	90333
Predictably Irrational: The Hidden Forces That Shape Our Decisions	Ariely, Dan	2008	4.10	65331
Sway: The Irresistible Pull of Irrational Behavior	Brafman, Ori & Rom Brafman	2008	3.74	14646
The Science of Fear: How the Culture of Fear Manipulates Your Brain	Gardner, Daniel	2008	3.95	3945
Buyology: Truth and Lies about Why We Buy	Lindstrom, Martin	2008	3.72	8025
Why Popcorn Costs So Much at the Movies: And Other Pricing Puzzles	McKenzie, Richard	2008	3.27	146
The Drunkard's Walk: How Randomness Rules Our Lives	Mlodinow, Leonard	2008	3.88	14517
Drive: The Surprising Truth about What Motivates Us	Pink, Daniel	2008	3.94	57108
Nudge: Improving Decisions About Health, Wealth, and Happiness	Thaler, Richard & Cass Sunstein	2008	3.79	30967
More Sex Is Safer Sex: The Unconventional Wisdom of Economics	Landsburg, Steven	2007	3.47	1039
More Than You Know: Finding Financial Wisdom in Unconventional Places	Mauboussin, Michael	2007	4.08	764
The Black Swan: The Impact of the Highly Improbable	Taleb, Nassim Nicholas	2007	3.88	57083
The Laws of Simplicity (Simplicity: Design, Technology, Business, Life)	Maeda, John	2006	3.89	3713
The Undercover Economist	Harford, Tim	2005	3.79	19966
Freakonomics: A Rogue Economist Explores the Hidden Side of Everything	Levitt, Steven & Stephen Dubner	2005	3.93	541150
The Paradox of Choice: Why More Is Less	Schwartz, Barry	2004	3.83	21188
The Luck Factor	Wiseman, Richard	2003	3.78	819
Blink: The Power of Thinking Without Thinking	Gladwell, Malcolm	2001	3.89	348706
Fooled by Randomness: The Hidden Role of Chance in Life and in the Markets	Taleb, Nassim Nicholas	2001	4.05	29479
Why Smart People Make Big Money Mistakes and How to Correct Them: ...	Belsky, Gary & Thomas Gilovich	2000	3.92	842
Irrational Exuberance	Shiller, Robert	2000	3.95	4402
Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing	Shefrin, Hersh	1999	3.76	162
Why We Buy: The Science of Shopping	Underhill, Paco	1999	3.87	8890
The Emotional Brain: The Mysterious Underpinnings of Emotional Life	Ledoux, Joseph	1998	4.07	2002
Management of the Absurd	Farson, Richard	1996	3.77	171
The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization	Senge, Peter	1994	4.09	1397
Influence: The Psychology of Persuasion	Cialdini, Robert	1993	4.17	50351
Irrationality	Sutherland, Stuart	1992	3.87	991
How We Know What Isn't So: The Fallibility of Human Reason in Everyday Life	Gilovich, Thomas	1991	3.94	2228

**** Ratings retrieved from goodreads.com in April 2017***

Popular Books (By Average Rating)

Title	Author(s)	Pub. Year	Average (Mean) Rating*	Number of Ratings*
On Being Human: Why Mind Matters	Kagan, Jerome	2016	4.25	16
The Last Mile: Creating Social and Economic Value from Behavioral Insights	Soman, Dilip	2015	4.17	12
Influence: The Psychology of Persuasion	Cialdini, Robert	1993	4.17	50351
Work Rules!: Insights from Inside Google That Will Transform How You Live and Lead	Bock, Laszlo	2015	4.15	4784
Superforecasting: The Art and Science of Prediction	Tetlock, Philip & Dan Gardner	2016	4.14	4766
Misbehaving: The Making of Behavioral Economics	Thaler, Richard	2015	4.13	3735
The Smarter Screen: Surprising Ways to Influence and Improve Online Behavior	Benartzi, Shlomo & Jonah Lehrer	2015	4.12	100
The Psychology of Price: How to use price to increase demand, profit and customer satisfaction	Caldwell, Leigh	2012	4.12	42
Predictably Irrational: The Hidden Forces That Shape Our Decisions	Ariely, Dan	2008	4.10	65331
What Works: Gender Equality by Design	Bohnet, Iris	2016	4.09	116
The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization	Senge, Peter	1994	4.09	1397
The Enigma of Reason	Mercier, Hugo & Dan Sperber	2017	4.08	12
Decoded: The Science Behind Why We Buy	Barden, Phil	2013	4.08	269
More Than You Know: Finding Financial Wisdom in Unconventional Places	Mauboussin, Michael	2007	4.08	764
Save More Tomorrow: Practical Behavioral Finance Solutions to Improve 401(k) Plans	Benartzi, Shlomo	2012	4.07	27
Thinking, Fast and Slow	Kahneman, Daniel	2011	4.07	139894
The Little Book of Behavioral Investing: How Not to be Your Own Worst Enemy	Montier, James	2010	4.07	726
The Emotional Brain: The Mysterious Underpinnings of Emotional Life	Ledoux, Joseph	1998	4.07	2002
Pre-Suasion: A Revolutionary Way to Influence and Persuade	Cialdini, Robert	2016	4.06	1155
Designing for Behavior Change: Applying Psychology and Behavioral Economics	Wendel, Stephen	2013	4.05	125
Fooled by Randomness: The Hidden Role of Chance in Life and in the Markets	Taleb, Nassim Nicholas	2001	4.05	29479
The Undoing Project: A Friendship That Changed Our Minds	Lewis, Michael	2016	4.02	11313
The Power of Habit: Why We Do What We Do in Life and Business	Duhigg, Charles	2011	4.02	163865
Switch: How to Change Things When Change Is Hard	Heath, Chip & Dan Heath	2010	4.01	29365
The Upside of Irrationality: The Unexpected Benefits of Defying Logic at Work and at Home	Ariely, Dan	2010	3.99	22211
Inside the Nudge Unit: How Small Changes Can Make a Big Difference	Halpern, David	2015	3.98	163
Incognito: The Secret Lives of the Brain	Eagleman, David	2011	3.98	17408
Risk Savvy: How to Make Good Decisions	Gigerenzer, Gerd	2013	3.96	601
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The Signal and the Noise: Why So Many Predictions Fail — but Some Don't	Silver, Nate	2012	3.96	29390

Willpower: Rediscovering the Greatest Human Strength	Baumeister, Roy & John Tierney	2011	3.95	13496
SuperFreakonomics: Global Cooling, Patriotic Prostitutes And Why Suicide Bombers Should Buy Life Insurance	Levitt, Steven & Stephen Dubner	2009	3.95	90333
The Science of Fear: How the Culture of Fear Manipulates Your Brain	Gardner, Daniel	2008	3.95	3945
Irrational Exuberance	Shiller, Robert	2000	3.95	4402
Drive: The Surprising Truth about What Motivates Us	Pink, Daniel	2008	3.94	57108
How We Know What Isn't So: The Fallibility of Human Reason in Everyday Life	Gilovich, Thomas	1991	3.94	2228
Focus: Use Different Ways of Seeing the World for Success and Influence	Grant Halvorson, Heidi & E. Tory Higgins	2013	3.93	489
Freakonomics: A Rogue Economist Explores the Hidden Side of Everything	Levitt, Steven & Stephen Dubner	2005	3.93	541150
Why Smart People Make Big Money Mistakes and How to Correct Them: ...	Belsky, Gary & Thomas Gilovich	2000	3.92	842
You Are Now Less Dumb: How to Conquer Mob Mentality, How to Buy Happiness, and ...	McRaney, David	2013	3.91	2642
The Honest Truth About Dishonesty: How We Lie to Everyone — Especially Ourselves	Ariely, Dan	2012	3.91	9349
The Rational Animal: How Evolution Made Us Smarter Than We Think	Kenrick, Douglas & Vladas Griskevicius	2013	3.90	231
Scarcity Why Having Too Little Means So Much	Shafir, Eldar & Sendhil Mullainathan	2013	3.89	2347
The Laws of Simplicity (Simplicity: Design, Technology, Business, Life)	Maeda, John	2006	3.89	3713
Blink: The Power of Thinking Without Thinking	Gladwell, Malcolm	2001	3.89	348706
Smarter Faster Better: The Secrets Of Being Productive In Life And Business	Duhigg, Charles	2016	3.88	10761
The Mind Club: Who Thinks, What Feels, And Why It Matters	Wegner, Daniel & Kurt Gray	2016	3.88	291
The Drunkard's Walk: How Randomness Rules Our Lives	Mlodinow, Leonard	2008	3.88	14517
The Black Swan: The Impact of the Highly Improbable	Taleb, Nassim Nicholas	2007	3.88	57083
Adapt: Why Success Always Starts with Failure	Harford, Tim	2011	3.87	2782
The Invisible Gorilla: How Our Intuitions Deceive Us	Chabris, Christopher & Daniel Simons	2010	3.87	10488
Why We Buy: The Science of Shopping	Underhill, Paco	1999	3.87	8890
Irrationality	Sutherland, Stuart	1992	3.87	991
The Knowledge Illusion: Why We Never Think Alone	Sloman, Steven & Philip Fernbach	2017	3.86	99
You Are Not So Smart: Why You Have Too Many Friends on Facebook, Why Your ...	McRaney, David	2011	3.85	21454
The Art of Choosing	Iyengar, Sheena	2010	3.83	4384
The Paradox of Choice: Why More Is Less	Schwartz, Barry	2004	3.83	21188
The Social Animal: The Hidden Sources of Love, Character, and Achievement	Brooks, David	2011	3.82	16241
Cognitive Surplus: Creativity and Generosity in a Connected Age	Shirky, Clay	2010	3.82	4254
Irresistible: The Rise of Addictive Technology and the Business of Keeping Us Hooked	Alter, Adam	2017	3.81	506
Priceless: The Myth of Fair Value	Poundstone, William	2010	3.81	1141
How We Decide	Lehrer, Jonah	2009	3.81	33162
Everything is Obvious: Once You Know the Answer	Watts, Duncan	2011	3.80	3336

The Art of Thinking Clearly: Better Thinking, Better Decisions	Dobelli, Rolf	2013	3.79	10321
Nudge: Improving Decisions About Health, Wealth, and Happiness	Thaler, Richard & Cass Sunstein	2008	3.79	30967
The Undercover Economist	Harford, Tim	2005	3.79	19966
Mindware: Tools for Smart Thinking	Nisbett, Richard	2015	3.78	691
The Luck Factor	Wiseman, Richard	2003	3.78	819
Grand Pursuit: The Story of Economic Genius	Nasar, Sylvia	2011	3.77	1128
Management of the Absurd	Farson, Richard	1996	3.77	171
Beyond Greed and Fear: Understanding Behavioral Finance and the Psychology of Investing	Shefrin, Hersh	1999	3.76	162
Thinking: The New Science of Decision-Making, Problem-Solving and Prediction	Brockman, John	2013	3.75	487
Herd: How to Change Mass Behaviour by Harnessing Our True Nature	Earls, Mark	2009	3.75	247
Sway: The Irresistible Pull of Irrational Behavior	Brafman, Ori & Rom Brafman	2008	3.74	14646
Payoff: The Hidden Logic that Shapes our Motivations	Ariely, Dan	2016	3.73	965
Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism	Akerlof, George & Robert Shiller	2009	3.72	3163
Buyology: Truth and Lies about Why We Buy	Lindstrom, Martin	2008	3.72	8025
Everything I Ever Needed to Know about Economics I Learned from Online Dating	Oyer, Paul	2014	3.58	218
The Why Axis: Hidden Motives and the Undiscovered Economics of Everyday Life	Gneezy, Uri & John List	2013	3.58	616
Secrets of the Moneylab: How Behavioral Economics Can Improve Your Business	Chen, Kay-Yut & Marina Krakovsky	2010	3.57	44
Happiness by Design: Change What You Do, Not How You Think	Dolan, Paul	2014	3.56	894
Wiser: Getting Beyond Groupthink to Make Groups Smarter	Sunstein, Cass & Reid Hastie	2014	3.56	216
The Buying Brain: Secrets for Selling to the Subconscious Mind	Pradeep, A. K.	2010	3.56	200
Social Physics: How Social Networks Can Make Us Smarter	Pentland, Alex	2015	3.50	674
Choosing Not to Choose: Understanding the Value of Choice	Sunstein, Cass	2015	3.48	23
When to Rob a Bank	Levitt, Steven & Stephen Dubner	2015	3.47	7276
Emotionomics: Leveraging Emotions for Business Success	Hill, Dan	2009	3.47	89
More Sex Is Safer Sex: The Unconventional Wisdom of Economics	Landsburg, Steven	2007	3.47	1039
Why Nudge? The Politics of Libertarian Paternalism	Sunstein, Cass	2015	3.44	90
Identity Economics: How Our Identities Shape Our Work, Wages, and Well-Being	Akerlof, George & Rachel Kranton	2010	3.44	288
Phishing for Phools: The Economics of Manipulation and Deception	Akerlof, George & Robert Shiller	2015	3.42	791
Make Your Brain Work: How to Maximize Your Efficiency, Productivity and ...	Brann, Amy & Kogan Page	2013	3.32	44
The Age of the Infovore: Succeeding in the Information Economy	Cowen, Tyler	2009	3.31	509
Why Popcorn Costs So Much at the Movies: And Other Pricing Puzzles	McKenzie, Richard	2008	3.27	146
Carrots and Sticks: Unlock the Power of Incentives to Get Things Done	Ayres, Ian	2010	3.20	268

**** Ratings retrieved from goodreads.com in April 2017***

Popular Books (By Author)

Title	Author(s)	Pub. Year	Average (Mean) Rating*	Number of Ratings*
Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism	Akerlof, George & Robert Shiller	2009	3.72	3163
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The Upside of Irrationality: The Unexpected Benefits of Defying Logic at Work and at Home	Ariely, Dan	2010	3.99	22211
Predictably Irrational: The Hidden Forces That Shape Our Decisions	Ariely, Dan	2008	4.10	65331
Payoff: The Hidden Logic that Shapes our Motivations	Ariely, Dan	2016	3.73	965
Carrots and Sticks: Unlock the Power of Incentives to Get Things Done	Ayres, Ian	2010	3.20	268
Decoded: The Science Behind Why We Buy	Barden, Phil	2013	4.08	269
Willpower: Rediscovering the Greatest Human Strength	Baumeister, Roy & John Tierney	2011	3.95	13496
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The Smarter Screen: Surprising Ways to Influence and Improve Online Behavior	Benartzi, Shlomo & Jonah Lehrer	2015	4.12	100
Work Rules!: Insights from Inside Google That Will Transform How You Live and Lead	Bock, Laszlo	2015	4.15	4784
What Works: Gender Equality by Design	Bohnet, Iris	2016	4.09	116
Sway: The Irresistible Pull of Irrational Behavior	Brafman, Ori & Rom Brafman	2008	3.74	14646
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The Social Animal: The Hidden Sources of Love, Character, and Achievement	Brooks, David	2011	3.82	16241
The Psychology of Price: How to use price to increase demand, profit and customer satisfaction	Caldwell, Leigh	2012	4.12	42
The Invisible Gorilla: How Our Intuitions Deceive Us	Chabris, Christopher & Daniel Simons	2010	3.87	10488
Secrets of the Moneylab: How Behavioral Economics Can Improve Your Business	Chen, Kay-Yut & Marina Krakovsky	2010	3.57	44
Influence: The Psychology of Persuasion	Cialdini, Robert	1993	4.17	50351
Pre-Suasion: A Revolutionary Way to Influence and Persuade	Cialdini, Robert	2016	4.06	1155
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On Being Human: Why Mind Matters	Kagan, Jerome	2016	4.25	16
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The Enigma of Reason	Mercier, Hugo & Dan Sperber	2017	4.08	12

The Drunkard's Walk: How Randomness Rules Our Lives	Mlodinow, Leonard	2008	3.88	14517
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The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization	Senge, Peter	1994	4.09	1397
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The Knowledge Illusion: Why We Never Think Alone	Sloman, Steven & Philip Fernbach	2017	3.86	99
The Last Mile: Creating Social and Economic Value from Behavioral Insights	Soman, Dilip	2015	4.17	12
Choosing Not to Choose: Understanding the Value of Choice	Sunstein, Cass	2015	3.48	23
Why Nudge? The Politics of Libertarian Paternalism	Sunstein, Cass	2015	3.44	90
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Scholarly Journals with Behavioral Economics Content

Sources: Journal websites (edited for length)

For changes and additions to this list, please email us.

Economics Journals

Econometrica

Impact Factor: 4.05

Econometrica publishes original articles in all branches of economics—theoretical and empirical, abstract and applied, providing wide-ranging coverage across the subject area. It promotes studies that aim at the unification of the theoretical-quantitative and the empirical-quantitative approaches to economic problems and which are penetrated by constructive and rigorous thinking. Furthermore, it explores a unique range of topics each year, from the frontier of theoretical developments in many new and important areas, through research on current and applied economic problems, through methodologically innovative, theoretical, and applied studies in econometrics.

The Economic Journal

Impact Factor: 2.37

The Economic Journal is a general journal publishing papers in all fields of economics for a broad international readership. As a general journal it welcomes submissions whether they be theoretical or applied, or orientated towards academics or policymakers. The journal places a premium on creative and provocative research.

Experimental Economics

Impact Factor: 1.84

Experimental Economics is an international journal that serves the growing group of economists around the world who use laboratory methods. The journal invites high-quality papers in any area of experimental research in economics and related fields (i.e. accounting, finance, political science, and the psychology of decision making). State-of-the-art theoretical and econometric works motivated by experimental data are also encouraged. The journal will also consider articles with a primary focus on methodology or the replication of controversial findings.

Journal of Behavioral and Experimental Economics (formerly the Journal of Socio-Economics)

Impact Factor: 0.34

The *Journal of Behavioral and Experimental Economics* (formerly the *Journal of Socio-Economics*) welcomes submissions that deal with various economic topics but which also involve issues that are related to other social sciences, especially psychology, or the use of experimental methods of inquiry. Thus, contributions in behavioral economics, experimental economics, economic psychology, and judgment and decision making are especially welcome. The journal is open to different research methodologies, as long as they are relevant to the topic and employed rigorously. Possible methodologies include, for example, experiments, surveys, empirical work, theoretical models, meta-analyses, case studies, and simulation-based analyses. Literature reviews that integrate findings from many studies are also welcome.

Journal of Economic Behavior & Organization

Impact Factor: 1.37

The *Journal of Economic Behavior and Organization* is devoted to theoretical and empirical research concerning economic decision, organization and behavior and to economic change in all its aspects. Its specific purposes are to foster an improved understanding of how human cognitive, computational, and informational characteristics influence the working of economic organizations and market economies and how an economy's structural features lead to various types of micro and macro behaviors, through changing patterns of development and institutional evolution. Research aligned with these purposes, which explores the interrelations of economics with other disciplines such as biology, psychology, law, anthropology, sociology, finance, marketing, political science, and mathematics, is particularly welcome. The journal is eclectic as to the research method employed, so systematic observation and careful description, simulation modeling, and mathematical analysis are all within its purview. Empirical work, including controlled laboratory experimentation that probes close to the core of the issues in theoretical dispute, is encouraged.

Journal of Economic Perspectives

Impact Factor: 5.01

The *Journal of Economic Perspectives (JEP)* attempts to fill a gap between the general interest press and most other academic economics journals. The journal aims to publish articles that will serve several goals: To synthesize and integrate lessons learned from active lines of economic research; to provide economic analysis of public policy issues; to encourage cross-fertilization of ideas among the fields of thinking; to offer readers an accessible source for state-of-the-art economic thinking; to suggest directions for future research; to provide insights and readings for classroom use; and to address issues relating to the economics profession. Articles appearing in the *JEP* are

normally solicited by the editors and associate editors. Proposals for topics and authors should be directed to the journal office.

Quarterly Journal of Economics

Impact Factor: 5.54

The *Quarterly Journal of Economics* is the oldest professional journal of economics in the English language. Edited at Harvard University's Department of Economics, it covers all aspects of the field.

Finance Journals

Journal of Behavioral and Experimental Finance

Impact Factor: N/A

The journal publishes full-length and short letter papers in the area of financial decision-making, specifically behavioral finance and experimental finance. Published research is in the fields of corporate finance, asset pricing, financial econometrics, international finance, personal financial decision making, macro-finance, banking and financial intermediation, capital markets, risk management and insurance, derivatives, quantitative finance, corporate governance and compensation, investments, market mechanisms, SME and microfinance and entrepreneurial finance, where such research is carried out with a behavioral perspective and/ or is carried out via experimental methods. The journal is open to but not limited to papers which cover investigations of biases, the role of various neurological markers in financial decision making, national and organizational culture as it impacts financial decision making, sentiment and asset pricing, the design and implementation of experiments to investigate financial decision making and trading, methodological experiments, and natural experiments. Both empirical and theoretical papers which cast light on behavioral and experimental topics are welcomed.

Journal of Finance

Impact Factor: 5.29

The *Journal of Finance* publishes leading research across all the major fields of financial research. It is the most widely cited academic journal on finance. The journal is the official publication of The American Finance Association.

Health Psychology

Impact Factor: 3.61

Health Psychology is a journal devoted to understanding the scientific relations among psychological factors, behavior and physical health and illness. The readership is broad with respect to discipline, background, interests, and specializations. The main emphasis of the journal is on original research, including integrative theoretical review papers, meta-analyses, treatment outcome trials, and brief scientific reports. Papers are of theoretical or practical importance for understanding relations among behavior, psychosocial factors, and physical health, as well as their application. Papers also address the translation of scientific findings for practice and policy. The journal publishes original scholarly articles on many topics, including contextual factors that may contribute to disease or its prevention.

Journal of Behavioral Decision Making

Impact Factor: 2.77

The *Journal of Behavioral Decision Making (JBDM)* is a journal that emphasizes psychological approaches and methods. The journal publishes manuscripts that develop significant psychological theories on fundamental decision processes, or report and interpret previously unknown phenomena. It focuses on publishing original empirical reports, critical review papers, theoretical analyses, methodological contributions, and book reviews. The objective of the journal is to stimulate, facilitate, and present high-quality behavioral research on decision making. Studies of behavioral decision making in real-life contexts are encouraged. Papers published in *JBDM* encompass individual, interpersonal and group decision making, including consumer behavior and behavioral economics.

Journal of Consumer Psychology

Impact Factor: 2.01

The *Journal of Consumer Psychology (JCP)* publishes top-quality research articles that contribute both theoretically and empirically to our understanding of the psychology of consumer behavior. *JCP* is the official journal of the Society for Consumer Psychology, Division 23 of the American Psychological Association. It publishes articles in areas such as consumer judgment and decision processes, consumer needs, attitude formation and change, reactions to persuasive communications, consumption experiences, consumer information processing, consumer-brand relationships, affective, cognitive, and motivational determinants of consumer behavior, family and group decision processes, and cultural and individual differences in consumer behavior. Most published articles are likely to report new empirical findings, obtained either in the laboratory or in

field experiments that contribute to existing theory in both consumer research and psychology. However, results of survey research, correlational studies, and other methodological paradigms are also welcomed to the extent that the findings extend our psychological understanding of consumer behavior. Theoretical and/or review articles integrating existing bodies of research and providing new insights into the underpinnings of consumer behavior and consumer decision processes are also encouraged.

Journal of Economic Psychology

Impact Factor: 1.68

The *Journal of Economic Psychology* aims to present research that will improve understanding of behavioral, especially socio-psychological, aspects of economic phenomena and processes. The journal seeks to be a channel for the increased interest in using behavioral science methods for the study of economic behavior, and so to contribute to better solutions for societal problems, by stimulating new approaches and theorizations about economic affairs. Economic psychology as a discipline studies the psychological mechanisms that underlie consumption and other economic behavior. It deals with preferences, choices, decisions, and factors influencing these elements, as well as the consequences of decisions and choices with respect to the satisfaction of needs. This includes the impact of external economic phenomena upon human behavior and well-being. Studies in economic psychology may relate to different levels of aggregation, from the household and the individual consumer to the macro level of whole nations. Economic behavior in connection with inflation, unemployment, taxation, economic development, consumer information, and economic behavior in the marketplace are thus the major fields of interest. Special issues of the journal may be devoted to themes of particular interest. The journal encourages exchanges of information between researchers and practitioners by acting as a forum for discussion and debates on issues in both theoretical and applied research.

Journal of Health Psychology

Impact Factor: 2.01

The *Journal of Health Psychology* is an international peer-reviewed journal that aims to support and help shape research in health psychology from around the world. It provides a platform for traditional empirical analyses as well as more qualitative and/or critically oriented approaches. It also addresses the social contexts in which psychological and health processes are embedded.

Journal of Personality and Social Psychology

Impact Factor: 4.74

The *Journal of Personality and Social Psychology* publishes original papers in all areas of personality and social psychology and emphasizes empirical reports, but it may also include specialized

theoretical, methodological, and review papers. The journal's *Attitudes and Social Cognition* section addresses those domains of social behavior in which cognition plays a major role, including the interface of cognition with overt behavior, affect, and motivation. Among topics covered are attitudes, attributions, and stereotypes, self-regulation, and the origins and consequences of moods and emotions insofar as these interact with cognition. *Interpersonal Relations and Group Processes* focuses on psychological and structural features of interaction in dyads and groups. Topics include group and organizational processes such as social influence, group decision making and task performance, pro-social behavior, and other types of social behavior. The *Personality Processes and Individual Differences* section publishes research on all aspects of personality psychology and includes studies of individual differences and basic processes in behavior, emotions, health, and motivation.

Judgment and Decision Making

Impact Factor: N/A

Judgment and Decision Making is the journal of the Society for Judgment and Decision Making (SJDM) and the European Association for Decision Making (EADM). It is open access and published on the World Wide Web. Submitted articles should be original and relevant to the tradition of research in the field represented by SJDM and EADM. Relevant articles deal with normative, descriptive, and/or prescriptive analyses of human judgments and decisions. These include, but are not limited to, experimental studies of judgments of hypothetical scenarios; experimental economic approaches to individual and group behavior; use of physiological methods to understand human judgments and decisions; discussions of normative models such as utility theory; and applications of relevant theory to medicine, law, consumer behavior, business, public choice, and public economics.

Organizational Behavior and Human Decision Processes

Impact Factor: 2.81

Organizational Behavior and Human Decision Processes publishes fundamental research in organizational behavior, organizational psychology, and human cognition, judgment, and decision-making. The journal features articles that present original empirical research, theory development, meta-analysis, and methodological advancements relevant to the substantive domains served by the journal. Topics covered by the journal include perception, cognition, judgment, attitudes, emotion, well-being, motivation, choice, and performance. The journal is interested in articles that investigate these topics as they pertain to individuals, dyads, groups, and other social collectives. For each topic, the journal places a premium on articles that make fundamental and substantial contributions to understanding psychological processes relevant to human attitudes, cognitions, and behavior in organizations.

Psychological Science

Impact Factor: 5.48

Psychological Science, the flagship journal of the Association for Psychological Science (previously the American Psychological Society), is the highest ranked empirical journal in psychology. The journal publishes cutting-edge research articles, short reports, and research reports spanning the entire spectrum of the science of psychology. This journal is the source for the latest findings in cognitive, social, developmental, and health psychology, as well as behavioral neuroscience and biopsychology. *Psychological Science* routinely features studies employing novel research methodologies and the newest, most innovative techniques of analysis.

Marketing/Management Journals

Management Science

Impact Factor: 2.74

Management Science publishes scientific research on the practice of management. Within its scope are all aspects of management related to strategy, entrepreneurship, innovation, information technology, and organizations as well as all functional areas of business, such as accounting, finance, marketing, and operations. The journal includes studies on organizational, managerial, and individual decision making, from both normative and descriptive perspectives.

Marketing Science

Impact Factor: 1.65

Marketing Science is an Institute for Operations Research and the Management Sciences (INFORMS) publication that focuses on empirical and theoretical quantitative research in marketing. *Marketing Science* covers a range of topics, including advertising, marketing research, pricing and promotions, and targetability. Other subjects include consumer perception models and those relating to the subject of purchasing behavior.

Journal of Marketing Research

Impact Factor: 3.11

The *Journal of Marketing Research (JMR)* publishes manuscripts that address research in marketing and marketing research practice. The journal publishes articles representing the entire spectrum of research in marketing, ranging from analytical models of marketing phenomena to descriptive and case studies. Most of the research currently published in *JMR* fits into the following two categories: (1) Empirical research that tests a theory of consumer or firm behavior in the

marketplace and (2) methodological research that presents new approaches for analyzing data or addressing marketing research problems.

Multidisciplinary Journals

Behavioral Medicine

Impact Factor: 1.74

Behavioral Medicine is a multidisciplinary journal in the field of behavioral medicine, including understandings of disease prevention, health promotion, identification of health risk factors, and interventions designed to reduce health risks and enhancing all aspects of health. The journal seeks to advance knowledge and with an emphasis on the synergies that exist between biological, psychological, psychosocial, and structural factors as they related to these areas of study and across health states. The journal publishes original empirical studies, including experimental research. The journal also publishes review articles. Papers in *Behavioral Medicine* emphasize the interplay between theory and practice, as well as the translation of knowledge to enhance health, and policy implications.

Behavioral Public Policy

Impact Factor: N/A

Behavioural Public Policy is an interdisciplinary and international peer-reviewed journal devoted to behavioral research and its relevance to public policy. The journal seeks to be multidisciplinary and welcomes articles from economists, psychologists, philosophers, anthropologists, sociologists, political scientists, primatologists, evolutionary biologists, legal scholars and others, so long as their work relates the study of human behavior directly to a policy concern. BPP focuses on high-quality research which has international relevance and which is framed such that the arguments are accessible to a multidisciplinary audience of academics and policy makers.

Behavioral Science & Policy

Impact Factor: N/A

Behavioral Science & Policy is a new journal that features short, accessible articles describing actionable policy applications of behavioral scientific research that serves the public interest and has an impact on public and private sector policy making and implementation. The journal will publish reports of public and business policy recommendations that are firmly grounded in empirical behavioral scientific research. *Empirical* refers to research based on an analysis of data including but not limited to field and laboratory experiments, analysis of archival data, meta-analysis, and/or observational study. Research is *behavioral* in the sense of being grounded

in the study of individual, group, and/or organizational behavior. Finally, contributions are *scientific* if the research tests falsifiable hypotheses and/or careful systematic observation, using rigorous scientific methods.

Decision

Impact Factor: N/A

Decision is a multidisciplinary research journal focused on a theoretical understanding of neural, cognitive, social, and economic aspects of human judgment and decision-making behavior. The journal publishes articles on all areas related to judgment and decision-making research, including probabilistic inference, prediction, evaluation, choice, decisions under risk or uncertainty, and economic games. The journal is interested in articles that present new theories or new empirical research addressing theoretical issues, or both. To achieve this goal, *Decision* will publish three types of articles: Long articles that make major theoretical contributions, shorter articles that make major empirical contributions by addressing important theoretical issues, and brief review articles that target rapidly rising theoretical trends or new theoretical topics in decision making.

Games and Economic Behavior

Impact Factor: 0.88

Games and Economic Behavior facilitates cross-fertilization between theories and applications of game theoretic reasoning. It publishes papers in interdisciplinary studies within the social, biological, and mathematical sciences. Research areas include game theory, economics, political science, biology, computer science, mathematics, and psychology.

International Journal of Applied Behavioral Economics

Impact Factor: N/A

The scope of the *International Journal of Applied Behavioral Economics* encompasses how preferences, attitudes, and behavioral issues influence economic agents involved in business and organizations. Special attention is given to the impact that globalization and digitalization have on businesses and organizations from a behavioral point of view. An interdisciplinary approach is required, as economics, psychology, sociology, and anthropology are domains that contribute to understanding complex economic behavior, its triggers, and its practical implications. The journal encourages practice-oriented research papers from academics and reflective papers from practitioners, as well as case studies. Both quantitative and qualitative research papers are welcomed, as well as research that uses innovative methodologies to explore new insights in the field and theory.

Journal of Behavioral Finance

Impact Factor: N/A

In *Journal of Behavioral Finance*, authors address the implications of current work on individual and group emotion, cognition, and action for the behavior of investment markets. They include specialists in personality, social, and clinical psychology; psychiatry; organizational behavior; accounting; marketing; sociology; anthropology; behavioral economics; finance; and the multidisciplinary study of judgment and decision making. The journal fosters debate among groups who have keen insights into the behavioral patterns of markets, but have not historically published in the more traditional financial and economic journals. Further, it stimulates new interdisciplinary research and theory that builds a body of knowledge about the psychological influences on investment market fluctuations. One of the benefits will be a new understanding of investment markets that can greatly improve investment decision making.

Journal of Behavioural Economics, Finance, Entrepreneurship, Accounting and Transport

Impact Factor: N/A

The *Journal of Behavioural Economics, Finance, Entrepreneurship, Accounting and Transport* publishes research papers around behavioural issues in economics, finance, entrepreneurship, accounting, and transport. It aims to discuss the effect of the emergence of the behavioural theory in different fields of research. It is the first journal to introduce the concepts of 'Behavioural Entrepreneurship' and 'Behavioural Transport', and it seeks to publish articles that focus on the role of investors, managers, and entrepreneurs' psychology in the decision making process. The journal helps us to understand 'why' and 'how' behavioural economic agents make sub-optimal decisions, which can explain why economic and corporate decisions are far from the rational choice.

Journal of Consumer Research

Impact Factor: 3.19

The *Journal of Consumer Research (JCR)* publishes scholarly research that describes and explains consumer behavior. Empirical, theoretical, and methodological articles spanning fields such as psychology, marketing, sociology, economics, communications, and anthropology are featured in this interdisciplinary journal. The primary thrust of *JCR* is academic rather than managerial, with topics ranging from micro-level processes (such as brand choice) to more macro-level issues (such as the development of materialistic values).

Journal of Economics and Behavioral Studies

Impact Factor: N/A

The *Journal of Economics and Behavioral Studies* is an open access journal that augments the knowledge base in collaboration with scholars, academicians, professionals and practitioners by allowing free access to valuable information around the world. Research studies in the journal address emerging issues and developments in local and international business world. JEBS encourages submission related to the subjects of managerial economics, financial economics, development economics, finance, economics, financial psychology, strategic management, organizational behavior, human behavior, marketing, human resource management and behavioral finance.

Journal of Marketing Behavior

Impact Factor: N/A

The *Journal of Marketing Behavior* publishes theoretically grounded research into human behavior in the marketplace that empirically tests new behavioral theory, or extends or integrates extant theory. Its methodological focus is on experimental or quantitative analyses of behavioral data, either in the lab or in the field. The substantive and methodological orientation of JMB point toward research that combines questions and theories from economics, social psychology, and/or behavioral decision research, with the clear objective of uncovering and explaining behaviorally relevant phenomena. While such research appears across a wide variety of journals in marketing and consumer research, JMB provides a focused outlet for this research.

Journal of Neuroscience, Psychology and Economics

Impact Factor: 1.06

The *Journal of Neuroscience, Psychology, and Economics* publishes articles in the field interdisciplinary field of neuroeconomics. In addition, the journal deals with issues of decision neuroscience, consumer neuroscience, neuromarketing, neuroIS, and neurofinance. Its focus is original research dealing with the application of psychological theories, neurophysiological frameworks, and neuroscientific methods to decision making, judgment, and choice.

Journal of Risk and Uncertainty

Impact Factor: 1.43

This journal is an outlet for research in decision analysis, economics and psychology dealing with choice under uncertainty. It publishes both theoretical and empirical papers that analyze risk-bearing behavior and decision-making under uncertainty. The journal addresses decision theory and the economics of uncertainty, psychological models of choice under uncertainty, risk and public policy, etc. Among the topics covered in the journal are decision theory and the economics of uncertainty, psychological models of choice under uncertainty, risk and public policy,

experimental investigations of behavior under uncertainty, and empirical studies of real-world, risk-taking behavior.

Medical Decision Making

Impact Factor: 2.91

Medical Decision Making offers rigorous and systematic approaches to decision making that are designed to improve the health and clinical care of individuals and to assist with health care policy development. Using the fundamentals of decision analysis and theory, economic evaluation, and evidence based quality assessment, Medical Decision Making presents both theoretical and practical statistical and modeling techniques and methods from a variety of disciplines.

Mind & Society

Impact Factor: N/A

Mind & Society examines the relationships between mental and socio-economic phenomena. It is the official journal of the Italian-based Rosselli Foundation. Priority is given to papers that explore the relationships between mind and action and between action and socio-economic phenomena. This includes the following topics: The concept of the mind of a social actor; cognitive models of reasoning; decision making and action; computational and neural models of socio-economic phenomena; and related topics. The international journal takes an interdisciplinary approach and publishes papers from many academic disciplines, including the philosophy and methodology of social sciences, economics, decision making, sociology, cognitive and social psychology, epistemology, cognitive anthropology, artificial intelligence, neural modeling, and political science. Papers must share the journal's epistemological vision—namely, the explanation of socio-economic phenomena through individual actions, decision making and reasoning processes—or at least refer to its content priorities. *Mind & Society* publishes papers that report original results of empirical research or theoretical analysis.

Policy Insights from the Behavioral and Brain Sciences

Impact Factor: N/A

Policy Insights from the Behavioral and Brain Sciences publishes original research and scientific reviews relevant to public policy. It allows scientists to share research that can help build sound policies and policymakers to provide feedback to the scientific community regarding research that could address societal challenges. The journal encourage the scientific community to build models that seriously consider implementation to address the needs of society.

Psychology & Marketing

Impact Factor: 1.34

Psychology & Marketing (P&M) publishes original research and review articles dealing with the application of psychological theories and techniques to marketing. As an interdisciplinary journal, *P&M* serves practitioners and academicians in the fields of psychology and marketing and is an appropriate outlet for articles designed to be of interest, concern, and applied value to its audience of scholars and professionals. Manuscripts that use psychological theory to understand better the various aspects of the marketing of products and services are appropriate for submission. *P&M* fosters the exploration of marketing phenomena spanning the entire spectrum of offerings (products & services), price, promotion (advertising, publicity, public relations, and personal selling), place (channels and distribution), and politics (public opinion, law, and ethics), all revolving around the individual and collective psyche of consumers. Manuscripts may be conceptual or empirical in nature, and also feature quantitative and/or qualitative analysis. They may deal with business-to-consumer, business-to-business, and not-for-profit business and organizational issues. Also appropriate for submission to *P&M* are case studies, cross-cultural research, and psychological studies or profiles of individuals or groups with clear marketing implications.

Review of Behavioral Economics

Impact Factor: N/A

The *Review of Behavioral Economics (ROBE)* seeks to extend and develop the study of behavioral economics. The journal encourages a transdisciplinary and pluralistic perspective in the tradition of the late Herbert A. Simon, long recognized as the founder of modern behavioral economics, for whom the concepts of bounded rationality and satisficing were based on psychological, cognitive, and computational limits of human knowledge and behavior, the decision making environment, and the evolutionary capabilities of the human being. *ROBE* sees behavioral economics embedded in a broader behavioral science that includes most of the social sciences, as well as aspects of the natural and mathematical sciences. The journal is open to a variety of approaches and methods, both mainstream and non-orthodox, as well as theoretical, empirical, and narrative. *ROBE* will also publish special issues and target articles with comments from time to time as appropriate.

Other Resources

For the most recent list of behavioral science jobs, events, books, and more, please visit www.behavioraleconomics.com.

APPENDIX – AUTHOR AND CONTRIBUTING ORGANIZATION PROFILES

Author Profiles

Alain Samson (Editor)

Alain Samson is the editor of the Behavioral Economics Guide, founder of behavioral-economics.com and Chief Science Officer at Syntoniq. He has worked as a consultant, researcher and scientific advisor, most recently with an LSE-led consortium conducting behavioral research for European public policy. His experience spans multiple sectors, including finance, consumer goods, media, higher education, energy, and government.

Alain studied at UC Berkeley, the University of Michigan, and the London School of Economics, where he obtained a PhD in Psychology. His scholarly interests have been eclectic, including culture and cognition, social perception, consumer psychology, and behavioral economics. He has published articles in scholarly journals in the fields of management, consumer behavior and economic psychology. He is the author of Consumed, a *Psychology Today* online popular science column about behavioral science.

Alain can be contacted at alain@behavioraleconomics.com.

Cass Sunstein (Introduction)

Cass R Sunstein is the Robert Walmsley University Professor at Harvard, where he is the founder and director of the program on behavioral economics and public policy. From 2009 to 2012, he served as Administrator of the White House Office of Information and Regulatory Affairs, and he has had several government positions in more recent years, including as a member of the Defense Innovation Board and the Review Group on Intelligence and Communications Technologies. He has advised government officials in many nations outside of his own country. He is author of numerous books, including *The Ethics of Influence* (2016), *Choosing Not to Choose* (2015), and *Nudge* (with Richard Thaler) (2008).

Contributing Organizations

The Behavioural Architects

The Behavioural Architects is an award-winning, global insight, research and consultancy business with behavioural science at its core. It was founded in 2011 by Crawford Hollingworth, Sian Davies and Sarah Davies.

We were one of the first agencies built around the new insights coming from the behavioural sciences. This new thinking has inspired us to develop powerful frameworks that fuel deeper understanding of consumer behaviour and behaviour change.

We have offices in Sydney, Shanghai, London and Oxford and have worked with many global corporations, NGOs and governments, together reinvigorating traditional research methodologies, alongside pioneering new ones. Our aim is always to make our behavioural insights both accessible and actionable for clients.

The Behavioural Architects invests heavily in its Oxford-based intelligence team dedicated to supporting our global teams, keeping them up to speed with all developments from the academic arena and the top BE practitioners.

In 2013 we won the Market Research Society (MRS) award for Best New Agency and in 2015, the highly competitive MRS Best Place to Work.

For more information, please visit www.thebearchitects.com.

Behavioral Science Lab, LLC

We are nerds at heart. Visionaries, who know that world around us is changing, but the way we look at, study and try to understand humans haven't changed in decades. Though most companies are able to provide pieces to the puzzle to where, when, what and how individuals engage with brands and products, most fail to provide a precise and full view of the "Why" — the true nature, needs and motivation of individuals.

We built the lab to start over, removing ourselves from existing methodologies and past thinking. We set out to revolutionize the way we look and think about people. By understanding individual pattern of expected utility through our own proprietary behavioral economics research tools and methodologies, we provide our clients with solutions to their marketing and business problems ever thought possible. By deciphering the full complexity of the human mind and all elements that influence one's decision process, we are truly rethinking the way we study, identify and engage with people, transcending into a new era of human insights.

With MINDGUIDE® and BrandEmbrace®, two of our signature tools, we not only provide a clear, holistic and multidimensional view of purchase decision requirements, we also help our clients predict demand, purchase, loyalty and switching.

For more information, please visit www.behavioralsciencelab.com.

Decision Technology

With roots in academia and close links to various research institutions, Decision Technology specialises in helping businesses and policymakers understand and manage customer decision-making with insight grounded in behavioural science and psychology.

We deliver highly differentiated insight and end-to-end services that merge financial analysis and business advice alongside field research and customer insight. This hybrid approach, developed with our co-founder Professor Nick Chater of Warwick Business School, marries a necessary focus on commercial results with a practical understanding of what drives human behaviour.

Decision Technology is a trusted advisor to some of the world's largest organisations in both the private and public sectors. We build long-term partnerships with our clients, whose markets span telecoms, utilities, retail, advertising, and finance. By employing a behavioural, experimental and statistical approach, our Brand practice helps our clients to navigate and leverage the relationship between customer decision-making and winning strategies.

For more information, please visit www.dectech.co.uk.

Deloitte US

In the US, Deloitte LLP and Deloitte USA LLP are member firms of DTTL. The subsidiaries of Deloitte LLP provide industry-leading audit, consulting, tax, and advisory services to many of the world's most admired brands, including 80 percent of the Fortune 500 and more than 6,000 private and middle market companies. Our people work across more than 20 industry sectors with one purpose: to deliver measurable, lasting results. We help reinforce public trust in our capital markets, inspire clients to make their most challenging business decisions with confidence, and help lead the way toward a stronger economy and a healthy society. As part of the DTTL network of member firms, we are proud to be associated with the largest global professional services network, serving our clients in the markets that are most important to them.

Clients count on Deloitte to help them transform uncertainty into possibility and rapid change into lasting progress. Our people know how to anticipate, collaborate, and innovate, and create opportunity from even the unforeseen obstacle.

For more information, please visit www.deloitte.com/us/.

FehrAdvice & Partners

The mission of FehrAdvice & Partners is to initialize better and more accurate decisions in government, business and NGOs, in order to improve the performance and competitiveness of

these institutions, especially in the field of corporate governance, policy making and behavioral change.

The advisory is based on the latest insights from behavioral economics. FehrAdvice & Partners AG meld these insights into a usable form for consulting and further develop them with empirical and theoretical studies. This results in an independent and unique advisory approach, the Behavioral Economics Approach BEA™, developed with one of the world's leading behavioral economics researchers, Prof. Dr. Ernst Fehr of the University of Zurich.

FehrAdvice provides consultancy in the design of high-performance markets and institutions, digitiziation & literacy, risk & financial decision making, energy & mobility, and health & ageing. Our practices include incentive design (incl. top-management compensation schemes), performance management optimization, behavioral change management, behavioral leadership-development, behavioral pricing, behavioral strategy, behavioral negotiation strategy and smart data approach.

For more information, please visit www.fehradvice.com/en/.

ING

ING is a global financial institution with a strong European base, offering banking services through its operating company ING Bank. The purpose of ING Bank is empowering people to stay a step ahead in life and in business. ING Bank's 52,000 employees offer retail and wholesale banking services to customers in over 40 countries.

The ING International Survey is produced several times a year by ING eZonomics, part of Group Research. eZonomics is about money and life. We try to make economics more accessible – showing how it affects how we live, now and in the future. Additionally, we use ideas from behavioural economics and social psychology to explain people's sometimes surprising relationship with money, the effect on their financial decisions and, perhaps most importantly, what to do with this information.

For more information, please visit www.ezonomics.com.

Irrational Company

Irrational Company was created in 2014 with the intention of bringing two subjects to Mexico that were not well known, but that we are very passionate about: Behavioral Economics and Data Science. Since then, we have sought to mix those disciplines in rigorous yet creative ways to help our clients meet their biggest challenges.

We have worked with clients in a range of industries to help them solve their biggest challenges. We have created a variety of research tools to understand why people do what they do, and how to communicate, motivate and create more value for them. We are also creating a digital platform to collect, analyze and visualize data about our country to help institutions make better strategic decisions with actionable data insights.

We are working with Universidad Anahuac to create the first official online program in Behavioral Economics in Spanish.

For more information, please visit irrational.ly.

London Economics

London Economics' Consumer Behaviour and Protection team comprises of experienced economists who specialise in the understanding of consumer behaviour and preferences and consumer related issues. Underpinning all our work is a strong commitment to delivering methodologically robust and independent analysis that meet the needs of our clients.

The London Economics' Behavioural and Experimental Economics team is at the leading edge of developments and application of the most innovative techniques in behavioural and experimental economics. Our highly-qualified behavioural and experimental economic consultants are committed to producing research using academically rigorous techniques, to deliver behavioural insights into consumer and firm behaviour where conventional economic techniques reach their limits.

For more information, please visit londoneconomics.co.uk.