

THE BEHAVIORAL ECONOMICS GUIDE 2015

Edited by
Alain Samson

Introduction by
Dan Ariely

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The Behavioral Economics Guide 2015

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INTRODUCTION

Behavioral Economics: An Exercise in Design and Humility

Dan Ariely

It is tempting to look at people in general and imagine a large body of reasonable and rational individuals out there, going about their lives in a reasoned, calculated and sensible way. Of course, this view is somewhat correct. Our minds and bodies are capable of amazing acts. We can see a ball thrown from a distance, instantly calculate its trajectory and impact, and then move our body and hands in order to catch it. We can learn new languages with ease, particularly as young children. We can master chess. We can recognize thousands of faces without confusing them (although as I get older I am less and less impressed with my own memory). We can produce music, literature, technology, and art—the list goes on and on.

As Shakespeare expressed in Hamlet:

“What a piece of work is a man! How noble in reason, how infinite in faculty! In form and moving how express and admirable! In action how like an Angel! In apprehension how like a god! The beauty of the world! The paragon of animals!”

The problem is that while this view of human nature is largely shared by economists, policy makers, and most of the general population, it is not perfectly accurate. Sure we can do many great things, but we also fail from time to time, and the costs of these failings can be substantial. Think for example about something like texting and driving: You don’t have to text and drive all the time for it to be dangerous and devastating. Even if we text and drive once in awhile, let’s say only 3% of the time, it can still injure or kill us and the people around us.

Texting and driving is a substantial problem, but it is also a useful metaphor to help us think about some of the ways in which we misbehave — acting in ways that are inconsistent with our long-term interests. Overeating, under-saving, crimes of passion, the list goes on and on. The big problem is that our ability to act in our long-term interest is only getting more and more difficult! Why? Because the way we design the world around us does not help us fight temptation and think long-term. In fact, if an alien would observe the way we design the world, the only sensible conclusion he could come to is that human beings are determined to design the world in a way that creates more and more temptations and makes us think more and more myopically. Think about it, will the next version of the doughnut (doughnut 2.0) be more tempting or less tempting? Will the next version of the smartphone get us to check it more or less throughout the day? And will the next version of Facebook make us check Facebook more or less frequently?

Basically, we can think about life as a tug-of-war. We are walking around with our wallets, our priorities and our thoughts — and the commercial world around us wants our money, time, and attention. Does the commercial world want our money time and attention at some time in the far future? Is it trying to maximize our wellbeing in 30 or 40 years from now? No. The commercial actors around us want our money, time, and attention now. And they are rather successful in their mission — partially because they control the environment in which we live (supermarkets, malls), partially because we allow them into our computers and phones (apps, advertising), partially because they know more about what tempts us than we know, and partially because we don't really understand some of the most basic aspects of our nature.

An important and rather depressing study by Ralph Keeney (a fellow researcher at Duke) explored the overarching impact of bad decision-making on our lives, or more accurately, our deaths. Using mortality data from the Center for Disease Control, Ralph estimated that about half of all deaths among adults 15-64 years old in the United States are caused or aided by bad personal decisions, particularly those relating to smoking, not exercising, criminality, drug and alcohol use, and unsafe sexual behavior.

Ralph carefully defined both the nature of personal decision and what can be considered premature death. For instance, if someone died after being broadsided by a drunk driver, it was not considered premature because the deceased did not make the decision that led to their death. However, if the drunk driver died then it was considered as a premature death because the decision to drive drunk, and dying as a result, are clearly connected. With this in mind we can examine a variety of instances where multiple decision paths are available (the drunk driver also has the option to take a cab, ride with a designated driver, or call a friend), and where these other decision paths are not chosen despite the fact that they are less likely to result in the same negative outcome (i.e., fatality).

To elaborate just a bit on just one example of a personal decision that can lead to death, let's examine the overconsumption of alcohol. This decision can lead to weight gain, which can lead to obesity, which can cause heart attacks, strokes, cancer, and other fatal health problems. It can also result in accidental injury, which, in some cases can be fatal to the person drinking. Drinking alcohol can also lead to having unprotected sex, which can result in the contraction of a fatal disease. It can also, though less common, result in suicidal behavior. And these are just a few of the ways that the decision to drink alcohol can be fatal. There are plenty of other potential consequences. Of course, overconsumption of alcohol is just one example of how bad decisions can lead to premature death, and sadly as society moves forward, the number and types of bad decisions increases, as does the number of their potential negative consequences.

Now, if people were simply perfectly rational creatures, life would be wonderful and simple. We would just have to give people the information they need to make good decisions, and they would immediately make the right decisions. People eat too much? Just give them calorie information and all will be well. People don't save, just give them a retirement calculator and they will start saving at the appropriate rate. People text and drive? Just let them know how dangerous it is. Kids drop out of school, doctors don't wash

their hands before checking their patients. Just explain to the kids why they should stay in school and tell the doctors why they should wash their hands. Sadly, life is not that simple and most of the problems we have in modern life are not due to lack of information, which is why our repeated attempts to improve behavior by providing additional information does little (at best) to make things better.

This is the basic problem: we have our internal software and hardware that has been developing over the years to deal with the world. And while we have some tremendous abilities, there are many cases in which these skills and abilities are incompatible with the modern world we have designed. These are the cases where we can veer dangerously off path and make serious mistakes. And these mistakes are getting more and more expensive to live with. Why? Think of these dangers as if they were terrorists. A thousand years ago, how much damage could a terrorist cause before they got caught? But today? With technologies such as explosives, chemical and biological warfare, even a very small group can cause tremendous damage. The same goes for falling to temptation. In a world where we don't have cell phones and cars the dangers of not paying attention is not that large -- at worst we will walk into a tree. But when we get a car that drives at 70 MPH, even a small mistake of attention can be very costly. The same goes for food. In a world where the caloric content of any food is not that high, eating for 10 minutes extra after we got our food intake need satisfied is not a big deal, but when a doughnut contains a few hundred calories, and we can scoff it down in less than a minute, eating for a bit too much time can be costly. Very costly.

There are lots of biases, and lots of ways we make mistakes, but two of the blind spots that surprise me most are the continuous belief in the rationality of people and of the markets. This surprises me particularly because even the people who seem to believe that rationality is a good way to describe individuals, societies and markets, feel very differently when you ask them specific questions about the people and institutions they know very well. On one hand, they can state all kinds of high order beliefs about the rationality of people, corporations, and societies, but then they share very different sentiments about their significant other, their mother-in-law (and I am sure that their significant other and mother-in-law also have crazy stories to share about them), and the organizations they work at. Somehow when we look at a particular example of life up close, the illusion of sensible behavior fades almost instantly. And the more we look at the small details of our own life, the more our bad decisions seem to multiply.

As an exercise let's each think about our own life and write down the number of time we have done the following activities in the last thirty days. Two more points to keep in mind: 1) If you don't fill in the numbers it will be much easier for you to keep the illusion of your own rationality, so it is up to you if you prefer to confront your own behavior or not. 2) If you leave lines empty, it feels very different from writing zero, so if you want to be truly honest with yourself, don't leave any line empty.

In the last thirty days the number of times I ...

Overate is _____

Texted while driving is _____

Read email while driving is _____

Spent money and regretted it later _____

Spent too much time on social media _____

Procrastinated _____

Stayed up too late and did not sleep well _____

Drank too much _____

Was not as kind to my significant other as I want to be _____

Did not spend enough time with my kids is _____

Did not exercise as much as I wanted to is _____

Did not take my medications _____

Lied (and not a white lie) _____

Mismanaged my time _____

Said yes to something that I should have said no to _____

Said something inappropriate and then regretted it _____

Took a non-optimal flight just to get a few more frequent flyer points _____

[Please add any additional misbehaviors below]

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

I did this exercise myself and for a few minutes I considered publicly posting my own answers but when I tallied the numbers, I did not want to admit my own failing or increase the number of times I lied – so I decided to keep the details of my own misbehaviors private. Maybe the extent of undesirable behaviors is only prevalent in my own life and maybe I am the most irrational person out there. But on the off chance that my experience is on par with the general human experience, maybe we all need to update our assessments of our abilities and think about how to improve our sorry state. And hopefully sooner rather than later.

The first question that comes directly from this somewhat sad analysis of the state of bad decisions and the modern world, is whether we should be depressed with all of these illustrations and personal anecdotes of substantial personal failings. And the second question that should follow it, is what are we to do?

In terms of being depressed, it might seem that the rational perspective is a much more optimistic view of life and that the behavioral economics perspective is depressing. After all, it seems wonderful to go about our daily life believing that the people around us are perfectly rational superhumans who always make the right decisions. Plus, this perspective has a certain level of respect for the marvel of humanity. In contrast, thinking about the people we interact with both professionally and socially as myopic, emotional, vindictive, unsure about what they want, easily confused, etc. seems rather sad. But let's take a different view on this — one that is rooted in the state of the world and not one that is focused on individuals.

Think about the world. We have somewhere between 7 and 8 billion people in the world, and as far as I can tell, things are far from ideal. We have wars, high crime rates, climate change, pollution, our oceans are unhealthy, we have a large amounts of poverty, we have obesity, smoking, etc, etc, etc. From this perspective, what is more optimistic? To think about the state of the world as the result of 7-8 billion rational people, or to think about it as the result of 7-8 billion irrational people? If we think about the world as an outcome of 7-8 billion rational people, then it means that this is the best we can hope for. But if we understand that the state of the world as an outcome of 7-8 billion irrational people, this means that we can do much better. It means that as long as we understand where we go wrong, we can improve things. This is the version of optimism – and I deeply believe in. True, we are flawed in many ways, and I'm sure that over the years we will find even more ways in which we are flawed. But for me, this only emphasizes the vast room for improvement. Now, this is optimism!

In terms of what to do next, in my mind the challenges are basically design challenges. As long as we build the world around us assuming that people have limitless cognitive capacity and no emotions to interfere with our decisions, we will fail, and we will fail often and on larger scales. But, if we truly understand human limitations and build around this understanding, we will end up with products and markets that are much more compatible with our human ability and will ultimately allow us to flourish. In the same way that we would never design a car assuming that people have an infinite amount of hands and legs to operate the car, we must also recognize our social, cognitive, emotional, and attention

limitations as we design our environment. This is a challenge, but this is also the path of hope.

And finally, I would like to remind us about the wisdom of the Romans. At the peak of Rome's empire, Roman generals who won significant victories paraded through the middle of the city displaying their spoils. The generals wore purple and gold ceremonial robes, a crown of laurels, and red paint on their face as they were carried through the city on a throne. They were hailed, celebrated and admired. But there was one more element to the ceremony: Throughout the day a slave walked next to the general whispering repeatedly in his ear "Memento mori," which means "Remember your mortality."

If I could create a modern version of this Roman phrase, I would probably pick "Remember your fallibility" or maybe "Remember your irrationality." Whatever the phrase is, recognizing our shortcomings is a crucial first step in the path to making better decisions, creating better societies and fixing our institutions.

PART I – EDITORIAL

Behavioral Science: Theory and Practice

Alain Samson

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Behavioral Economics in 2015

In last year's **BE Guide**, I described Behavioral Economics (BE) as the study of cognitive, social, and emotional influences on people's observable economic behavior. BE research uses psychological experimentation to develop theories about human decision making and has identified a range of biases. The field is trying to change the way economists think about people's perceptions of value and expressed preferences. According to BE, people are not always self-interested, cost-benefit-calculating individuals with stable preferences, and many of our choices are not the result of careful deliberation. Instead, our thinking tends to be subject to insufficient knowledge, feedback, and processing capability, which often involves uncertainty and is affected by the context in which we make decisions. We are unconsciously influenced by readily available information in memory, automatically generated feelings, and salient information in the environment, and we also live in the moment, in that we tend to resist change, be poor predictors of future preferences, be subject to distorted memory, and be affected by physiological and emotional states. Finally, we are social animals with social preferences, such as those expressed in trust, altruism, reciprocity, and fairness, and we have a desire for self-consistency and a regard for social norms.

BE ideas have been applied to various domains, including finance, health, energy, public choice, and consumer marketing. As a representative of the domain of marketing, Rory Sutherland gave readers his perspective in the 2014 Guide by distilling BE down to the following six insights:

- 1) Small changes can have large effects.
- 2) Psychology is really important.
- 3) People can't always explain why they do what they do, or what they want.
- 4) Preference is relative, social, and contextual, not absolute.
- 5) Trust is never a given; commitment really matters.
- 6) People satisfice.

Unlike the general lessons gleaned from BE by practitioners, behavioral economists, by virtue of their specialist sets of evidence and knowledge, tend to have a narrower view of the field. In essence, they use psychology to study economic problems, and their approach is usually rooted in traditional economic methods, such as those around the concept of utility. As a discipline at the intersection of psychology and economics, however, the boundaries of BE are not always clearly defined. Thanks to this and BE's rising popularity, some academics

and practitioners who might have called themselves psychologists in the past (e.g. behavior change experts or consumer psychologists) have come to adopt the label 'behavioral economist' or 'behavioral scientist'. More often than not, others do the labeling. In a 2014 *Huffington Post* article, for instance, the organizational psychologist Adam Grant mentioned that he frequently gets introduced as a behavioral economist. On one occasion, when he tried to set the record straight, an executive responded, "Your work sounds cooler if I call you a behavioral economist." It certainly appears to be true that, as Daniel Kahneman **observed**, "applications of social or cognitive psychology are now routinely labeled behavioral economics" when it comes to policymaking. Unfortunately, as Richard Thaler has **noted**, this has the side-effect of slurring the great work carried out by non-economists in public policy areas.

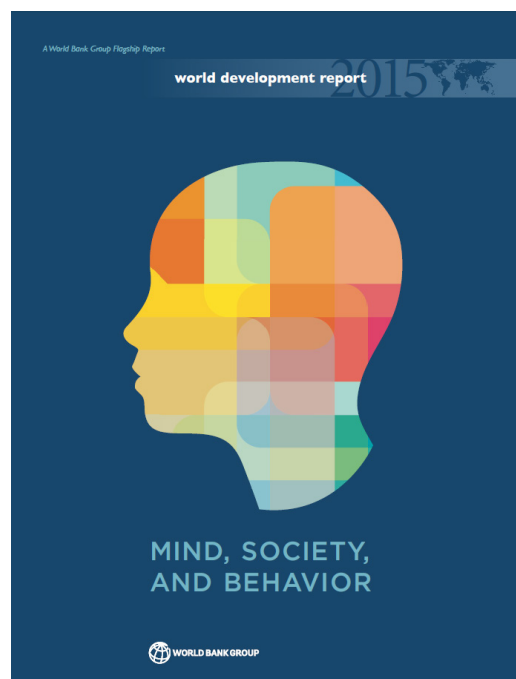
The importance of behavioral science is now also evident in the job market, where organizations, ranging from financial institutions to market research agencies and healthcare providers, are looking for Chief Behavioral Officers, or more modestly titled Behavior Change Advisors. Some might argue that the interest in BE could be a passing fancy in industries that are prone to fads and short attention spans. But such a view would detract from the significance of the discipline, as the pursuit of knowledge is an incremental process, particularly in the social and behavioral sciences. For the most part, BE is a field that is still in its infancy and thus is apparently here to stay.

As in previous years, the dissemination of knowledge from the ivory tower to more general audiences is still aided by popular science books written by accomplished scholars in economics, psychology, and public policy. Many of those publications increasingly move from the descriptive to the practical side of the continuum. Uri Gneezy and John List published the book *The Why Axis: Hidden Motives and the Undiscovered Economics of Everyday Life*, documenting field experiments that show how incentives can change outcomes in the real world. The 'mindless eating' expert Brian Wansink tackles eating problems in his new book *Slim by Design: Mindless Eating Solutions for Everyday Life*, while the behavioral scientist Paul Dolan's *Happiness by Design: Change What You Do, Not How You Think* introduces readers to the science of happiness and ways to achieve it. Richard Thaler's *Misbehaving: The Making of Behavioral Economics* also has a practical bent, by applying BE to everyday phenomena and providing readers with insights on making better decisions. Finally, the title of Dan Ariely's new book, *Irrationally Yours: On Missing Socks, Pickup Lines, and Other Existential Puzzles*, speaks for itself.

BE Bits and Pieces

Since the publication of last year's Guide, behavioral economics has continued to thrive as a field of study. The far-reaching implications of BE, and wider behavioral science, are evident in special issues published by international scholarly journals indicating a growing interest and touchpoints between disciplines. In 2013, the journal *Health Psychology* published an issue on the intersection between health psychology and behavioral economics, while the *Review of Income and Wealth* published a special issue in 2014 on poverty, development, and behavioral economics. More recently, in 2015, the *Journal of Economic Behavior and*

Organization invited submissions for a special issue on the behavioral economics of education. The connection between behavioral science and policy culminated this year in the publication of the extensive *Mind, Society, and Behavior* report by the World Bank Group, a recruiting drive by the newly established White House Social and Behavioral Sciences Team, and the launch of the brand new journal *Behavioral Science & Policy*, which fills an important gap in the publication landscape. In early September 2015, the largest gathering of behavioral scientists, practitioners and policymakers convene at the *BX 2015*, an international conference on behavioral insights, in London, UK.



Education and BE

Compared to other domains, education has not received as much attention from behavioral economists, and yet it presents a large range of behavioral challenges that have recently piqued the interest of scholars and policymakers (Koch et al., 2014; Lavecchia et al., 2014). Whether it's about the choice of school or everyday choices about homework, education presents numerous important decisions that have to be made by school children, parents, and students in higher education. A central problem in education has always centered on motivation and what behavioral economists call 'present-biased preferences', in that people value immediate rewards more highly than future pay-offs. As Lavecchia and colleagues (2014) point out, this bias changes over the life course, but it is particularly strong in younger years and peaks in adolescence. Researching colleges, completing applications, and studying for exams all have salient upfront costs, while the benefits of these actions are uncertain and occur in the long-term or incrementally. Consequently, effective educational policies need to address present bias, particularly barriers to seeing education as an investment.

Other behavioral challenges identified by Lavecchia et al. include too much focus on routine, negative identities, and mistakes that are made due to a lack of information or an abundance of options. There is evidence that people tend to overestimate tuition costs (low-income individuals by a factor of two) and underestimate the income differential between university and high school graduates, potentially leading to suboptimal choices. Moreover, low-income students are less likely to apply to selective institutions, and the number and complexity of choices available, along with inertia, compound the problem further. Lavecchia et al. cite some interesting programs that address these issues. In Canada, for instance, an experiment is underway that provides high school students with the necessary help and time in class to choose from institutions and make applications, thereby making the process both easier and more salient.

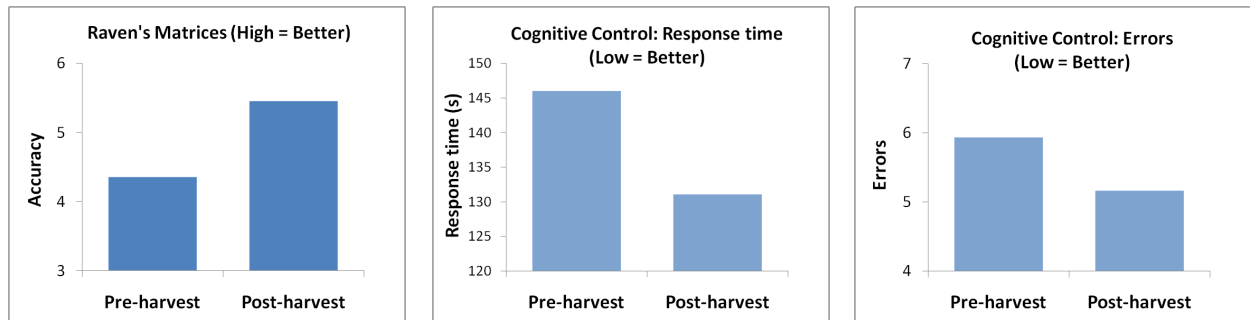
In another example, this time in the US, a relatively small change to the choices presented by the ACT college entrance exam appears to have made a big difference. Up to 1997, students applying to college could send their test scores to three colleges for free and had to pay \$6 for additional reports; 80% of students sent three reports. When this was changed to four free reports, less than 20% sent three and 70% four reports. Students from low-income families not only submitted more applications, but they were also more likely to apply to a selective institution.

BE and development

Behavioral economics is concerned with micro-level behavior, and it struggles to operate in macroeconomics, which is concerned with the behavior of the economy as a whole (*The Economist*, 2015, May 9, reviewing Thaler, 2015). An interesting paper on international policy implications, written by Lucy Martin (2014) and previously discussed in *The Economist*, formulates a connection between micro-level behavior and questions relating to macro-level development. Martin's research suggests an avenue through which poor countries could foster better governments. According to the author, poor countries are often funded through low taxes and high levels of aid, which creates an accountability problem. The argument is based on the concept of loss aversion, i.e. the insight that humans dislike a loss more than an equivalent gain. Experimental evidence from Uganda suggests that raising taxes should increase citizens' willingness to punish leaders. One of the implications, according to the author, is that "adding community contributions to external aid programs could give beneficiaries more ownership over projects and [...] make them more likely to hold local leaders accountable for how development funds are spent" (pp. 30-31).

Another link between BE and poverty is evident in ideas emerging around cognitive scarcity (Mullainathan & Sharif, 2013). Research suggests that the condition of economic deprivation can take up precious mental resources, which has a knock-on detrimental effect on judgments and economic choices that could otherwise help poor people improve their plight. A laboratory experiment by Mani and collaborators (2013) showed that, unlike well-off people, poor people's cognitive functioning becomes impaired as a result of having to think about financial challenges. An experiment with sugarcane farmers measured cognitive functioning (Raven's Matrices and cognitive control in a Stroop task; see charts below) at

pre-harvest (high financial pressure) and post-harvest (low financial pressure) periods and found significantly better scores in the latter period.



In fact, the first period was associated with a loss in cognitive functioning equivalent to losing about one day of sleep. These results remained significant when other factors, such as stress, were controlled for in the statistical model. The authors argue that poverty “captures attention, triggers intrusive thoughts, and reduces cognitive resources” (p. 980), and they conclude that policy makers should not only focus on monetary taxes, but also reduce “cognitive taxes” on the poor. This may include policies that facilitate decision making and the optimal timing of those decisions.

Thinking resources and trust

The psychology of mental resources more generally is also an important part of theories concerned with self-regulation, which represents another key point of overlap between BE and psychology. This area addresses self-control or willpower, a trait that allows humans to attain goals by overcoming impulses that could lead to negative outcomes; Roy Baumeister, for example, likened willpower to a muscle (Baumeister et al., 2007). Studies have found that tasks requiring self-control, including lengthy or difficult decision making, can weaken this muscle, leading to ego depletion—a diminished ability to exercise self-control (Vohs et al., 2008). The theory has also affected views of criminal (restorative) justice (e.g. Braithwaite, 1999), as evidenced by the apparent link between social exclusion and impaired self-regulation (Baumeister et al., 2005).

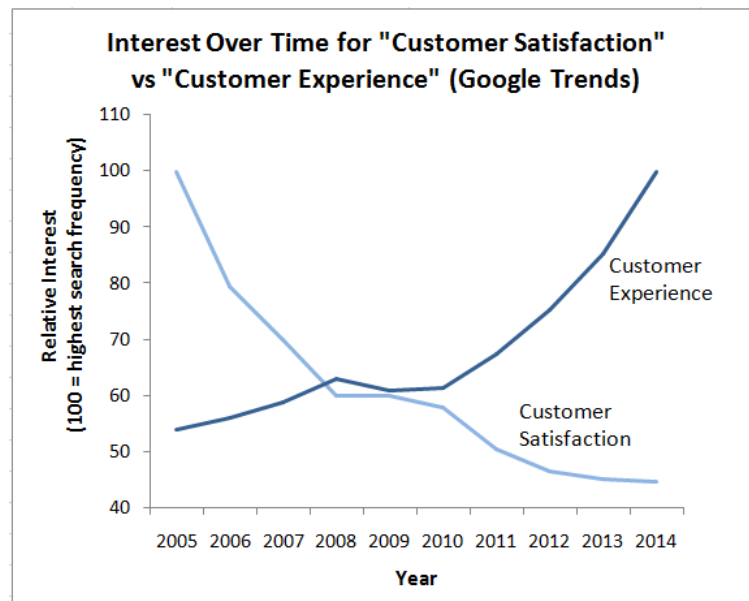
An interesting piece of research recently investigated the relationship between this depletion and trust in economic decision making (Ainsworth et al., 2014). Experiments used trust games, which required participants to split money between themselves and another person. In this type of game, allocating less money to another person is a low-risk behavioral approach, indicating low trust. When participants were ego-depleted (e.g. as a result of not being allowed to use the letters 'A' and 'N' in a story they were asked to write), they offered less money. The difference between depleted and non-depleted people largely disappeared, however, when they thought they would meet the other person later or when they were made to think of themselves as being similar to that person. These findings have numerous implications about trust; for example, self-control may be particularly important in developing trust in anonymous contexts, such as on the internet.

The apparent decline of trust in recent years, and the cognitive overload that may be experienced as a result of technological change and life in the 21st century, inspired research about the effect of limited cognitive resources on trusting behavior (Samson & Kostyszyn, 2015). The experiment used trust games in two different conditions: a condition without cognitive load and another where participants either had to memorize a long password or were exposed to a disturbing noise. The results of the experiment showed significantly higher trust levels under conditions without cognitive load. In addition, behavior was more 'impulsive' when cognitive resources were limited: Trust behavior in the game was predicted more strongly by a partner's last move than the participant's own strategy, indicated by the average level of trust in all preceding rounds of the game.

Neuroeconomics

The last 10-15 years have also witnessed a huge increase in neuroeconomics research (Glimcher et al., 2009). The aim of the neuroeconomics discipline is to study decision making and the brain through a combination of neuroscientific, economic, and psychological approaches. Last year, the Society for Neuroeconomics held its tenth annual conference. I was unable to decide on the best conference paper to mention in this editorial, so let me offer the following selection of findings:

- People will sacrifice more money to prevent others' pain rather than their own pain. Increasing the amount of serotonin in participants' brains increased harm aversion for both self and others, while increasing dopamine reduced harm aversion for others only (Crockett et al., 2014).
- The pain of paying is a psychologically painful experience. This was researched in experiments comparing paying with money vs. physical pain, as well as priming and placebo manipulations. In the latter, participants who thought they had taken a psychological pain-enhancing pill were willing to pay more for an object than those who were given a psychological pain reliever (Mazar et al., 2014).
- Financial traders given testosterone (vs. a placebo) will engage in more and longer competitive bidding, consider assets' fundamental values to a lesser extent in their trading decisions, and think of themselves as more talented (as opposed to 'lucky'). Financial bubbles in the high-testosterone group formed quickly and eventually crashed (Nadler et al., 2014).
- Consumer choices between two products can be predicted by a model based on people's amount of gaze time (measured with eye tracking technology) on a product vs. branding information. These data then determine the relative importance (weight) of subjective product preferences and branding information in the consumer's choice. In binary choices, attention leads to preference more than preference affects attention (Krajchich et al., 2014).



While these differences may be partly due to terms going in and out of fashion, the rising use of the ‘customer experience’ term should also reflect marketing with increasing interest in the creation of experiences, and practices around the co-creation of value, in-the-moment consumer research, and neuromarketing, to name just a few. Satisfaction is an evaluation that is often measured globally or domain-specifically. It can also evoke evaluations relative to objective circumstances and reference points, and it is affected by current mood states, while retrospective reporting is influenced by recall biases (Kahneman et al., 2004). Research on happiness has found that income is a better correlate of evaluation of life (satisfaction) than emotional wellbeing (Kahneman & Deaton, 2010). Similarly, as referenced by George Loewenstein in last year’s BE Guide, one study found that the economic value of a car (luxury vs. economy) is associated with people’s evaluations of *how they would feel* driving or their global *retrospective judgment of how it usually feels* to drive—it is less correlated with how they report to *have felt during a recent specific driving episode* (Xu & Schwarz, 2006).

A recurring concept in research on wellbeing is hedonic adaptation, which refers to the finding that people’s levels of happiness return to a stable baseline level after a change in experience has occurred (Frederick & Loewenstein, 1999). The 2014 Association for Consumer Research (ACR) Conference featured a special symposium dedicated to this theoretical domain. Topics ranged from the effects of sentimental value to uncertainty on hedonic adaptation.

One of the presented papers, by Lee et al. (2014), investigated hedonic adaptation for utilitarian and hedonic products. Since hedonic products are purchased for more affective reasons than utilitarian ones, the researchers hypothesized that their adaptation would follow a steeper path. Study results showed that consumers’ lay beliefs about adaptation did not correspond to reality. While they did not predict different adaptation rates for utilitarian (printers) and hedonic (MP3 player) products, actual adaptation was stronger for hedonic products—as indicated by a steeper decline in attitudes over time. Subsequent experiments also showed that greater adaptation to a hedonic product (an expensive fashion item) was

mediated by the excitement felt by consumers about the product, whereas adaptation to a utilitarian product (an inexpensive fashion item) was mediated by both excitement and functionality. In addition, greater adaptation was associated with more post-purchase regret (e.g. “To what extent would you say this purchase was money well-spent?”).

Research on the experiential and hedonic aspects of consumption has a range of applications. One of the key insights to be gained for marketing researchers may be around knowing when and how in-the-moment experience (vs. satisfaction and related variables) matters most in predicting key consumer behaviors, such as product trial, repurchasing a brand, engaging in word-of-mouth, or switching service providers.

That's all interesting, you may say, but what does it mean in practice? Read on for a more applied perspective.

Applied Behavioral Science

While much of the 2014 BE Guide was concerned with behavioral science theories, the following sections provide a more applied approach. More particularly, I will guide readers through three aspects that connect behavioral science theory with practice from the top down: Understanding behavioral science through general frameworks or models (behavioral tools), thinking of choice architecture as particular behavioral interventions ('nudging'), and finally conducting actual experiments to test interventions ('test & learn').

Behavioral Tools

Whether they work in public policy or industry, readers of the behavioral science literature who wish to apply ideas from economics and psychology are faced with the challenge of engaging with material that is quite vast and complex. To this end, behavioral frameworks and integrative models are being devised by some practitioners, such as business consultants, in attempts to simplify and apply behavioral science ideas (see this Guide's 'Concepts' section for a selection). Consultants love tools. A business consultant's toolbox, for example, includes everything from benchmarking to the balanced scorecard, and like any other tools, behavioral frameworks and models allow practitioners to meet diagnostic, best practice, knowledge transfer, and decision-making functions. A good behavioral tool is both a conceptual lens and a decision aid that can help practitioners understand problems and design solutions. More importantly, it is parsimonious, universal, and flexible enough to be applied repeatedly and thereby increase efficiency. The tool, essentially, comes to represent a tried and tested approach over time.

Behavioral tools (see box 'Behavioral Tools') can sit anywhere on a continuum between the descriptive and the more prescriptive or practice-oriented, depending on their purpose. While many practitioners opt for a one-size-fits-all, domain-general approach, others may find more useful a specific model that suits their problem domain (e.g. personal finance or health). But there's no need to reinvent the wheel. One of the most popular and universal

frameworks in recent years has been presented in the white paper '**MINDSPACE**', published by the UK Cabinet Office, which does a great job at bridging theory and application. In the 'Behavioral Science in Practice' section of this Guide, Behavioral Science Lab outline their own conceptual BE model, while Fehr et al. present their behavioral change matrix. Examples of behavioral models are also included in last year's **2014 BE Guide**, such as the 'nudge' taxonomy proposed by Codagnone et al. (p. 55; see also the next section in this editorial for an application) and BrainJuicer's behavioral model (p. 66).

BEHAVIORAL TOOLS: A Basic Typology

Behavioral principles: A 'laundry list' of heuristics and biases ('loss aversion', 'framing bias', etc.), sometimes with examples of how these work out in practice, or a more sophisticated statement of behavioral principles or 'nudges' ('defaults', 'pre-commitment', etc.). This approach serves as a useful reference framework or checklist.

Examples: **MINDSPACE**; **Cialdini's Principles of Persuasion**

The conceptual model: Identifying relationships and categories. A simple model might focus on cognitive, emotional, and social biases, or System 1 and System 2 thinking. A more advanced model might integrate different behavioral concepts or offer a depiction of how phenomena are interrelated (e.g. loss aversion and the endowment effect). These types of models are a great way of mapping out human psychology or making classifications.

Examples: **Codagnone et al.'s Nudging Taxonomy**; **'Your Brain On Behavioral Economics'**

The behavior change model: A more dynamic or change-oriented approach to human behavior. Models of this type may map out behavioral stages. Or they may show the interaction between psychological processes (e.g. motivation to attain certain goals) and environmental factors (e.g. frames or cues). Tools like these are particularly useful if they are aimed at understanding behavior change processes or how an intervention might induce behavior change.

Examples: **BJ Fogg's Behavior Model**; **Prochaska & DiClemente's Stages of Change**

Many useful behavioral models can be found in the psychological literature that was published before the behavioral turn. These often focus on motivated behavior change. The theory of planned behavior (Ajzen, 1985), for example, considers the joint influence of attitudes and beliefs about a behavior, along with related subjective norms and perceived behavioral control. These factors affect individuals' intention to perform the behavior and, ultimately, achieve actual behavior, while other models focus on motivations, opportunities, and abilities (Ölander & Thøgersen, 1995) or 'stages of change', including behavioral maintenance (Prochaska & DiClemente, 1992). Finally, more holistic models emphasize that individual behavior is influenced by factors on the macro (societal), meso (organizational) and micro (interpersonal and intrapersonal) levels (McLeroy et al., 1988).

There are differences in purpose and applications across behavioral theories, some of which have been used mainly in the domain of health (e.g. stages of change), while others are more universal (e.g. theory of planned behavior). Depending on their interpretation, models can serve either intervention or explanatory purposes. While traditional behavioral models tend to include relatively enduring personal, social, and environmental factors, models attempting to integrate ideas from BE and related disciplines often focus more on contextual influences on behavior, such as choice environments. This is evident in nudge theory and choice architecture, both of which are discussed in the next section.

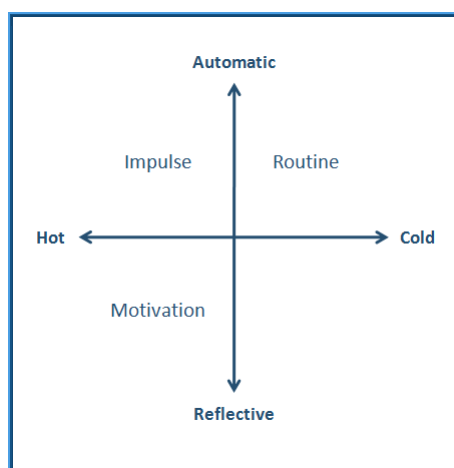
Nudging and Choice Architecture

Behavioral tools can help practitioners select, design, or apply nudges, which have been defined as follows by Thaler & 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 (Thaler & Sunstein, 2008). Working with defaults is particularly effective when there is inertia or uncertainty in decision making. 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).

The theory and practice of nudging has become too vast an area to be discussed in detail in this editorial. I will therefore assume that the reader is already familiar with some of its ideas, including those that were discussed in the [2014 Guide](#). There is one issue, however, that is sometimes lost among practitioners faced with an array of behavioral insights: Nudges are best understood in connection to specific problems and the contexts of the target behavior. In the 2014 BE Guide, Codagnone et al. offered a nudge classification model with axes denoting 'automatic vs. reflective' and 'hot vs. cold affect' dimensions:



Nudges designed to help problem gambling, for instance, can work with defaults. At the beginning of a session, gamblers may be forced to opt out of an automatic one-game limit if they want to play several games. This nudge is particularly appropriate for the automatic and cold 'routine' dimension of the model, and it is also an example of counter-biasing, where the choice architecture works with one bias (e.g. inertia) against another bias. A nudge may also work to disrupt the automatic and 'impulsive' flow of the activity and re-engage the person in reflective processing. In this case, the goal would be to de-bias gambling activity in the moment, which is located in the automatic and affectively hot quadrant of Codagnone et al.'s model. A gambling inhibition device could automatically engage an alarm sound when a maximum number of games has been reached (see e.g. [US Patent 7210998](#)), followed by a message reminding the gambler about the number of games and the total amount of money s/he has lost.

The 'motivational' quadrant in the model represents the intersection of hot affect and the reflective system. In the gambling example, this may involve emotion-laden messages about the consequences of gambling addiction (perhaps about its effects on loved ones) that trigger reflection and influence motivation to change. Finally, the reflective-cold quadrant of the model represents the domain of de-biasing strategies that are not commonly associated with nudging. According to Codagnone et al., the model could be extended by adding a social (vs. individual) dimension. The patent mentioned earlier ([US7210998](#)), for instance, includes a “dial a friend” option: Once a pre-committed maximum number of plays has been reached, the gaming machine automatically calls the telephone number of a previously informed person known to the player (who may then discourage the player from gambling).

In the spirit of connecting behavioral problems with specific solutions, a group of behavioral scientists, led by Eric Johnson (2012 [[click here for PDF](#)]), recently offered practice-oriented tools in a marketing journal. These include:

- The best intervention for decision **inertia** is setting **defaults**.
- **Alternative (choice) overload** can be counteracted by reducing the number of alternatives or by providing decision aids.
- **Attribute (choice) overload** can be reduced by applying the principles of parsimony, linearity, comparability, and evaluability.
- **(Myopic) procrastination** can be tackled by providing a **limited time** window for action or a focus on **satisficing**.
- The problems that come with long or complex search processes can be reduced with **decision staging**.
- **Naive allocation** is best mitigated by partitioning options.
- Non-linear attributes (e.g. monthly payments in relation to credit card payback periods) can be made more understandable by rescaling or translating them (e.g. monthly payment needed to eliminate the balance in N years).

In addition to the above nudges, Johnson et al. suggest that the implementation of nudges may require one of the following:

- Individual differences can be dealt with by customizing information.
- Issues in relation to decision-makers' valuations of outcomes require a focus on experience.

The first point suggests that the effectiveness of nudges can be increased if there is more sensitivity to variations between individuals. Psychological theories on regulatory fit (Higgins, 2005), for instance, could be used to illustrate Johnson et al.'s point. More particularly, regulatory fit explains differences with respect to the **framing** of choices. Prevention-focused people, who tend to focus on avoiding negative outcomes in their pursuit of goals, are more susceptible to loss frames, while individuals with a stronger promotion focus, who tend to pursue positive outcomes eagerly, are more easily influenced by gain frames (e.g. Lee & Aaker, 2004).

Johnson et al.'s (2012) second point, a reference to decision-makers' outcome valuations, reflects the fact that people are often unable to predict accurately future preferences and feelings about the outcomes of their choices (see e.g. **projection bias** and the **hot-cold empathy gap**). They also tend to underestimate their **adaptation** to experiences. Consumer protection laws that stipulate 'cooling off' periods, for instance, take into account that individuals sometimes make choices in hot states, without awareness of their future wellbeing. Thus, when choice architects implement nudges, they may want to "encourage a decision-maker to consider not only the features of an option that are salient at the time of choice, but also those that will be more important when the outcomes are experienced" (p. 498).

More Practical Nudging

The nudges discussed by Johnson and his collaborators undoubtedly provide useful additions to the behavioral databases that some practitioners have been compiling over the last few years. Another handy list is printed in a new article by Cass Sunstein (2014 [[click here for PDF](#)]), the co-author of *Nudge*. His publication offers ten nudges, drawn from behavioral insights, for public policy programs that can help people make better choices:

1. **Default rules**
Example: Automatic enrollment in savings plans.
2. **Simplification**
Example: Making enrollment forms less complex.
3. **Social norms**
Example: Emphasizing what most people do, e.g. "nine out of ten people pay their taxes on time."
4. **Ease and convenience**
Example: Making healthy foods more visible or accessible.

5. *Disclosure (if information is sufficiently simple)*
Example: Disclosing the full cost of credit cards.
6. *Warnings*
Example: Text and graphic pictures on cigarette packages.
7. *Precommitment*
Example: Committing to certain future actions, such as a smoking cessation program.
8. *Reminders*
Example: Emails or text messages that remind about overdue bills.
9. *Implementation intentions*
Example: Eliciting questions about future behavior ("Do you plan to vaccinate your child?") or calling attention to people's identity ("You are a voter, as your practice suggests").
10. *Past choices (if individuals lack information)*
Examples: Informing people of the nature and consequences of past behavior, such as energy consumption on their electricity bills.

Sunstein's nudges can easily be applied to various domains, including those outside of public policy. Consider the problem of missed appointments. Reminders are probably the most frequently used nudge to increase the likelihood that people will keep appointments. But there are others. Making it easy to change appointments should enhance appointment compliance, while eliciting implementation intentions (e.g. "Will you please call us if you won't be able to keep your appointment?") is known to increase compliance (Cialdini, 2008). Organizations that rely on appointment confirmations may even choose to work with defaults at different stages of the appointment-making process. A study of the UK's National Health Service (Martin et al., 2012) used a commitment and social norm interventions. Their pre-commitment intervention consisted of having patients personally write down their appointment information. The researchers reckoned that this would increase the salience of information and commitment through personal involvement. Social norms were communicated through signs that showed the number of patients who turned up for their appointments in previous months. The combination of these nudges decreased appointment non-compliance by about 30%.

Which analogous nudges do you think would work for your organization? Perhaps you'd like to compare the effects of a couple of nudging options to ('traditional') incentives such as rewards, which have also proven effective in appointment compliance (Giuffrida & Torgerson, 1997). Conducting an actual field experiment would help you decide. This 'test & learn' approach is discussed in the next section.

SPECIAL INTEREST: The Psychology of Disclosure

Disclosure has been a hot topic in relation to the practice of nudging in terms of providing information relevant to the decision, the choice architecture, or the interests of those providing the choices. Disclosure raises the possibility that advisees feel manipulated, potentially leading to psychological reactance. In a recent study ("Warning: You Are About to be Nudged!"), using defaults in hypothetical end-of-life care choices, disclosure did not significantly change people's choices (Loewenstein et al., 2014a). Research on a range of nudges and decision contexts will be needed to build a body of evidence about the effects of disclosure on decisions.

The psychological dynamics of disclosure have been discussed in the literature by George Loewenstein et al. (2014b). They offer a number of psychological factors that limit the effectiveness of disclosure policies by advisors, such as problems with information recipients' biased probability judgments, awareness, or attention. Sometimes attention is motivated; for example, people might ignore information that makes them feel uncomfortable or that doesn't support decisions they have already made. The effectiveness of disclosure can also be reduced if it increases distrust among advisees. On the other hand, they may also feel pressure to comply with the advice. This may be due to either the panhandler effect (a reluctance to appear unhelpful once the advisor's interests have been disclosed) or insinuation anxiety (a fear of showing distrust). From the advisor's viewpoint, disclosure effectiveness can be reduced through moral licensing, which occurs when an advisor feels less responsible for giving unbiased advice after an advisee has been warned about potential bias.

In light of some of these problems, how can information disclosure be made more effective? Given the limits of attention, the authors highlight the benefits of simplifying information. In addition, standardized and comparative information can assist people in assessing relevant tradeoffs better. For example, instead of providing interest rates, the dollar cost of payday loans for different durations can be contrasted against the lower dollar costs of credit card debt. Alternatively, social comparison information can be used (see also Sunstein's [2014] third point), such as providing households with information about how their energy use compares with their neighbors'. Finally, making information as vivid as possible, such as adding images to the text in health warnings (see Sunstein's [2014] sixth point), can activate emotions and make disclosure more effective.

Test & Learn

As mentioned in the BE Guide 2014, there has been emerging interest in taking the study of decision making out of the university lab and into real-world settings. Some scholars have focused on the lack of representativeness of the (usually Western) student samples that tend to be investigated in the university lab. As a result, experimentation with diverse groups of people has become more common (though these studies are often conducted online, see Goodman et al., 2013). The nature of experimental tasks that are studied in the lab and the environment in which they are conducted means that they don't always translate into real-world behavior. Problems with external validity (generalizability) when psychological lab studies are replicated in the field have also been raised (Mitchell, 2012).

But for most practitioners the question is simply this: Will my proposed program or policy work once it has been implemented? Data from the real world have long been used in areas like health, education, and online behavior, and field experiments are increasingly advocated as a valuable way to test behavioral hypotheses in economics (Gneezy & List, 2013), business (Davenport, 2009), and public policy (Haynes et al., 2012).

The most basic experimental design consists of a test condition with people receiving a treatment or intervention and a control condition. These conditions represent the independent (or causal) variables in an experiment. The experiment's units of analysis (e.g. people) are randomly assigned to different conditions. The control condition often represents current practices or the status quo, and it provides researchers with baseline data about behavior that would have occurred if no change had been introduced.

For businesses and policy makers, a 'test and learn' approach, based on such randomized controlled trials (RCTs), reduces uncertainty about the efficacy of new programs or policies. It does so by measuring impacts in the settings in which behavior will actually occur. Conducting experiments in the field (which may include online environments, if that's where the behavior of interest naturally occurs) not only allows researchers to observe meaningful behavior, but their design and the results they generate also tend to be easier to communicate to a wider audience. In the public sector, which has suffered from shrinking budgets, the test and learn approach can increase confidence that public money is being spent on the right policies and that those policies deliver value for money (Haynes et al. 2012). Similarly, businesses can acquire valuable data for important decisions on a small scale, before putting them into action in the entire market. Besides being able to reduce the risk of implementing a policy or program by looking at real-life outcomes, the advantages of testing also include the ability to compare multiple competing hypotheses and finding out whether an expected outcome holds in different contexts or settings.

Through business experiments, companies can improve their understanding of relationships between a change in strategy and responses in employees', customers', competitors', or other stakeholders' behavior (Gneezy & List, 2013; Davenport, 2009). Thus, the most important advantage of a randomized-controlled field experiment is its ability to look at cause-and-effect relationships. Other quantitative methodologies are usually inferior in this respect; consider 'big data', for example, a recent trend about finding patterns in large bodies of accumulated information. According to Gneezy and List (2013), this approach suffers from two major problems: Firstly, it places too much reliance on correlation rather than causation, and secondly, it often provides an overwhelming amount of information, variables, and potential relationships. When it comes to investigating causal relationships, less is therefore more.

Differentiating Experiments

While the 'test and learn' approach is frequently associated with field experiments, this methodology must be understood in relation to other types of experiments, particularly controlled experiments in the lab and natural experiments. Let's take the effects of **framing**

as a typical theory from BE and psychology and look at examples of different types of experiments that have been used to study the phenomenon.

1. Lab experiment

This type of experiment conducts research in a controlled environment with standardized procedures. A classic consumer psychology study on framing in the lab was conducted by Levin and Gaeth (1988), in which a sample of students was randomly assigned to different experimental conditions that involved tasting and rating meat. The researchers carefully controlled the amount of food that participants tasted and the times and days on which the experiment occurred. Some participants first tasted the meat and then saw the label. Others first saw the label and then tasted the meat. Researchers split these groups into two further conditions by manipulating the frame of the label: The beef was either advertised as 75% lean (positive frame) or 25% fat (negative frame). At the end of the experiment, participants had to rate the meat on dimensions such as quality, greasiness, and taste.

Results of the study showed that framing was effective—as we would expect, the beef was rated more favorably when it was presented in a positive frame. Actually experiencing (tasting) the product reduced the framing effect, but the order in which the tasting and labeling occurred did not make a difference.

Unlike carefully controlled taste tests, most experimental tasks don't strictly need to be conducted in a lab setting, and so lab experiments are increasingly being supplanted by *online experiments*. This methodology tends to be relatively cost-effective, allows researchers to reach more easily diverse populations, and reduces experimenter effects (due to the anonymous online setting). Since they lack the controls offered by the laboratory, online experiments are considered a type of quasi-experiment, as are the field and natural experiments discussed below.

2. Field experiment

This methodology can investigate the same cause-and-effect relationships as a lab experiment, but it does so in a natural setting. A study in China, conducted by Hossain and List (2012), sought to increase the productivity of workers at a computer electronics firm. More specifically, their field experiment tested the effect of two different frames. Some of the workers received a gain-framed letter (the 'reward' condition), stating that, in addition to their salary, they would receive a salary enhancement of RMB 80 for every week the weekly production average of their team was at least K units per hour. Another experimental condition ('punishment') worked through loss aversion. The letter to workers in this case stated that, in addition to their standard salary, they would receive a one-time salary enhancement of RMB 320. However, for every week in which the weekly production average of their team was below K units per hour, the salary enhancement would be reduced by RMB 80.

Results showed that receiving any bonus incentive alone increased productivity by up to 9% for workers in groups and up to 12% for individuals. While the loss (punishment) frame did

not change the performance of those working on their own, the productivity of workers in groups increased by between 16% and 25% above those in the reward condition.

3. Natural experiment

Another kind of quasi experiment is the natural experiment. This methodology is the most limited experimental type with respect to controls and replicability. Researchers do not themselves manipulate the experimental treatment(s), which occur naturally, and as a result natural experiments are observational studies (often based on secondary data) that do not assign subjects to treatment and control conditions, thereby weakening researchers' ability to make causal inferences.

Johnson et al. (1993) analyzed framing in insurance markets. When buying insurance policies, consumers may have annual deductibles, which is usually an amount of money that will not be covered by the insurance if a claim is made. This deductible is felt as a loss, and so the insured feel both the loss of the premiums they have paid and the cost of the deductible. Alternatively, insurance providers can offer a rebate from which claims are deducted, an integration of losses that should be more attractive to consumers.

Johnson and his colleagues found an illustration of both defaults and framing in a real-world setting. In a simple natural experiment, they compared a change in auto insurance laws in two states in the early 1990s. The law allowed New Jersey (NJ) and Pennsylvania (PA) drivers to exchange a reduction in the right to sue for lower insurance premiums. In NJ, drivers received lower insurance rates by default and had to incur an additional cost for the right to sue. In PA, by contrast, motorists had the full right to sue by default and could reduce their premiums by giving up their rights. About 20% switched from the default when the change represented a premium increase (NJ), and about 25% moved when it was a premium reduction (PA). As a result, only 20% of drivers in NJ opted for the full right to sue, whereas 75% of people in PA kept their right to sue. Johnson et al. reckoned that this was at least partly due to framing effects.

Bridges and boundaries

Traditional lab, field, and natural experiments all have their advantages and disadvantages vis-à-vis other types of experiments (see box 'Methodological Spotlight'). Some of these tradeoffs may have become more blurred in experimental internet settings, where field researchers can have significant control over the variables and data collected online but low control over the offline environment. However, when results from different types of experiments are considered together, researchers can gain a fuller picture of the phenomenon under investigation. John List (2006) has argued that, methodologically, field experiments provide a bridge between lab experiments and naturally occurring data.

Sometimes field experiments define the boundaries of findings from the lab. Take lab research on the [endowment effect](#), for example, which has shown that people's ownership of an object can lead to their overvaluing the object: Willingness-to-accept (WTA) is higher than willingness-to-pay (WTP). The best-known experiment of this kind was done on a sample of students using university-branded mugs as objects. Field experimentation by List

(2003) used real-life collectors trading in pins and sports cards. His study investigated both relatively experienced dealers and more inexperienced non-dealers, looking at the actual trades made by those groups. Results demonstrated that greater market experience significantly reduced the endowment effect.

METHODOLOGICAL SPOTLIGHT: Three Traditional Types of Experiments

Laboratory (controlled) experiments

Advantages: Better replicability due to standardized procedures. High control of variables and the environment. High internal validity (cause-effect relationship). Better suited for complex experimental designs.

Disadvantages: Artificial setting (low ecological validity) and sometimes lack of external validity (generalizability outside of lab). Awareness of being studied: The presence of experimental staff and perceptions about the purpose of the experiment (demand characteristics) may bias participants.

Field experiments

Advantages: Cause and effect investigated in a natural setting (greater external and ecological validity). Usually no awareness of being studied.

Disadvantages: Less control over (third) variables that aren't part of the cause-effect relationship under investigation. More difficult to replicate. Can be expensive.

Natural experiments

Advantages: Natural setting (very high ecological validity). No awareness of being studied. Inexpensive, if done retrospectively, and data are already available. Ethical.

Disadvantages: Lack of control over design: Independent variable cannot be manipulated, no random sampling, and extraneous variables can influence results. Limits to replicability. Can be expensive and/or time-consuming, especially if longitudinal.

Will my Intervention Work?

Whether it is used by economists, business managers, or policymakers, test and learn experimentation tends to entail a similar process. The following is a brief step-by-step guide for practitioners and newbies to (field) experimentation, drawing on the author's own experience and multiple published sources (Anderson & Simester, 2011; Davenport, 2009; Harrison & List, 2004; Gneezy & List, 2013; Haynes et al., 2012).

I. Determine the hypothesis

Research always starts with one or more questions. What outcome do you want to change, and what treatment(s) or intervention(s) do you want to test to achieve this outcome? Your

treatments may be anything from traditional economic incentives to tried-and-tested behavioral nudges or entirely new types of intervention. Examples might include comparing the effect of two different discount frames on purchases in your online store, or perhaps you might wish to examine the effect of different hygiene cues on the frequency of hand-washing in your hospital.

Ask yourself whether these interventions are practically feasible to implement. In formulating your hypothesis, you may already want to think ahead and consider how difficult the experiment will be to execute using existing staff and resources. At this stage, you should also consider how easily you will be able—in practice—to observe outcomes. It's relatively simple for an online retailer to track clicks by a customer, for example, compared to measuring hospital staff's levels of hand hygiene.

2. Design your test

A study's hypotheses and concepts are turned into variables by means of operationalization. It is this aspect of a research design by which an experiment's insights often stand and fall. Researchers need to ask themselves whether their experimental conditions are sound and whether variables actually measure what they are supposed to measure.

If your outcome of interest is sales, for example, it could be measured in terms of daily sales or individual purchases. For an outcome like hand hygiene, you could consider simple measures, such as the amount of soap used, or more demanding ones, such as observed hand-washing or even actual cleanliness based on swabs.

You also have to ask yourself about the randomization units in the sample. Are they at the level of individuals or aggregate levels of individual behavior, such as teams, hospital units, store locations, or geographical areas? Aggregate levels may have to be used, if randomly assigning individuals to experimental conditions is not possible. With the help of a statistician, determine how many units you will need in your sample for robust results and how long the testing period should take. If your outcome of interest uses data from existing channels, such as sales figures, you can look at the variance of historical data to make a more informed decision about the number of data points needed. An expert on experimental methodology can also help you determine whether you may be better off with a more complex design, such as a pre/post-test design with control group, or a factorial design, instead of a simple test-control design.

While you are thinking about these questions, you will also have to ask yourself whether events that do not represent your variables of interest could influence the outcomes of your study; if you don't have control over those events, you may have to change the timing or setting of your research or even re-think the experiment from the bottom up.

If possible, make sure you measure everything that matters, which may include characteristics of the individuals you are observing (e.g. demographics or even attitudes). Since re-doing the experiment will be costly, it is sometimes better to gather too much rather than too little data—your budget permitting.

The most challenging element of designing a field experiment is balancing experimental rigor with practical and financial constraints. Unfortunately, there's no universal recipe to find the best balance, which may be the result of a negotiation process between different stakeholders that represent interests somewhere on a continuum between ideal-world research and real-world limitations.

Practical considerations for experimentation in retail stores, for example, often involve the question of whether sales figures for a certain time period or individual behavior should be used as a unit of analysis. Daily or weekly sales figures tend to be easier to collect, but this approach usually requires the experiment to run for a longer amount of time. From a behavioral (rather than a business) perspective, it also includes unwanted noise in the data if only certain customer groups are targeted or if customers' exposure to the experimental treatment is uncertain.

3. Execute your test

The logistics of actually executing your experiment and introducing your intervention can be fraught with difficulties. The key in successfully rolling out a test is to ensure that the intervention(s) and the measurement of outcomes are done in the way they were originally intended. This may include monitoring the intervention directly or instructing staff to report abnormal events. Hold a discussion with key stakeholders early in the process about what might go wrong in the experiment, including potential confounding variables, since this will help you deal with problems later or ensure that they don't occur in the first place.

Issues to consider include the potential effect of people's awareness of the experiment on behavioral outcomes. Experimental subjects in a hand hygiene study, for example, may become more compliant as a result of feeling observed. Similarly, retail staff in a store experiment who are aware of their involvement in a study may inadvertently affect customer purchases.

Potential problems related to human error can be addressed by providing proper instruction or training. It is also a good idea to be prepared for technical problems; if you are running your test at multiple locations, for example, you might want to prepare for potential technological failures related to the intervention or measurement by over-sampling the number of locations in your experiment.

4. Analyze the results

At the analysis stage, experimenters need to find out whether there are differences in outcomes between test and control groups, or the change in outcomes between different experimental periods, and whether these differences are statistically significant. Analyzing the data collected in your experiment can be relatively easy if it follows a basic test and control group design (e.g. conducting independent samples t-test). More complex designs or analyses may need the help of a statistician.

When you analyze your results, you may wish to look at different sub-groups in your sample, such as comparing nurses to doctors in a hospital hand hygiene study or different customer segments in a product discount-framing experiment. Alternatively, you may want to

determine how different types of sites involved in your experiment interact with the intervention. For example, did staff in Hospital Unit A respond differently to a hand hygiene intervention to those in Hospital Unit B? Did introducing the new discount frame affect purchasing behavior differently in stores in affluent neighborhoods to those in less affluent neighborhoods? Naturally, it is important to anticipate variables that could be of interest at the research design stage.

The statistical analysis of experiments usually also includes so-called control variables, which have to be anticipated at the design stage in order to collect appropriate data. These are measurable factors outside of the experimenter's control that may influence the outcome of interest. In the hospital experiment, this could include the staff's changing work load, for example. In the retail case, other marketing factors running concurrently with the intervention could be controlled for (though a smart design would try to avoid variations in other marketing activities that could contaminate the experiment in the first place).

RCTs, such as business experiments measuring the effect of an intervention on sales, sometimes offer a range of different variables that could be included in an analysis. At the analysis stage, practitioners may be tempted to test which of a dozen or so variables were affected by the intervention. This can be a problem, because experimental research is about testing hypothesis (usually determined a priori), not exploring data. The likelihood of finding a statistically significant result by chance alone (a false positive) increases with the number of outcome variables under investigation. Even if this issue is corrected for in the analysis, researchers may also struggle to explain, in hindsight, the finding (and potential fluke) associated with a variable that wasn't part of the original hypothesis testing.

5. Learn from your results

After analyzing your data, you may come to the conclusion that further tests are needed to clarify your results, or you may decide to redo your experiment with different interventions altogether. Testing an intervention always includes the 'risk' of finding no differences between the test and the control group, but this in itself is an important finding. To discover what works, you may decide to include multiple test groups or less conservative interventions in the future.

If you are confident that your intervention worked, you're ready to implement it in practice, whether it's a government policy or a marketing program. If you are interested in growing a test and learn culture in your organization, consider building a database about your experiments and learnings. In the process, you will advance not only substantive knowledge produced by your test results, but also your understanding of experimental practice. As part of the latter, it's a good idea to keep asking yourself how to improve not only the robustness, but also the efficiency of your methods; for example, you may have access to secondary data that would allow you to look at interventions retrospectively in a natural experiment.

Practitioner Contributions to this Guide

This year's edition once again includes a section written by practitioners of applied behavioral economics and psychology. I hope that reading through the articles will make some of the more abstract ideas discussed in the BE Guide come to life.

Timothy Gohmann's article presents a conceptual model that integrates person, choice, and outcome variables. It illustrates how obtained utility feeds back into expected utility in the decision making process. **Gerhard Fehr and his colleagues** offer case studies that illustrate a behavioral change model in action. Their tool is designed to analyze policy issues and determine solutions to the problem at hand. **Roger Miles's** contribution discusses the context of behavioral regulation and compliance. The article highlights problem behaviors and bias-detection.

Other articles in this Guide provide new perspectives in the domain of marketing. **Henry Stott** argues for a greater focus on events that influence customers and ultimately company performance. His research results show that customer experience independently affect both key customer behaviors and brand image. A different take on branding is offered by **Phil Barden**, who makes a case for a better understanding of brand properties, particularly brand signals. This understanding is needed for marketers who wish to nudge consumers at (or close to) points of purchase. Finally, **Seamus O'Farrell** also challenges some of the traditional conceptions of brand. His article discusses the importance of a brand's distinctive assets, its physical and mental availability, as well as its ability to evoke positive feelings.

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Selected Behavioral Science Concepts

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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. 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 and influences subsequent judgments about value. The process usually occurs without our awareness (Tversky & Kahneman, 1974), and sometimes it occurs when people’s price perceptions are influenced by reference points. For example, the price of the first house shown to us by an 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**

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 estimate the prevalence of depression to be higher than those with low recall (An, 2008), while 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, Raghurir, 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 that human rationality is rooted in mathematics (the computer metaphor in information processing). 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 represents a fundamental idea about human psychology that underlies 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 was coined by Thaler and Sunstein (2008) and refers to the practice of influencing choice by changing the manner in which options are presented to people. For example, this can be done 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 application of **heuristics** in decision making becomes more likely with a greater number or complexity of choices. 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).

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 (if they are made publicly) and/or cognitive dissonance (if they are made privately) (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).

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).

Discounting

See **Time discounting**

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-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).

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**.

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, 1979). 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

Behavioral game theory is a mathematical approach to modeling behavior by analyzing the strategic decisions made by interacting players (Nash, 1950). Game theory in standard experimental economics 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).

An early example of research that uncovered violations of standard assumptions of rationality occurred in the form of a simple *ultimatum game*. 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, Schmittberger & Schwarz, 1982).

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).

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**.

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**).

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, 1979). 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

People treat money differently, depending on factors such as the money’s origin and intended use, rather than thinking of it in terms of formal accounting. A key term in mental accounting is that of *fungibility*, the underlying fact that all money is the same and has no labels. According to the theory, people treat assets as less fungible than they really are;

they frame assets as belonging to current wealth, current income, or future income. Marginal propensity to consume (MPC: The proportion of a rise in disposable income that is consumed) is highest for money in the current income account and lowest for money in the future income account (Thaler, 1990). Consider unexpected gains: Small windfalls (e.g. a \$50 lottery win) are generally treated as ‘current income’ that is likely to be spent, whereas large windfalls (e.g. a \$5,000 bonus at work) are considered ‘wealth’ (Thaler, 2008). Another example from mental accounting is credit card payments, which are treated differently than cash. Mental accounting theory suggests, credit cards decouple the purchase from the payment by separating and delaying the payment. Credit card spending is also attractive because on credit card bills individual items (e.g. a \$50 expense) will lose their salience when they are seen as a small part of a larger amount due (e.g. \$843) (Thaler, 1999). (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).

Naive allocation

Decision researchers have found that people prefer to spread limited resources evenly across a set of possibilities. 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).

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).

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

See **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). 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'. (One example of the 'expressed v. actual' problem is when the outcome of a parliamentary election flatly contradicts the opinion poll predictions, as with the UK General Elections of 1992 and 2015). 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.

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, 1979; Kahneman, 2011):

	GAINS	LOSSES
HIGH PROBABILITY	95% chance to win \$10,000	95% chance to lose \$10,000
<i>Certainty Effect</i>	Fear of disappointment RISK-AVERSE	Hope to avoid loss RISK-SEEKING
LOW PROBABILITY	5% chance to win \$10,000	5% chance to lose \$10,000
<i>Possibility Effect</i>	Hope of large gain RISK-SEEKING	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 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](#).)

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](#).)

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

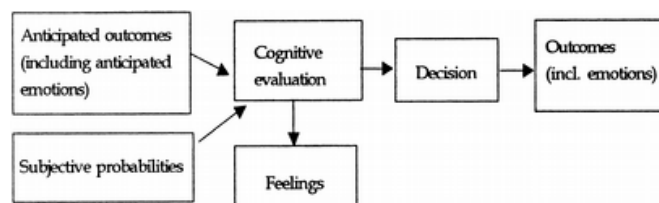
B. Bob is a farmer

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.

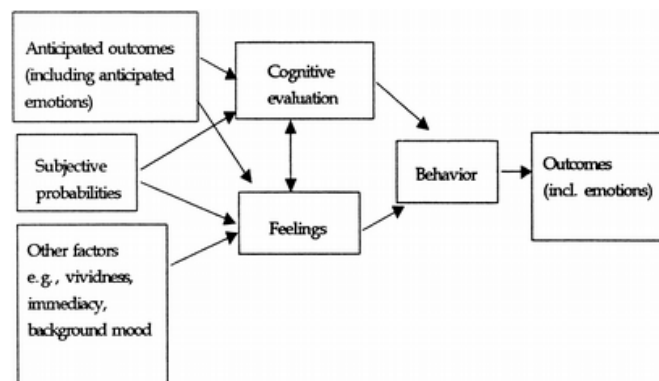
Similarity- or prototype-based evaluations more generally are a common cognitive shortcut across domains of life. For example, a consumer may infer a relatively high product quality from a store (generic) brand if its packaging is designed to resemble a national brand (Kardes, Posavac, & Cronley, 2004).

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).

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 can be applied when people choose between alternatives. When this heuristic is used, a decision maker will make a choice based on the first attribute that effectively discriminates 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).

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).

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** revealed in their willingness to pay. 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).

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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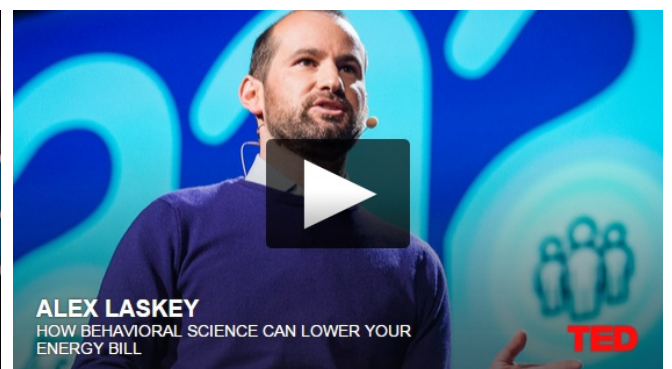
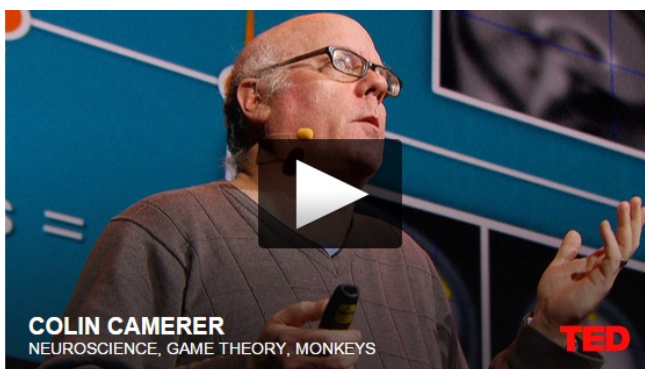
PART 2 – RESOURCES

TED Talks on Behavioral Science

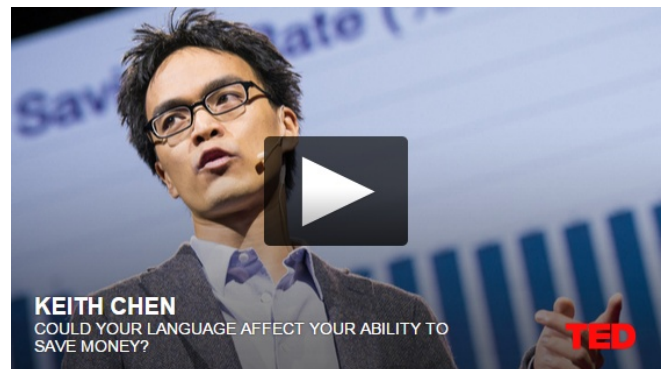
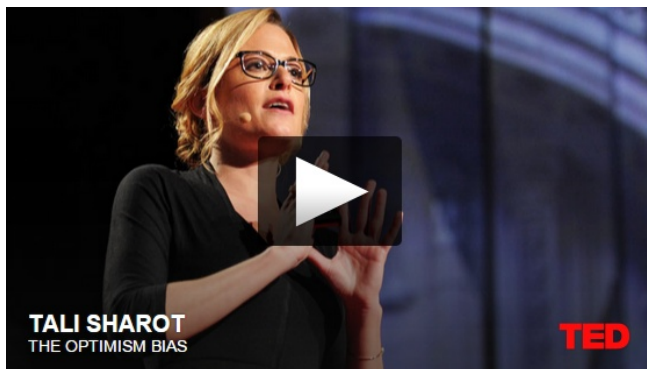
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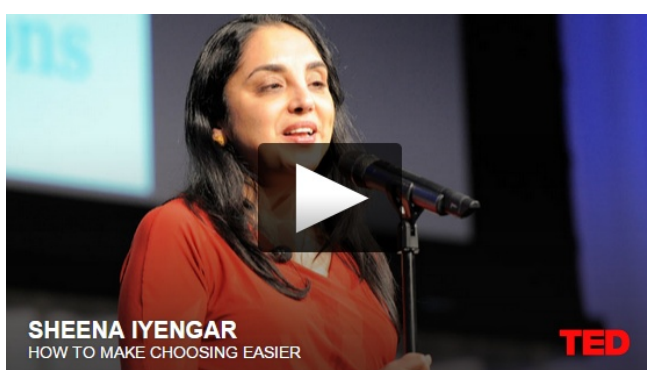
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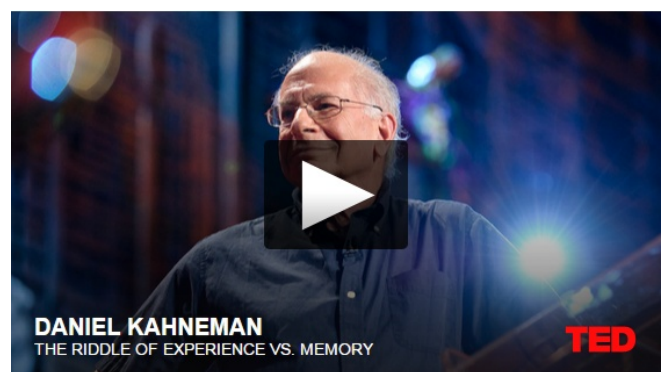
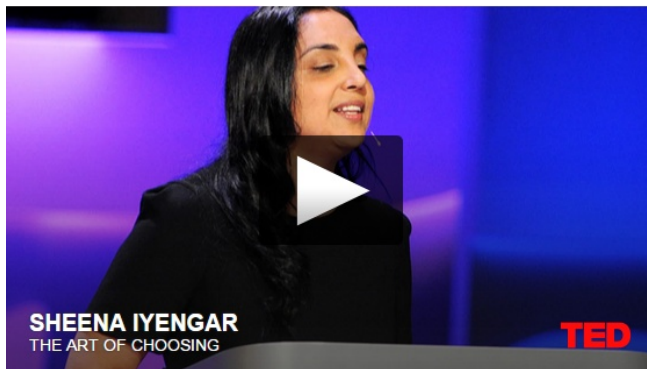
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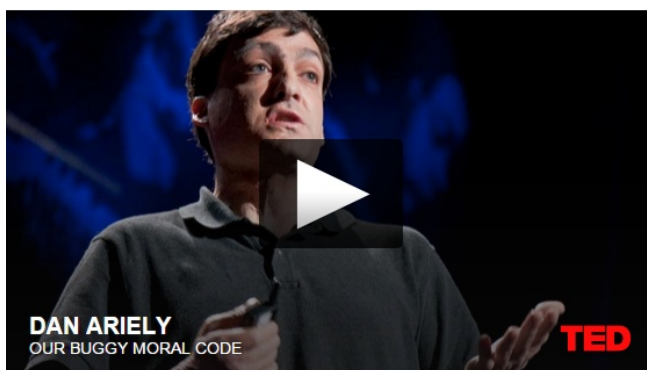
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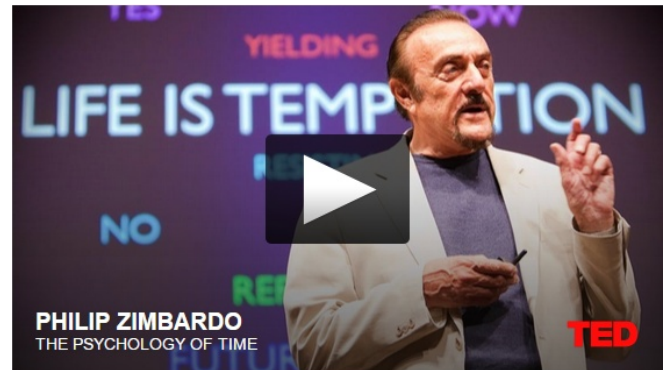


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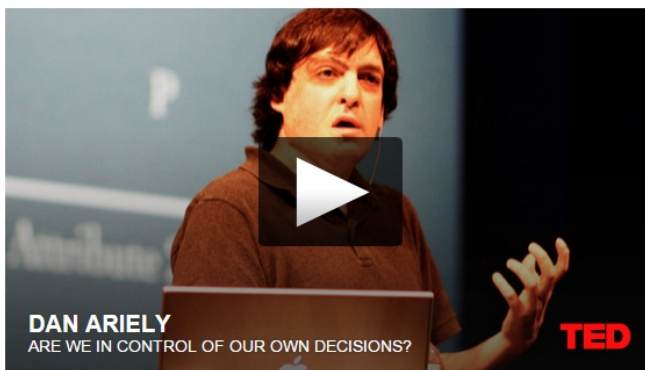


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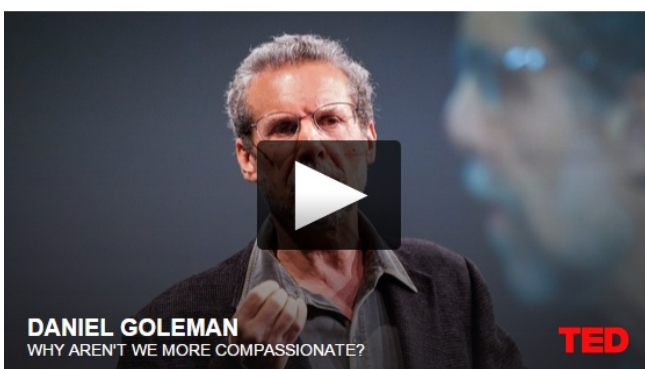




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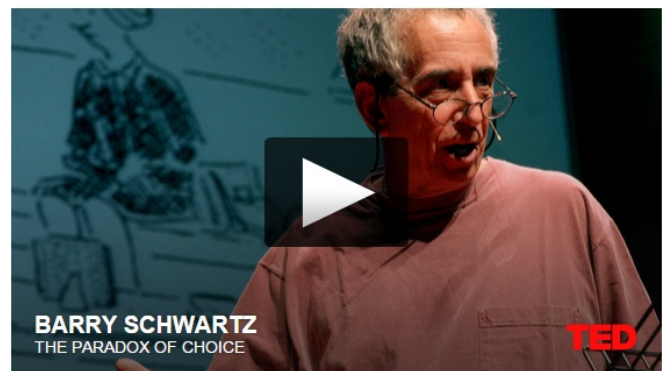
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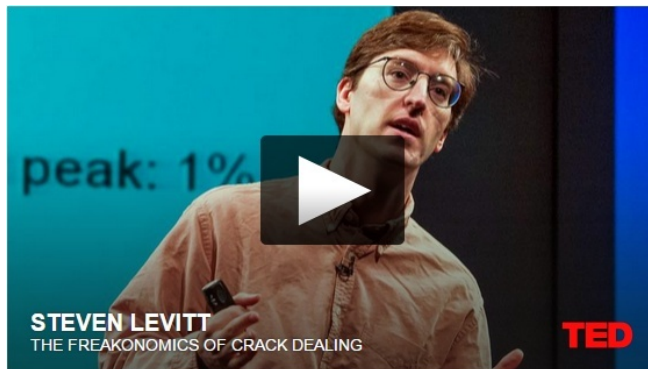
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2003



Scholarly Journals with Behavioral Economics Content

Sources: Journal websites (edited for length) and impact-factor.org

Economics Journals

Econometrica

2013 (2014) Impact Factor: 3.50

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.

Experimental Economics

2013 (2014) Impact Factor: 2.56

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)

2013 (2014) Impact Factor: N/A

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

2013 (2014) Impact Factor: 0.96

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

2013 (2014) Impact Factor: 4.23

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

2013 (2014) Impact Factor: 5.97

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.

Psychology Journals

Journal of Behavioral Decision Making

2013 (2014) Impact Factor: 2.08

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

2013 (2014) Impact Factor: 1.71

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

2013 (2014) Impact Factor: 1.21

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 Personality and Social Psychology

2013 (2014) Impact Factor: 5.51

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

2013 (2014) Impact Factor: 1.74

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

2013 (2014) Impact Factor: 2.90

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

2013 (2014) Impact Factor: 4.86

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

2013 (2014) Impact Factor: 2.52

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

2013 (2014) Impact Factor: 2.21

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

2013 (2014) Impact Factor: 2.66

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 Science & Policy

2013 (2014) 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

2013 (2014) 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

2013 (2014) Impact Factor: 1.03

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

2013 (2014) 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 Behavioural Economics, Finance, Entrepreneurship, Accounting and Transport

2013 (2014) 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

2013 (2014) Impact Factor: 2.78

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 Marketing Behavior

2013 (2014) 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.

Mind & Society

2013 (2014) 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.

Psychology & Marketing

2013 (2014) Impact Factor: 0.90

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

2013 (2014) 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.

Postgraduate Programs in Behavioral Economics and Behavioral/Decision Science (Taught in English)



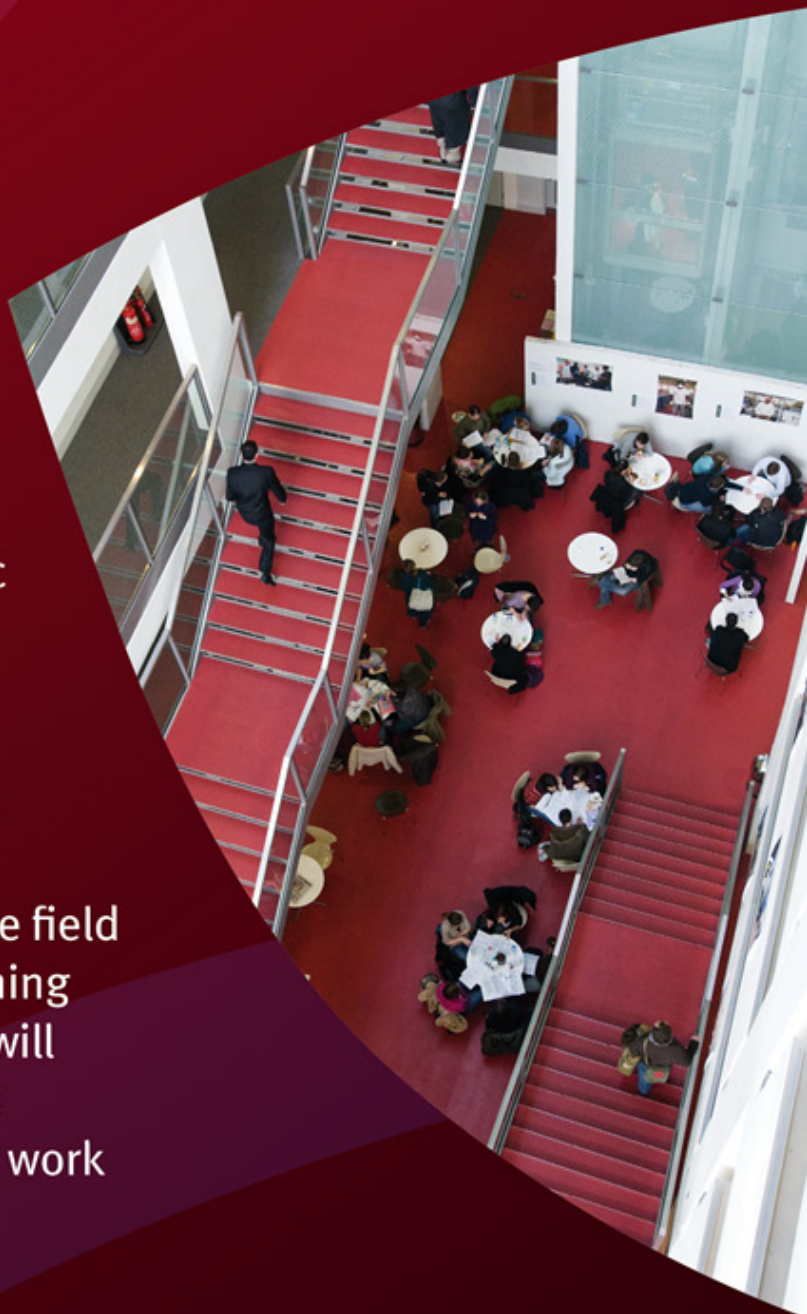
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For more information please contact us: warwick.ac.uk/go/bes



United States

Brown University	PhD in Economics (see also Brown Experimental and Economic Theory Group)
California Institute of Technology (Caltech)	PhD in Behavioral & Social Neuroscience
Carnegie Mellon University	PhD in Social and Decision Science (see also Dynamic Decision Making Laboratory and Center for Behavioral and Decision Research)
Cornell University (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 (Fuqua School of Business)	MBA and PhD in Marketing PhD in Decision Sciences
Harvard University	PhD in Economics Master (MPH) and Doctor of Public Health (DrPH)
Johns Hopkins University	PhD in Social and Behavioral Sciences
Massachusetts Institute of Technology	Masters and PhDs in Management, Economics and Brain & Cognitive Sciences (see also MIT Sloan Neuroeconomics Laboratory)
New York University	MA and PhDs in Economics, Politics and Psychology (see also Center for Experimental Social Science)
Ohio State University	PhD in Psychology (Decision Psychology) (see also Behavioral Decision Making Initiative)
Stanford University	MS and PhD in Management Science and Engineering (see also Stanford Decisions and Ethics Center)
University of Arizona	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 (Rady School of Management)	MBA and PhD in Management (see also Rady Behavioral Lab)
University of California, Santa Barbara	MA and PhD in Economics (see also Experimental and Behavioral Economics Laboratory)
University of Michigan	Master of Applied Economics (MAE) and PhD in Economics
University of Oregon	MA and PhD in Psychology (see also Institute of Cognitive and Decision Sciences)
University of Pittsburgh (Katz Graduate School of Business)	PhD in Marketing and Business Economics
University of Wisconsin	MS and PhD in Human Ecology: Consumer Behavior and Family Economics (Consumer Science) (see also Behavioral Research Insights Through Experiments Lab)

United Kingdom

City University London	MSc in Behavioural Economics PhDs in Economics and Psychology (see also Decision Making and Behavioural Economics Research Group) See also p. 70
Durham University	MSc in Experimental Economics
Goldsmiths College	MSc in Consumer Behaviour
Kingston University	MSc in Behavioural Decision Science
London School of Economics and Political Science	MSc in Management Science (Decision Sciences) Executive MSc in Behavioural Science PhDs in Management Science, Social Policy, Economics and Psychology (see also LSE Behavioural Research Lab) See also p. 71
Middlesex University	MSc in Behavioural Economics in Action
University College London	MSc in Cognitive and Decision Sciences

	PhD in Experimental Psychology
University of Cambridge (Judge Business School)	MBA, Executive MBA and PhDs in Business Economics, Marketing, etc. PhD in Economics (see also Cambridge Experimental and Behavioural Economics Group)
University of East Anglia	MSc in Experimental Economics PhDs in Economics and Psychology (see also Centre for Behavioural and Experimental Social Science)
University of Essex	MSc in Behavioural Economics
University of Exeter	MSc in Behavioural Economics and Finance
University of Leeds	MSc in Business Analytics and Decision Sciences (see also Centre for Decision Research)
University of Nottingham	MSc in Behavioural Economics PhD in Economics (see also Centre for Decision Research and Experimental Economics)
University of Oxford	DPhil in Economics (see also Behavioural Economics research group and Nuffield Centre for Experimental Social Sciences)
University of Stirling	MSc in Behavioural Science for Management PhDs in Economics, Behavioural Science and Psychology (see also Behavioural Science Centre)
University of Warwick (Warwick Business School)	MSc in Behavioural and Economic Science MSc in Behavioural Finance PhD in Psychology (Behavioural Science Group) (see also Decision Research at Warwick)
See also p. 72	

The Netherlands

Erasmus University Rotterdam	Master in Economics and Business (Behavioural Economics specialisation) PhD in Economics and Management
Leiden University	Master in Psychology (Economic and Consumer

	Psychology)
Maastricht University	Master in Human Decision Science
Radboud University Nijmegen	Master in Behavioural Science
Tilburg University	Master in Social Psychology (Economic Psychology Track) 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)	Master and PhD in Economics (Research Priority Area Behavioural Economics)

Germany

International Max Planck Research School on Adapting Behaviour in a Fundamentally Uncertain World (Uncertainty School), Berlin	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

Other Countries

Catholic University of the Sacred Heart, Milan, Italy	PhD in Economics (see also Behavioral and Experimental Economics Research Group)
Hebrew University of Jerusalem, Israel	PhDs at the Federman Center for the Study of Rationality (Interdisciplinary: PhDs in Psychology, Economics, Business Administration, Statistics, Public-Policy, etc.)
Monash University, Australia	Master of Business Economics

	PhDs in Management and Economics (see also Monash Laboratory for Experimental Economics and Monash Business Behavioural Laboratory)
National University of Singapore	MBA and PhDs in Management, Decision Science, Economics, (see also Centre for Behavioural Economics)
Paris School of Economics, France	Masters and PhDs in Economics (see also Parisian Experimental Economics Laboratory)
University of Paris (Sorbonne), France	Master in Economics & Psychology
University of Queensland, Australia	Master and PhD in Economics (see also Risk and Sustainable Management Group)
University of Trento, Italy	PhD in Economics and Management (Behavioural Economics)
University of Vienna, Austria	MSc and PhD in Economics (see also Vienna Center for Experimental Economics)
University of Zurich (Zurich Graduate School of Economics), Switzerland	PhD in Economics and Neuroeconomics (see also Laboratory for Experimental and Behavioral Economics)

Other Resources

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

PART 3 – APPLIED PERSPECTIVES

Behavioral Science in Practice

Disclaimer:

The content of papers in this section is the sole responsibility of the contributing authors and organizations. The editor accepts no liability for the quality, correctness, or completeness of the information provided.

Toward a Common Behavioral Economics Perspective

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With so many researchers, government agencies and consultants claiming to use behavioral science techniques, interest is booming! The business media appear to be responding with new and varied applications, methodologies and the promise of quick behavioral change, often without fully understanding much about BE. For example, we at the Behavioral Science Lab are repeatedly asked by marketers to “just apply behavioral economics” with little or no clarification of the motivations of those whose behavior we are asked to modify.

This excited readiness to accept the application of BE but with little understanding may be the result of there being very few results in marketing as attractive as those in BE. The strict adherence to the scientific method, clear definition of terms and focus on decision making all make BE results attractive to practitioners, especially marketers. For example, where in marketing research can you find a glossary of “effects” or a literature of decision biases or Nobel Prize winners?

Nevertheless, some of the confusion with which BE is perceived today must be attributable to the practitioners themselves. For example:

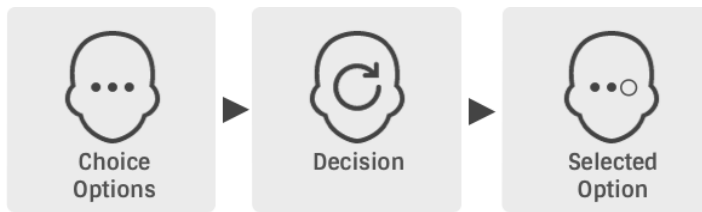
1. Do respondents express similar BE effects, or are there individual differences?
2. How important are individual differences?
3. How is BE best applied in the real world, how can it be improved?

By not answering these questions, are we investigators contributing to the confusion and misrepresentation of BE to potential users? If so, it behooves us to arrive at a common understanding of how BE works so that it reaches its full potential to enlighten and instruct.

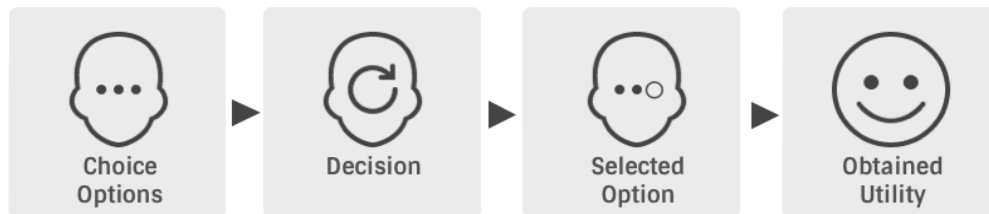
To that end, this short discourse will attempt to offer a common perspective on BE and test it against selected findings. Most of the content will consist of “thought experiments,” intended not to minimize the value of past findings, but to place those findings in a context within which a more complete understanding of BE might be possible.

Basic Experimental Design

Many, but not all, BE studies use an experimental design that includes a choice decision with risk, payoff and often a reward. Results are interpreted as being reflective of how decisions are made and what decision commonalities or heuristics might be sufficiently consistent to be treated as new knowledge. In its simplest form, this design appears as the following:

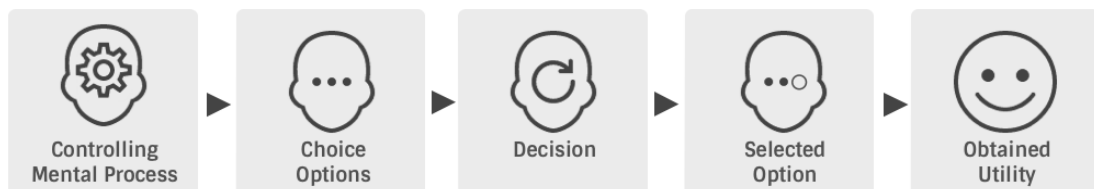


Since any decision, even those in a laboratory setting, is not made in a vacuum, a more complete description of the decision process would be to include the presumed result of the decision, which we will call the “Obtained Utility” as shown below.



Controlling Mental Process

Again, simply stated, we infer that selected options have greater utility than options not selected. From this behavior we infer the characteristics of a mental process or state guiding the observed choice behavior. Let’s add a component, Controlling Mental Process, to the model above about which we know neither its components nor method of operation.



Let’s try this Controlling Mental Process concept on some common BE findings.

Loss Aversion

One of the simplest BE effects to understand is Loss Aversion, the higher likelihood of selecting a choice option that avoids a loss of the same or greater magnitude as an alternative that promises a gain. Often called the “losses loom larger than gains” phenomenon first reported by Kahneman and Tversky (1979), it is often used to explain the Endowment Effect. So applying our Controlling Mental Process concept, is there a state or process that guides loss aversion behaviour? If so, then there should be individual differences which affect decision making. In 2007, in a paper entitled “Individual-Level Loss Aversion in Riskless and Risky Choices,” Gächter, Johnson and Herrmann found that “... in both choice tasks loss aversion increases in age, income and wealth and decreases in education.” Our conclusion from this and other studies is that some process or state affects loss aversion, exists prior to the choice task, and is related to these demographics. Operating in this way, this process or state would fit the definition of Controlling Mental Process.

Optimism Bias

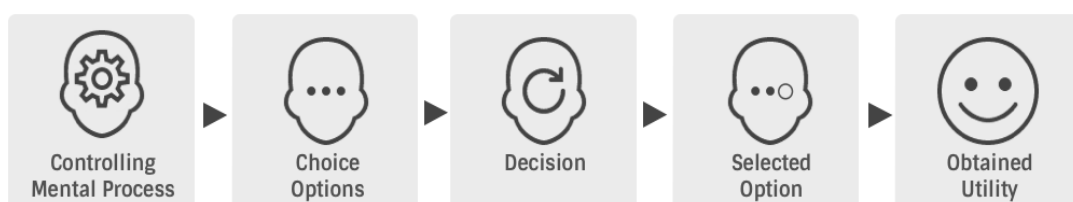
This well-known BE effect is often described as the perceived higher likelihood of occurrence of events with positive, higher utility outcomes — in other words, “optimism” about the future. Unfortunately, not everyone experiences Optimism Bias equally. Strunk, Lopez and DeRubeis in “Depressive Symptoms Are Associated with Unrealistic Negative Predictions of Future Life Events” (2006) found that “A nonsignificant optimistic bias characterized participants with low depressive symptoms, whereas a significant pessimistic bias characterized participants with high depressive symptoms.” So we would conclude that differences in observed optimism appear related to the manner in which a yet unspecified Controlling Mental Process operates. A direct link between “unrealistic” optimism and physiology has been posited by Sharot, Korn and Dolan (2011), concluding that “... optimism is tied to a selective update failure and diminished neural coding of undesirable information regarding the future.” Our conclusions from these studies and others is that individual differences in Optimism Bias occur, i.e., not everyone behaves similarly as a result of it, and some pre-existing process or state “directs” it.

Intertemporal Choice (IC)

This is the well-known and researched higher likelihood of selecting a positive future outcome the sooner it occurs. This effect does not follow the classic Discounted Utility model, but rather variable rate discounting. Intertemporal Choice suggests the higher selection likelihood of immediate versus delayed gratification, or Present Bias. So is there a uniform Present Bias effect across respondents or is there some process or state responsible for individual differences? In their 2007 paper, “Intertemporal Choice — Toward an Integrative Framework,” Berns, Laibson and Loewenstein suggest several control mechanisms for IC and cite neurological evidence for two decision states. Each of these states (control mechanisms) allow for individual differences in IC and may, themselves, conflict with each other according to the authors. So the concept of some Controlling Mental Process dealing with conflicting interactions and impacting the likelihood and degree of Present Bias appears not just feasible, but likely together with co-occurring differences in neural activity.

Finally, “internal” psychological variables such as self-control, and degree of innate risk aversion or acceptance appear to impact IC as do the “external” factors of time, stress, risk and payoff magnitude, and number of decisions.

So our premise that a Controlling Mental Process, as shown again below, regulates the likelihood of choice behavior (and perhaps the magnitude) associated with known BE effects (**Loss Aversion**, **Optimism Bias** and **Intertemporal Choice**) appears supportable.



What do we know about this concept? Daniel Kahneman in *Thinking, Fast and Slow* (2011) suggested that such a concept actually directs decision making in two ways, “fast” and “slow,” i.e., “System 1” and “System 2,” respectively. These “useful fictions,” as Kahneman refers to them, are aides in bundling the characteristics and mechanisms of such a controlling process. “Fast” decisions involve processes that are more intuitive, more impulsive, perhaps more related to perception than cognition and less likely to involve high-cost/-risk outcomes. Fast decisions are more likely to occur under time pressure, stress or an “overload” of the decision maker. One decision mechanism proposed for slow decisions is the **Representativeness** heuristic. This is the apparent comparison of current situations (decision options) to the utility of past situations so that an appropriate course of action can be selected with presumed greater “facility.” “Slow” decisions use mechanisms characterized by more deliberate “logical” processes with less impulsivity and more complete assessment of outcomes. Social impact and self-image also appear to impact these decisions. **Anticipation** (of outcomes) has been proposed as a slow decision mechanism in which an expected outcome (utility) is “forecasted.”

There is precedence for such an “expectational” basis of decision making. The **Expectancy Theory** of workplace performance proposed by Victor H. Vroom of Yale suggested that decisions were determined by a comparison of the effort required to achieve the expected increased salary and social prestige of advancement. Although the calculus for such decisions was not specified, Vroom was clear that the decision to assume advancement was dictated by the expectation of the sum of all rewards associated with it. This is a clear example of BE since there were both social and economic payoffs associated with the acceptance of advancement. Vroom also believed that the best strategy for management was to understand those nonfinancial “motivators” that were unique to each employee and contributed to individual higher performance.

Finally, Game Theory teaches us that feedback from the consequences of a decision must “feedback” to impact future decisions.

Utility Expectation Model

Since we are inferring something about a mental process that existed prior to the presentation of choice options, its function must be to direct actions that occur in the future together with their consequences. Its existence must precede the presentation of choice options even if its impact cannot be assessed until after a decision scenario is presented and behavior observed. So let’s relabel Controlling Mental Process the “Utility Expectation Model.” Such a model would have the following components:

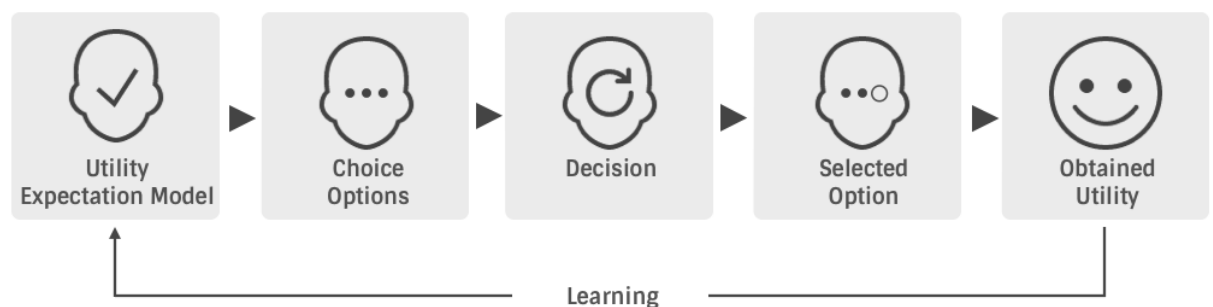
- Fast and slow decision processes
- External factors impacting decisions (time, number of decisions, stressors, etc.)
- Internal factors specific to the decision maker (risk aversion, self-control, wealth, etc.)
- BE effects themselves (Loss Aversion, Optimism Bias, Intertemporal Choice, Endowment and others)
- Feedback of experienced utility based either on the immediate result of a decision, the recollection of the results of prior decisions or the results of similar prior decisions.

Some educated guesses about how such a **Utility Expectation Model** would “manage” these components follow:

1. Affective states (delight, dread, anxiety, social approbation, etc.) and environmental decision conditions (time, number of decisions, others) could play significant roles.
2. “Conflict” (Approach-Avoidance) resolution suggests a systems structure with gates, paths and recursion.
3. Psychological variables (self-control, risk aversion, locus of control) may act as nodes in the system structure.
4. BE effects may act as “moderators” or “accelerators.”
5. Heuristics might be just be the “short form” of the full model.
6. Mental constructs would have to have invariant meaning across respondents, so a new way of constructing and naming these constructs is probably necessary.
7. To avoid “pollution” with experimenters’ beliefs and biases, most of the “work” to define such mental constructs would probably be done by respondents themselves using a formal process.
8. Large scale sample sizes would be necessary to capture the breadth of individual differences.
9. Individual respondent models would be necessary to fully explain the role of individual differences.
10. Respondents with similar individual models would be “aggregate-able” into common decision “types.”
11. Model components may impact the model quite differently dependent on decision type.
12. Validation on a respondent level and within decision type would be needed to confirm the results of multiple models.
13. Different decision types may map to different game playing strategies.

Common Behavioral Economics Perspective

Our **Common Behavioral Economics Perspective** now appears as follows with a feedback loop:



When complete, this **Common Behavioral Economics Perspective** could be used to answer some interesting questions as follow:

- A. Are fast and slow process decisions really supported by the same underlying mechanism once the internal and external factors impacting decisions are known, or are they really two different mechanisms?
- B. Are decisions that appear strictly “irrational” actually “rational” when the complete set of decision elements are known, such as the internal and external factors above? Are there really any “irrational” decisions, or is “irrational” just an explanation of not knowing the true drivers of the utility expectation?

- C. What is the Model impact of known BE biases on the expectation of utility?
- D. How many types of similar decision types for a purchase in a given product class are in use by respondents?
- E. To what extent can respondents be dissuaded of their own biases by “fixes” generated by understanding the bases of expected utility?
- F. What would intervention “fixes” look like if a decision process was fully understood? Would there be only one optimal intervention per process, or are optima possible?
- G. For decision processes involving investment, healthcare, education, risk protection, etc., could optimal decision set(s) be constructed for individuals?
- H. Is there a metric for how well a decision option satisfies the “requirements” of the Utility Expectation Model?
- I. How does culture impact the expectation of utility? Are there common model components across cultures?

Let’s build on the content and scientific discipline of BE and expand it beyond its current limitations to form the basis of a broader understanding of human behavior. After all, isn’t our ultimate objective to better understand, ourselves, and our decisions?

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Catching the Careless Nudists: The Behavioural Regulators' Agenda

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“Only when the tide goes out do you discover who’s been swimming naked” – Warren Buffett

In 2008, whilst analysing patterns of ‘bad behaviour’ among bankers caught up in an epic financial crisis, I suggested that financial markets might benefit from a more behaviour-based approach to regulation: More focus on real Human interactions, less on those imaginary Econs. My research subjects, many of them paid-up Econs, huffed that the markets would be just fine again if only we could all work a bit harder at getting our quant models right.

Less than five years later, in 2013, Her Majesty’s Government gave birth to the Financial Conduct Authority (FCA), the world’s first self-styled behavioural financial regulator.

Come 2015, that regulator is now a voluble two-year-old, talking up its own behavioural research¹ and setting a course that other regulators increasingly follow. What happened, and what’s happening?

It’s all going a bit mainstream

If you’re at all involved in the financial sector, behavioural economics is more than just a fashionable theory: suddenly, behavioural regulation has become real, and compliance with its mandate is becoming very expensive². Provider firms are being fined huge sums, not just for the bad behaviour they *have* inflicted on customers, but also for actions that they *have not* taken that have negatively impacted their customers³. When it comes to behaviour, regulators are prepared to punish sins of omission as well as commission.

From the outset, the UK’s FCA set an assertive agenda invoking behavioural analysis to “place consumer interests at the heart of [regulated] business” (FCA: 2013), and it is willing to both define its own role broadly and work with other watchdogs to get results⁴. Its behavioural weapons of choice include compelling businesses to design out asymmetric incentives, such as quick-cash commissions and systemic conflicts of interest; promoting

¹ Such as behavioural sections in *FCA Business Plan 2015/16* and Occasional Paper 10: – “*Message received?: The impact of annual summaries, text alerts and mobile apps on consumer banking behaviour*” (2015).

² For a start, new behavioural offences have created exponential growth in regulatory fines since January 2014.

³ Commerzbank was recently fined over US\$1 billion for *not* having conduct-aware controls in place.

⁴ From April 2015, the FCA has had “concurrent powers” with the Competition and Markets Authority. Both regulators may then be able to shut down a range of financial and other firms, possibly for undefined behavioural infractions.

“more functional market structures”; and banning sales practices that “take advantage of consumer bias” (FCA: 2014).

...and global

Other financial regulators and supervisors around the world are now expanding their remit, in both jurisdictional reach and the scope of defined offences. Conduct risk – now defined as a subset of behavioural risk – is appearing more and more often as a specific focus of attention⁵. Regulatory agencies are collaborating across boundaries to explore the theme: such as the FCA with the local competition regulator (CMA); and the Central Bank of Ireland’s consumer protection review through the Netherlands’ regulator (AFM: 2015).

Individually, regulators also continue to extend their reach. The FCA has recently taken on the payday lender subsector (HCSTCs⁶). Together with its regulatory sibling (prudential regulator, the PRA), it is also now empowered to intervene in person against any non-executive director (FCA: 2015b).

It’s the behavioural risks that continue to excite the regulator’s greatest interest. Information asymmetries are seen as a natural start point for enforcement actions against “abusive strategies” (FCA: 2015a)—a clear reference to recent scandals involving manipulation of forex market prices and interest-rate benchmarks.

At ground level, the UK regulator has also started to use behavioural studies of customers to call attention to common forms of bias, reminding providers that these affect not just retail consumers but also the bigger beasts on the buy-side: eligible counterparties and professional clients. All customers, large or small, novice or veteran, are to be warned about “unrealistically high expectations” (FCA: 2015a) resulting both from sell-side and buy-side biases. The onus is now on providers, who will be expected to account for how a range of real or perceived biases affects each buyer and to neutralise any inherent biases on both buyer and seller sides—although how this will be achieved is not yet clear.

Back to school

The new regulator’s first shortlist of targeted “potential areas of bias” (FCA: 2014) read like a BE-101 tutorial, including as it did present-bias, overconfidence, framing and herding. All of this presents a triple challenge for practitioners, who are now required to solve these slippery cognitive problems; to explain to the regulator how they have achieved their solution; and to prove how their approach works, by showing the relative merits of their chosen methods of behavioural risk control.

If that all sounds a bit like some kind of new exam for financiers—it is, in effect. But far more than exam grades are at stake. This is about licences to trade, about the livelihoods of financial firm principals and all their staff, and ultimately about the survival of entire markets.

⁵ Behavioural interventions and initiatives have also been announced by FINRA and the Consumer Finance Protection Bureau (in the US); the MiFIR/MiFID regime (in the EU); SIC and Competition and Consumer Commission (Australia); and the Singapore Monetary Authority. This list is by no means exhaustive.

⁶ High-cost short-term credit lenders.

Financial regulators in other jurisdictions are not far behind, with proposed extensions of powers into behaviour control after findings of conduct “black holes” among providers in numerous other markets. As other jurisdictions phase in local behavioural agendas, it’s worth noting that the UK regulator has helpfully highlighted one important global distinction, between two discrete elements of behaviour: innate *bias* (the cognitive blind spots we’re all born with) and socially validated “*bad behaviour*” (notably, the tendency of pumped-up sales teams to gang up to over-sell stuff to naïve buyers).

New predictors of bad behaviour

We would all like to think that our offices are full of positively motivated people, yet the reality is that some of our staffs behave in a variety of ways that do not conform to expected good behaviour. Moreover, each individual’s behaviour is being constantly adjusted in reaction to both positive and negative reinforcement.

Behavioural science offers a welcome deeper insight here. For example, and as we might expect, a typical employee likes to do more of the things that get a good response from his or her colleagues and less of the things that make him or her feel uncomfortable. However, each of us may also be unconsciously connecting our possible actions to a highly personal mental picture (reification) of the probable pleasure or pain that will result, and accordingly do more or less of the action.

A manipulative employer who knows about this may use this effect to adjust employee behaviour profitably away from acceptable norms. Some may replace simple reward for effort with a potentially dangerous alternative – instrumental conditioning – that offers greater rewards for doing ethically flexible local versions of working practices (“the way we do things around here”)(Miles, 2012).

Naïve optimists?

In the Boardroom, and suddenly facing the very personal-seeming⁷ threat of possible time in prison, each Director is having to learn to be more vigilant. Nobody can now afford to assume that a positive risk culture is their organisation’s default value setting. Directors are learning to be more wary of, for example, their popular line manager who eases staff into unethical practices by “normalising” any non-compliant behaviour from the outset.

In days gone by, an employer who wanted to bend the rules might create work routines that made bad behaviour feel familiar and acceptable, knowing that employees’ latent discomfort about performing a doubtful task would lessen the more often they repeated the task. Over time, staff could accept and even learn to enjoy regular activities that they knew intuitively to be problematic. Add in human tendencies to want to believe whatever senior people tell us, and to blend in by copying others in a group, and it’s easy to see that staff behaviour—and the firm-wide risk culture that followed from it—could be open to material manipulation. No longer. From now on, regulators stand ready to call this out.

⁷ Is this ‘spotlight effect’ bias or real hazard? No doubt we’ll find out, for each company, as 2016 unfolds.

Saying what we mean

Although the British regulator hasn't yet put it as bluntly as this, the task for businesses is to fix their own behavioural lapses in four ways: to address identified biases; compensate for these; challenge identified patterns of bad behaviour; then eliminate them. This is the regulator's recipe for an ethical conduct environment.

The behavioural toolkit available to us all includes new diagnostics that reveal unwelcome patterns in unexpected places. One of these tools is linguistic analysis: In the past, industry jargon signified a careless mode of customer engagement that the punters (and reforming governments) found by turns quaint and somewhat insulting. For example, it may be technically correct for an internal auditor to classify and register good behaviour as a "risk", but the label⁸ seems contrary and puzzling to most outsiders.

That's only one instance of how financial markets' engagement with human factors of risk has evolved in a parallel universe, with its own language and often oddly disjointed components. Another example: in one silo, anti-money laundering staff study the criminal charges associated with "knowing your customer"; meanwhile, just down the hallway, the marketing team work up a new "customer-centric" offering. Now that they are compelled to demonstrate truly customer-facing behaviour, providers have started to notice how damaging their contrary use of language could be to their brand value – and are taking steps to fix it.

So if "acceptable" conduct isn't just words... what else is it?

Language is only one (if often ignored) sign of the possible onset of bad behaviour towards customers. A less subtle example, sadly familiar to consumer activists, is when a junior counter clerk shakes down a loyal elderly customer for failing to produce a passport to prove identity. From the customer's point of view, that's a crazy, common sense-free event.

This type of consequence-blindness may not only break through to disrupt the retail branch, but may also lurk within the Risk Committee and fester among back office and compliance staff who do not routinely face customers. Lawmakers and consumer watchdogs will increasingly call out inept behaviour as unacceptable, creating new areas of reputational, as well as compliance, risk.

Not so very long ago, a leading British regulator publicly questioned the societal value of investment banking⁹. Since then, other regulators have felt intensely relaxed about extending the scope of the control debate into BE-related policy territory. They foray into the broader debate on social economics, not only questioning the benefits of banking, but

⁸ In plain language, "risk" as used here might be better termed "customer benefit".

⁹ Questioning whether some parts of it might be "socially useless" (Adair Turner, interviewed in Prospect magazine, 27th August 2009).

also dropping into public speeches some distinctly BE-sounding¹⁰ rhetorical questions such as: Why do consumers reward poor products?, and: Why aren't purchase decisions rational?

Where in earlier times the finance industry may have been tempted to respond with the frank, non-defence that it's just the way we do things ("that's business")(Miles, 2012), the new challenge for providers is to move on, to be more affirmative in explaining the value of their offerings. Behavioural regulation demands that everyone demonstrate new customer-centric credentials based on how they're seen to act in day-to-day consumer encounters—and often literally how they act, in the angry glare of customers' social media critiques.

Acceptable Behaviour 101: Financial Firms Change Their Thinking

The starting point for each provider has been to ask, "Do we conduct our business the way we do because it's the best practice in our industry, or is it just that nobody has recently thought (or dared) to question why we act as we do?" There's then a tougher question to be asked and answered: "Is what we've designated 'normal' conduct actually good behaviour or just our local way of protecting questionable practices (whether or not we consciously intend to)?"

One of the regulator's core purposes with the new-style regulation is to give customers at all levels (consumer, professional, counterparty) a fair deal, to "understand... which combinations of product features and behavioural biases drive investors' misperceptions" (FCA: 2015a). The regulator—and providers, too—want more research into this.

Meanwhile, what hard-pressed compliance and risk managers now want is a practical work plan to overcome their legacy stack of risk-cultural baggage. Most of all, they would *really* like to see a list of specific offences, to help them to "heat-map" noncompliant conduct; but the regulator demurs.

Alternative approaches, then?

As BE-ists know, though, there are other ways to skin this cat. Last year, in regular conversations with the Boards of various financial providers, one would hear a familiar set of opening questions ("Roger, this behavioural regulation thing, where's it all going? Why's it suddenly so big? And so eye-wateringly expensive? Can you make it go away, please?").

This year, Boards' line of questioning is more reflective: How is our firm supposed to assure the regulator that we have best practice in managing behavioural risk, if there's not yet a defined standard for reporting it? What will good behavioural risk controls look like?

To which one answers:

If it seems that there's a lot of new behavioural stuff for financial managers to learn, the premise of the new regulation is simple enough: Past methods of calibrating risk, mainly with

¹⁰ In fact, quite Ariely-esque (if that's a word).

reference to movements of money, ignored many indicators of how people actually behave. Money-based, quant risk models had created an illusion of certainty¹¹.

By contrast, our new behavioural methods offer greater power to predict how real life will play out—what will happen when real people interact, rather than just a series of abstractions moving through a virtual risk model. Human factors analysis explodes many of the comforting old ‘Econ’ assumptions, newly grounding our understanding of risk-taking. As enjoined by our thought-leaders, we should be relentlessly empirical¹² in pursuit of this.

There’s a hard edge of urgency to this, too. Where before the days of behavioural regulation one might have harmless fun identifying how sales staff exploited consumer ignorance or bias to close a sale, after 2015 any failure to detect bias-based selling may attract an unwelcome enforcement visit from the regulator. (Investors, meanwhile, may be reassured that good behaviour appears to correlate positively with share price.)

All of which suggests that financial firms would do well to join us in taking a pragmatic view of the new regulators’ agenda. The sector is being challenged – this year in the UK, next year everywhere – to install behavioural risk controls. As currently defined, this means risk managers placing customers’ interests at the core; binding risk into strategic planning; and getting all staff into risk-aware ways of working.

Coda

Behavioural science, and regulators who use it, are helping to refocus corporate Boards on a simple human truth: We make sounder decisions when we stop fixating on charts and look directly and critically at how people interact with other people. If BE-ists *have* to frame the point a little more analytically, to ward off the lingering Econs, could we agree to do it something like this: We can reduce over-dependence on proxy indicators that are derived and financial, by starting to give greater weight to directly observed human factors.

Or, again, more simply like this: The behavioural view explains why people do as they do, in reality; how real people will really respond to real events and propositions. Rather than shy away from it as “soft” science, any effective leader might want to embrace BE for its greater power to predict What Actually Happens. What leader (worth the name) wouldn’t want to be able to make more robust decisions? To transform uncertainties into manageable risks? With or without a regulator watching, BE will be shaping the future of good governance.

¹¹ So much so that HM Treasury famously reassured us in 2006 that it had abolished boom and bust. A certain Royal person then asked a certain research institution why none of us had thought to question this. Fair point, ma’am; we hadn’t yet met that nice Professor Thaler.

¹² Phrase attributed to many, recently including Thaler, Kahneman, and Bourdieu; also used, I suspect, by many a BE-ist at some point when pitching for work. Also used by watchers of BE, not necessarily as a compliment.

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His clear explanations of risk, bias and behaviour in financial markets, and conduct risk commentaries (for Reuters) have a worldwide readership that includes the regulators. He contributes both to expert practice texts (FT, IOR, GARP, OCEG) and as a plain speaking 'risk explainer' in crowd-pleasers (such as *Watching the English* and *Trial and Retribution*).

Dr Miles's live behavioural field study of bank Board members gaming their own risk controls during the 2008 crash, published in *Operational Risk: New Frontiers*, predicted a new conduct regulator two years before the FCA was created.

Building Strong Brands through the Lens of Unthinking Emotional Behaviour

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When it comes to brand choice and buying behaviour, people are predominantly NOT rational actors.

In the early 1970s, an American sportswear company was lambasted for the alleged exploitation of sweatshop labour in some of the world's poorest and most vulnerable countries. Nearly 40 years worth of wilting and highly-publicised claims have continued to this day.

On 20th April 2010, a deepwater explosion caused a catastrophic spew of crude oil into the Gulf of Mexico. It caused 68,000 square miles of environmental damage ... enough to submerge England and Wales. Excoriating global news coverage raged unabated for a year.

In July 2011, it was revealed that the phones of murdered schoolgirl, Milly Dowler, relatives of dead British soldiers, and victims of the London 7/7 bombings, had been hacked. Rupert Murdoch and son were under intense public scrutiny and the nation was disgusted.

Over the past quarter of a century, Nike has become by far the biggest sportswear brand on Earth. And its market share continues to grow.

British Petroleum suffered a severe drop in its share price in the immediate aftermath of its disaster, but this quickly began to recover. And while roadside petrol sales for all the oil companies have been hit by the recession and competition from the big retailers, BP's market share ... on both British AND American soil ... has held up just fine and dandy.

The Sun, the daily version of the *News of the World*, and a brand synonymous with its high-profile owner, continues to sell two and a half times the copies of its nearest competitor, *The Daily Mirror*, everyday. Its readership is bigger than that of *The Daily Telegraph*, *The Times*, *The Guardian*, *The Financial Times* and *The Independent* combined. Furthermore, while total newspaper circulation is in inexorable decline, *The Sun's* is falling more slowly than all other newspapers.

How can this be?

This is the age of networked consumer activism.

This is the era in which environmentalism is one of the big mainstream agenda items.

This is a point in time when corporate ethics are in the dock and under the public microscope.

Isn't it? Surely people have been burning their allegedly slave-produced Nike trainers and running to Adidas. Surely car drivers would have by-passed, BP, and turned into the Shell station. Surely the indignant, salt-of-the-earth Sun readers started to pick up *The Mirror* instead.

When it comes to brands in the real world, the vast majority of people simply don't think very hard about the vast majority of brands, or the vast majority of their buying decisions. There are too many other things competing for their attention and to which they attach greater importance. Like paying the bills, looking after the kids and, er, watching TV.

Overwhelmingly, most human decision-making takes place beneath the level of consciousness; in the evolutionarily primitive, emotional centres of the brain. These decisions are prompted by small impulses, evoked by *distinctive* emotional memories associated with a brand, which have often been built over years ... decades even. These memories relate to two simple, but central concepts¹³:

- i) Distinctive Assets; simple things like name, logo, shape or colour.
- ii) Association Assets; for instance, it's fun, it's convenient, it's relaxing ... and what it is.

These assets are, by definition, primarily intangible. But they are very real and very, very important.

Red, yellow, "Da dadada dah" (tune) ... I wonder which brand you're thinking of now?

A brand which has a stronger, more vivid, set of memory structures (distinctive assets and associations) attached to it than a competitor - in the minds of more people - has greater salience. That is, it has a higher propensity to come to mind when a purchase decision is being considered, or is about to be made. Brands with the strongest levels of salience have a higher probability of being noticed, remembered and bought.

A simple way of thinking about this is through the concept of *mental availability*. The 'availability bias' was first identified in 1974 by two Israeli psychologists, the now oft-quoted Daniel Kahneman, and his research partner, Amos Tversky (Tversky & Kahneman, 1974). It works on the basis that 'if you can think of something it must be important'. Familiarity doesn't breed contempt (as the old cliché goes), contentment more like. If you can think of a brand then you are much more likely to have bought it in the past, or be going to buy it.

The world is jam-packed full of things competing for our time and attention. Our lives are increasingly busy. Our shopping (brand) choices are seemingly endless. Yet clever-old evolution has biologically programmed our brain to spend as little time as possible in the process of conscious thought. Deliberate, logical thinking uses up a lot of energy. Our brain (especially the primitive part) needs to conserve as much energy as it can, in order to be on

¹³ It is essential to acknowledge the profoundly important contribution of the Ehrenberg-Bass Institute (and, specifically, the leadership of Professor Byron Sharp) to the scientific literature and practice of marketing.

constant alert to our senses, as they bring information about the world around us. For instance, the faintest rustle in the undergrowth beside us, that we barely hear or see. It makes lightning-fast decisions ... it makes us run before we become lunch ... let alone even consciously think. Science has a somewhat disparaging term for us; it calls us 'Cognitive Misers'. But it's why most of us are still here. As the philosopher and mathematician, Alfred North Whitehead, explained, "*Civilisation advances by extending the number of important operations we can perform without thinking about them*".

Just like the availability bias mentioned above, much of our lives are navigated by our automatic, sub-conscious use of heuristics; rules of thumb for quick decision-making. Brands are heuristics; helping us not to have to think too hard is one of their *raison d'être*. We want to get out of the brand-cluttered supermarket quickly. We want to sort out the deathly-dull car insurance easily, so we can get back to far more important things like, er, watching TV. The quicker a brand comes to mind when we are faced with buying the week's groceries ... or the need to get some fashionable sports gear ... or to access some newsworthy titbits on the way to work ... the better!

Busy drivers want petrol. BP provides petrol and has lots of filling stations next to busy roads (high physical availability, to use the vernacular). They recognize BP and trust it, with little conscious thought, to meet their needs. They're simply not that bothered about making some sort of moral connection (that is, if there even is one, or if they know there's a connection in the first place). They just want to drive home to see the kids and, er, watch TV. People want the vast majority of brand choice decisions to be as quick and easy as humanly possible ... it's as simple as that.

For brands to grow, it's clearly important to manage what people think 'about' you. But it's even more important that they think 'of' you in the first place.

In addition to distinctive assets and mental availability, it is also essential for your brand to evoke *positive feeling* (the affect heuristic; Slovic, et al., 2002), even if this may seem almost imperceptible to a consumer. We are more *homo emoticus* than *homo economicus*;

"A brain that can't feel, can't make up its mind"

Antonio Damasio, Neurologist

And so too in terms of consumers' decisions and brand choice. Brands that achieve stronger levels of salience and affect will tend to be the biggest brands in a category.

Indeed, it is precisely this that makes skilful marketing and communications so essential to strengthen a brand's intangible assets and grow its market share.

"Car insurance? Oh, I don't know, who's that one with the funny nodding dog that says, "Hoh, yes!!!"? Churchill. I'll just call them".

Of course, corporate reputation is extremely important. If nothing else, business leaders should strive to ensure that their companies behave well for reasons of human ethics and corporate citizenship. (And the observations above are just that; observations. This article is not intending to make any ethical judgements). However, it is the case that truly strong

brands can often grow, despite the reputational mistakes or misdemeanours of a corporation and its leaders.

Nike, BP and *The Sun* are, quite simply, incredibly powerful brands. They have extremely strong levels of salience and positive feeling toward them. They stand higher in the memory 'consideration sets' of more consumers than their competitors, who buy them in greater numbers more often. That said, it is not that people are unswervingly loyal to them. Consumers don't exhibit undying romantic love and loyalty to one brand to the exclusion of all others. They will readily buy a competitor to these brands if one of them is less available at a given point in time. Put politely, consumers are repertoirists. Put less politely, they're promiscuous, with little solus loyalty in their bones. The reason why more of them buy Nike, BP and *The Sun*, is more a function of habit and availability. Humans are creatures of habit. Habit is primarily an unthinking/subconscious state. And the creation of stronger memory structures associated with a brand will increase the probability of being unthinkingly chosen more often. Salience helps create habits.

All this being said, the issue of corporate brand reputation is a highly researched and carefully managed sphere of business. Huge amounts of management time, money and energy are spent in protecting and nurturing reputations to underpin the long-term trustworthiness and value of a business. The three examples above are cited to illustrate that reputation, and its impact on consumers, is not necessarily as linear as one might first imagine. Of course, throughout corporate history there are countless examples where damaged reputations have caused brands to stutter badly, or indeed fail. The Nestle baby milk crisis in the 70s took much skilful effort to resolve. Gerald Ratner's expensive gaffe when he stated that he was able to sell jewellery at such low prices because "it's total crap". The then market-leading mineral water, Perrier, which has never fully recovered in the UK after the benzene claims. Perhaps these were due to the perception that there could be a 'direct' impact on consumers' health or social standing, whereas the impact of the issues surrounding Nike, BP and *The Sun* were somehow more 'indirect'. This, however, is a subject for further discussion.

Marketers are starting to look to science to discover how brands really work in the minds of consumers, in terms of attention and memory. Furthermore, to understand how and why buyers behave in the way they do. Cognitive psychology and the social sciences are starting to provide marketers with real empirical insights. Such as how to create brand associations in long-term memory, through the accurate evocation of relevant emotions that influence behaviour. Similarly, science can shed light on how and why the issues of reputation do, or do not, affect brand choice and market share.

Attempting to distil the above ... and the vast body of knowledge not referenced here ... into something resembling a "Top 10 Tips" would not be useful. Perhaps it is best to conclude with three suggested questions for CMOs to ask themselves:

- i) What distinctive assets and associations does your brand actually own in consumers' minds, i.e. those things which people do, or don't, recognise and remember about it (note, the answer may surprise you)?

- ii) What will make it as easy as possible for people to choose and buy us, physically as well as mentally?
- iii) What emotion does your brand (and its communications) evoke, if any, such that it sticks in people's minds? How can you use this to build richer memory structures around your distinctive associations?

In a simple sense, all this is saying is that, applying the knowledge which has emerged from 'beneath the surface' over the past 30 or so years, can raise the probability of success. It can provide the insight for inspiringly clear strategies. It can fuel more great creative ideas, that are more effective, more often. It can help marketers to maximise their brands' growth by reaching and affecting more customers than their competitors.

Or, put much more simply, making your brand more and more and more famous!

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Learning from Experience: How Customers are Won and Lost

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Acquiring and retaining customers is what business is all about and many executives believe that branding is a key tool in that quest. We argue that brand is a consequence, rather than a cause, of commercial performance. Customer experiences independently drive both revenue-generating behaviours and brand image. Any correlation between the latter is because they have customer experience in common. By focussing on the events that influence people, companies can short-circuit the brand blather and directly manage the parts of the operation that create value. As such, we call for fundamental changes to the way companies formulate their retail strategy, including how brands are measured and managed.

Introduction

It might surprise you to learn that about \$3bn is spent globally each year on brand tracking. It might surprise you even more to hear that this money is largely wasted. Why? Because such trackers are both inaccurate and insensitive. Worse still, this \$3bn is only the visible waste. These flawed measures influence commercial decisions, from above and below the line advertising to customer service and pricing strategy. Take one wrong turn in such a maze and you're soon a long way from where you need to be.

So why is brand image measurement so defective and how can it be mended? Using a supermarket study, we'll show how companies can track people's actual experiences and that these are both more predictive of people's behaviours and less noisy, demonstrating greater sensitivity and fidelity to what's really happening in the market.

Knacker the Tracker

A typical tracker is a time series showing how many people agree with a brand statement, (e.g. "they offer good prices"). But trackers are mostly stationary lines that only rise or fall each month as a result of sampling errors, sunny day effects, and the like. Figure 3 shows a classic example of a line that doesn't move from one year on to the next, yet bobs up and down, pretty much arbitrarily, from month to month.

		Good Food Quality				
		Disagree			Agree	
Competitive Prices	Agree	0%	1%	1%	4%	8%
		1%	2%	5%	8%	4%
	Disagree	1%	4%	9%	7%	3%
		1%	10%	7%	5%	3%
		2%	4%	4%	3%	3%

Figure 1: The Brand Image Paradox

The puzzle is why tracking is so susceptible to noise given the large sample sizes. Figure 1 shows a typical survey finding. People rate cheaper stores as offering better quality products and vice versa. That's counter-intuitive. In truth, they mainly just like or hate a store and it's only when this data is aggregated that you see better prices linked to lower quality, arranging the brands along a spectrum from Aldi to Waitrose. Why does this paradox arise? Because, beyond the main liking-hating effect, individuals nudge their price and quality ratings marginally up or down, depending on the brand. They differentially like Waitrose's quality more than they like the prices. So image tracking is an exercise in measuring how respondents wobble off the diagonal in Figure 1, like measuring the height of a ripple on a wave. That's the problem with trackers.

Begging Belief

The cause of the problem is that brand perceptions – like many beliefs – don't really exist. Beliefs are usually manufactured on demand. So if we ask people if they're happy with their love life and then if they're happy with life in general, their responses are 66% correlated. But ask them the same questions in the reverse order and this falls to 12% (Strack et al., 1988). If beliefs about wellbeing pre-existed, they wouldn't flip-flop like this across contexts. Similarly, people don't have pre-formed beliefs about mobile phone coverage or bank service levels. Their responses to such questions are based on – in order of priority – what mood they are in, what you asked them earlier, whether they generally like the brand and, finally, what they think about the coverage or service levels. You have to unpick all the other stuff before you get to the thing you want.



Figure 2: Events Explain Images

Figure 2 shows a smarter approach. Beliefs ultimately come from experience. In our supermarket study we asked people about their most recent shopping trip and, separately, their brand perceptions. Figure 2 details the relationship between them. For example, people who noticed a price rise, or an item that was cheaper at a competitor, had a worse price image of the store. Only the filled bars are statistically significant.

The events in Figure 2 are intuitive. Price events drive price image but not service image and vice versa. The correlation in Figure 1 is gone. Furthermore, out of hundreds of in-store and at-home events, we can identify those few that drive each image. Manage these and you manage the brand. For example, note the negative price image impact of items coming off promotion. Promotions may swell baskets in the short-term, but they corrode footfall in the medium-term. They damage price credibility and being caught out by an off-promotion price is memorably annoying. Ask my wife about baby wipe “hi-lo” pricing when you have a half hour spare. Promotions are a drug. Supermarkets are addicted. As James Thurber said of martinis “two are too many, and three are not enough”. In 2003 Asda didn’t do promotions. By 2008 they were running about 2,000 per week, to no noticeable effect other than losing their CEO in 2010.

Synthetic Tracking

This insight provides the foundations for a new way to track brands that we’ve termed “synthetic”. Instead of asking for perceptions directly, consumers recall experiences. These are then blended, using fitted weights, into an image rating. Because people’s event memories are more objective and reliable than their image beliefs, these synthetic images are less noisy and more sensitive. In Figure 3 we see how negative word of mouth, which contributes to mobile phone synthetic coverage, spiked during an O2 outage. And O2’s traditional brand image measure? It remained flat.

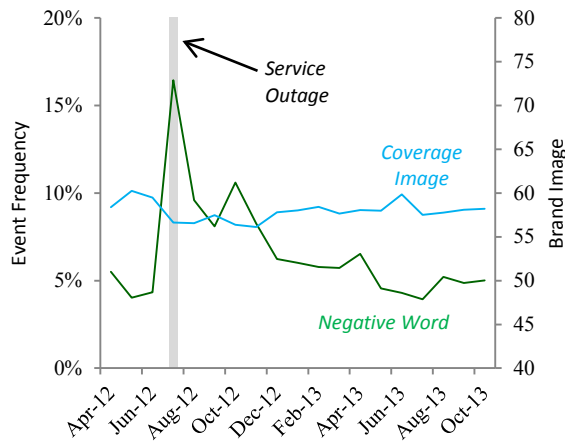


Figure 3: Mobile Phone Example

Another benefit of synthetic tracking is that any image movements are traceable. So a fall in coverage can be attributed to the outage rather than to, say, an increase in dropped calls or poorer reception as people learn how to hold their new iPhones¹⁴.

Image, Schminage

Event data can also be used to refine the objective measures in management “dashboards” and the associated incentive schemes. For example, based on people’s responses to the statement “I couldn’t get the item I wanted” we have questioned the accuracy of traditional supermarket availability measures because they equally penalise being out of light bulbs and bananas. If you are a supermarket that runs out of bananas, what are you playing at? Likewise, reported pre-pay tariff switching behaviour has been used to entirely overhaul the design and interpretation of a global mobile phone provider’s weekly sales report.

Events can also be used to predict customer revenue behaviours like retention¹⁵. Figure 4 uses events to predict loyalty. Each year about 10% of us change our “main supermarket”. The vertical axis shows that loyalty is lower for people who experience smelly stores, uncaring staff or expensive items and higher for those who encounter helpful staff, noticeably cheaper items, or Italian Wine Week. The horizontal axis then shows the difference between the incidence rates at the highest and lowest frequency brands to gauge the materiality and actionability of each event.

¹⁴ In an incident that became known as the iPhone 4 death grip. See www.knowyourmeme.com for details of the original coinage and amusing photos of suggested solutions. Spock is our favourite.

¹⁵ Indeed events can have an astonishing influence on behaviour. The title alone of “Carter, T. J., Ferguson, M. J. & Hassin, R. R. (2011). A single exposure to the American flag shifts support towards Republicanism up to 8 months later. *Psychological Science*, 22, 1011-1018” tells you all you need to know.

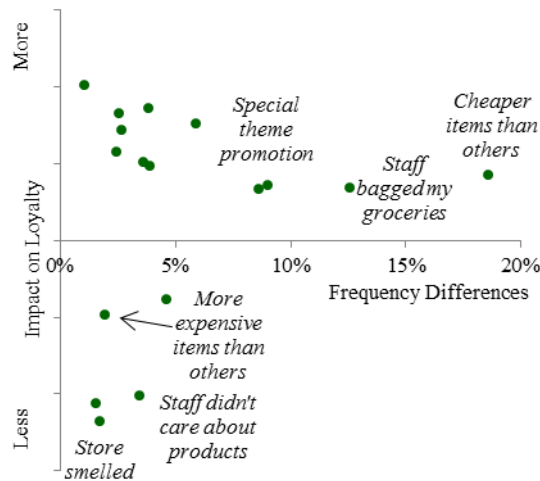


Figure 4: Events Explain Behaviour

As was the case with brand images, events can be combined to create a synthetic loyalty tracker that predicts long-term sales. Because of switching barriers (e.g. location) synthetic loyalty tells management how many people want to leave, even when that isn't apparent from the trade figures because some people are trapped. Think of it this way. Just because they're grinning like chat-show hosts doesn't mean that guests at the boss's party wouldn't rather be home watching telly with a pizza.

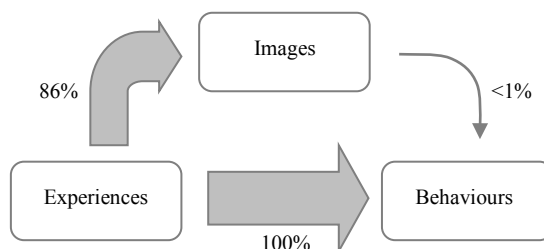


Figure 5: Images Don't Explain Behaviour

So should you care about brand images at all? Figure 5 says "no". If you take the consumer behaviour that's explained by experiences as a baseline, 86% of that information is contained in the brand images. But once you explain behaviour, like loyalty, with events, images contain no further information¹⁶. So any relationship observed between brand and behaviour is because both are caused by events. Brand image is an epiphenomenon. Experiences are all you need to know. Accordingly, tracking image is a waste of effort when you could be tracking experiences instead.

Figure 6 illustrates how images can be correlated with, but not cause, behaviours. Nobel Prizes are correlated with chocolate consumption (Messerli, 2012). But Nobel Laureates

¹⁶ Technically, the R2 of predicting Intention to Switch (ITS) using experiences is 14%, images using experiences is 12%, ITS using images is 7% and the residual of ITS, after prediction with experiences, using images is effectively 0%. This also highlights the noise at work, albeit images are twice as noisy as events. ITS was validated based on subsequent actual switching.

aren't especially noted for their chocoholism and guzzling chocolate doesn't make you clever. It isn't the Milky Bar Kid's Theory of Relativity. The answer is, of course, that there is a third cause, like wealth, which generates both outcomes.

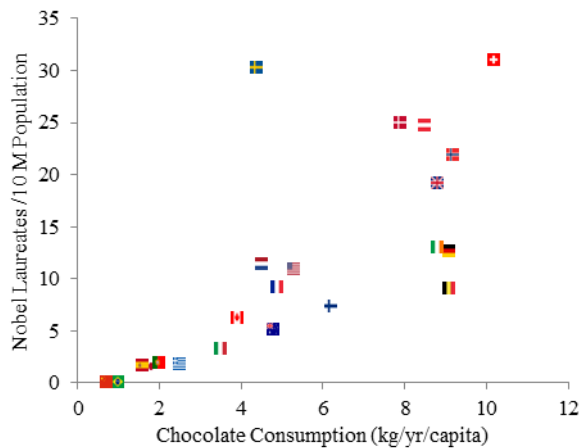


Figure 6: Correlation isn't Causation

Before we are deafened by the agencies' howls of protest, let's clarify two things. First, in this framework adverts are still events. It's not that "image management" can't influence behaviour. But we don't need brands to explain how adverts work. In fact, that's an actively bad idea. Second, we aren't saying image should be dropped entirely. Images, along with behaviours, are caused by experiences. So, like sales figures, images are useful performance indicators. We just need to engage in a bit of what Gwyneth Paltrow called conscious uncoupling. We've had a long affair with images, but it's time to complete the relationship and create trackers that are more aligned with consumer psychology. This means shifting focus from measuring beliefs, which don't exist, towards measuring events, which do.

Summary

Our research shows that many of the metrics that managers traditionally use to track performance are flawed. These measures are motivated by unrealistic assumptions about how people process information and make purchasing decisions. Like Alice, people may mean what they say, but not say what they mean. The experiences that actually shape people's behaviours¹⁷ aren't the same as the beliefs that people think shape their behaviours. A better approach is to alter how brands are tracked:

- Events: Identify the main revenue driving events and track their frequencies across competitors.
- Synthetics: Establish how events drive images and revenue behaviours and create synthetic time series.
- Extend: By losing all but the main image measures create room for innovation (e.g. emotion tracking).

¹⁷ Lewis Carroll's March Hare and Mad Hatter provide a lesson in logic. They claim that "saying what you mean" isn't the same as "meaning what you say" because "seeing what you eat" isn't the same as "eating what you see". Try this line out at your next offsite breakout group. You're welcome.

These relatively modest changes promise a big impact. Tracking will become more sensitive, timely and actionable. Synthetic scorecards will incentivise staff to build long-term value. Extending the survey will provide a wider portfolio of business diagnostics. And best of all? You get all this in a succinct and insightful monthly report that you will both read and look forward to receiving.

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From Branding to Action

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Many marketers have become familiar with the concept of ‘nudging’ introduced within the broader context of Behavioural Economics. However, how can we harness the power of this to best effect for our brands? In this article, I demonstrate how marketing can profitably utilise this understanding in deploying automatically associated brand signals in order to positively influence brand choice.

Action Follows Attitude?

What implications do the leaps and bounds in understanding made within the field of Behavioural Economics have for marketers? To help identify, understand and exploit new implications, let us first consider what marketing is, and traditionally has been, focussed on. Marketing’s focus is on behaviour, and its aim has always been to influence customer behaviour. The basic assumption generally made by marketers is that a customer’s behaviour is resultant of his/her attitudes or, put more simply, that action follows attitude.

This has led to the common marketing practice of focusing on the target audience and specifically their internal thinking and opinions (attitudes, preferences etc), as these are deemed to be hugely influential on behaviour. Hence, as marketers, we attempt to shape and develop these to our brand’s advantage, and often they become our obsessive yardsticks against which we measure the success of our brand communication.

However, it is now clear that human behaviour is not as ‘mechanical’, and hence not as predictable, as this base assumption would suggest. For example, we know (from our own experience) that many of the brands that we buy on a grocery shopping trip have not been pre-specified on a shopping list (be this physical or mental). We might reference generic categories (such as margarine, bread, floor cleaner, etc.) on our list, but do not necessarily nominate any specific brand – the critical purchase decision is subsequently made in store. In addition, we purchase several other items that were not even on our shopping list! Such familiar behaviours as these challenge the basic marketing assumption – how can our stated attitudes and preferences be so dominant in defining our purchase actions when so many of our decisions are ‘unmade’ before we enter the store? So, if our internal thinking processes (opinions, beliefs, preferences) only tell part of the story, then what else plays a role?

Behaviour Also Depends on the Situation

In psychology, the basic formula that explains behaviour is the outcome of an interaction between an individual **and a situation**. In marketing, we have traditionally neglected the situation and solely focussed on the target customer, whereas the situation provides the context for decision-making and hence affects behaviour.

$$\text{Behavior} = \text{person} \times \text{situation}$$

Figure 1: Behaviour is an outcome of both the person and the situation

Behavioural economics clearly demonstrates how powerful the situation (inclusive of the environment) in which the (purchase) decision takes place can be – for example, Brian Wansink's canteen experiments showing how changing situational factors in various ways affects people's eating choices. As such, **the situation is a key determinant of behaviour**.

But, how should we think of a 'situation' in order to be able to understand its full value to our marketing practice? Broadly speaking, **the situation is anything and everything that the customer might experience in the lead up to the behaviour on which we are focused i.e. a purchase decision**.

However, from a practical marketing perspective we should consider what our brands can realistically influence - we should focus on the much tighter scope of the purchase decision interface. This consists of all the perceivable signals, codes and cues that the customer meets in relation to their purchase decision.

The perceivable signal aspect in the above is important. At decode, our understanding and work uses the (Nobel Prize winning) Behavioural Economics model of Daniel Kahneman (2002). In this, he concludes that our intuitive decision-making system (referred to as the 'autopilot' or system 1) is governed by what we perceive, and what is automatically triggered and activated by these percepts. Quoting from Kahneman himself: 'What you see is all there is'.

Behavioural Economics, then, offers complementary understanding to that on which traditional marketing was founded, giving marketers a second focus through which to leverage decision-making.

The Two Sides of the Equation are Complementary

However, we should not now neglect the original focus on the internal perspective of decision-making i.e. a customer's motivations and goals. This would be a mistake since we know that purchase behaviour is mainly motivated behaviour and that the peripheral cues in the environment only cut through if and when there are no strong preferences, which is most often the case (the Fazio MODE Model provides a useful framework for considering the multiple processes by which our attitudes can guide behaviour and choices).

Instead, we need to see both sides (a customer's internal perspective and the situation) as complementary levers, both of which are available to us as marketers to utilise to best effect.

One can think of the two levers as being short term (situation) and long-term (internal perspective). The short-term lever offers the effect on behaviour that our brands can have

through addressing the decision interface (nudging or nudges). This can influence our behaviour automatically, and without necessarily changing our attitudes and preferences. The long term lever offers the ability to build and deploy the associative networks, created through perceived signals across a brand's touchpoints, which constitute the brand's equity.

Using the Two Levers as One

Brands and nudges have several things in common. On a conceptual level, framing is the core for both (see my previous contribution in the BE Guide 2014 for further detail). The brand changes the perceived experience of the product, as clearly demonstrated in both placebo research and blind taste tests, and can increase the customer's willingness to pay a higher price through such framing effects. Like nudges, they automatically affect customer judgement and behaviour as they work their influence through similar automatic associations.

Brand equity is built from signals, those signals that have formed strong associations with the brand over time (e.g. through communication and brand experience). Like nudges, they work at a System 1 level and underlie the same mechanisms and principles: framing, automatic association and they are grounded in perception.

An example that illustrates how both levers can work powerfully together is the case of brand properties. These are signals that have the ability to be a nudge for the brand and also to convey 'baked-in' brand values. For example, the Magnum brand property of the 'cracked shoulder' visual example below not only cues the brand, but also conveys the Magnum brand values of indulgence, sensuousness and pleasure.



Figure 2: The 'cracked shoulder' not only triggers the Magnum brand, but also its brand values

As is already known, decision-making at (or close to) the point of sale is heavily influenced by the customer's automatic processing of the environment (otherwise, why do brands invest so much into increasing their presence and appeal there?). For example, studies have shown that such 'stopping power' can explain between 40 and 70 of all brand choices in a supermarket (fitting with the earlier observation that many of our brand purchases are undecided as we enter the store). Brand properties play an important role as signals in this context. They activate the brand automatically, and by doing so, increase fluency, influence judgement and boost the value perception of that brand choice. These are 'nudges' for the brand, but they also convey its equity.

To optimise the joint effect of these short term and long term levers, we should not only consider the short term need to trigger the brand, but also carefully select the signals that we deploy based on their association with relevant brand values. In his research, the neuroscientist Fuster established that we recode everything that we perceive into mental concepts. As such, we make sense of signals in this manner. For example, a red rose recodes to the concept of romance/love in many cultures and contexts. Since brands are associated with such mental concepts, and also with the needs and goals for which they are a means of achievement or fulfilment, choosing the right signals is key.

What Signals Does a Brand Own?

In order to do this effectively, we need to first understand what brand signals are. These are properties of the brand that have the power to instantly activate the memory of the brand and to trigger brand meaning.

Our recent research amongst marketers found that, in practice, only a limited set of such brand properties are recognised and managed; mostly logos, brand/product claims and slogans. More implicit and subtle signals such as shapes, actors/models used in advertising, style of photography, gestures, advertising scenarios, sounds, materials or fonts are often overlooked in communication planning and brand activities. However, cognitive science shows that it is precisely these implicit properties that offer huge potential and opportunities to significantly increase brand and communication effectiveness, particularly when it comes to how signals can influence purchase decisions. Indeed, in a recent decode study, we found that shapes have a significantly higher branding power than claims or slogans in the markets that were analysed (see Figure 3). For example, Magnum's most iconic asset is the product itself, including its shape, i.e. the brand's distinctiveness is "baked-in" to the product itself. In contrast, the brand's slogan, "For pleasure seekers", has less than half of the branding power of the shape, with 1/3 of people mistakenly linking it to Haagen Dazs.

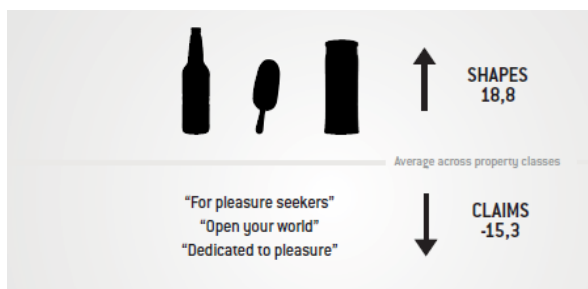


Figure 3: Shapes have higher branding power than slogans

One key reason for the current narrow perspective on brand properties is a misconception as to how the consumer's brain perceives processes, stores and deploys brand properties when interacting with brand touch-points. Understanding the brain's underlying processes responsible for branding and brand activation offers a systematic way to identify brand property and signal candidates and to evaluate their potential beyond the obvious such as brand logos or slogans. We can use insights from neuroscience to help us to identify and manage these brand signals and, hence, become more effective in their use in 'nudging'.

Science has shown that the human eye is not a camera, and that our memory doesn't store snapshots or pictures. Our visual input is, instead, deconstructed based on specialised neurons, some of which deal with colours, some with shapes, and others with orientations, angles or sizes. To identify a brand, the brain uses only a limited amount of this available information – the so-called diagnostic characteristics. Caricatures are a good example of the brain using diagnostic characteristics: while we may have never seen a specific caricature of a given person (e.g. Prince Charles) before, we are still able to automatically recognise who it is if that person's diagnostic characteristics (e.g. large ears) are featured. Or think of the iconic Coca-Cola logo: the picture shown (Figure 4) automatically activates the right brand even though the brand name is not written correctly. If brand recognition was based on picture recognition, then the brain would not be able to recognise this logo as Coca-Cola.



Figure 4: Diagnostic recognition of the Coca-Cola brand

So, the brain uses only those brand properties (signals) having high diagnostic value to recognise a brand – and not pictures. These highly learned, unique, and therefore diagnostic brand properties activate the brand, automatically, in milliseconds, even when consumers do not actually pay much attention.

Applying this learning enabled one of our clients to deconstruct their brand logo into the signals that the visual brain uses for recognition, such as the font or the position of the logo on the pack. An empirical analysis then revealed that the colour of the brand logo had a low diagnostic value – it did not activate the brand. Unlike the diagnostic red colour for Coca-Cola, this particular colour was not iconic for our client's brand. This allowed the marketing manager to change the colour of the brand logo to better convey the new brand benefit, without jeopardising consumer orientation and brand activation. The result was a significant market success that was supported by the ongoing ability to use a colour that is consistent with the product proposition.

Deconstructing the brand properties along these scientific principles not only provides a whole new range of branding opportunities, it also provides guidance and freedom at the same time: when we know which properties drive brand recognition, it becomes clear what 'signals' we should keep, and what can be changed when we plan a packaging re-launch or a new communication platform.

Brand properties not only increase branding power (and hence boost the return on marketing investment) but they also carry brand values and hence can trigger associations with brand values. So, in the context of 'nudging' these can be selected to best deliver in the specific situation. Indeed, neuroscience shows that sensory properties such as shapes or sounds activate those areas in the brain that deal with semantic associations and meaning. Therefore brand properties automatically activate associations with values and benefits.

In other words, effective brand properties not only activate the brand but additionally have the power to convey specific brand values. They convey a message about the brand, whether intended or not. The Tropicana pack re-design case study can help to illustrate this point.



Figure 5: The new Tropicana design conveyed different brand values to the original

By removing the orange with the straw, the pack design not only decreased branding power and confused consumers but, crucially, it also conveyed a different message: the orange with the straw stuck in it stands for freshly harvested, natural, every-day orange juice for the whole family, whereas the fluted glass featured on the new pack conveyed brand values such as exclusivity and sophistication.

So, we should additionally consider the semantic associations – the meaning or message, and the brand values – triggered by each brand property when selecting them for specific use as signals in the decision process.

Branding into Action in Practice

Understanding the branding effectiveness and specific brand value associations of brand properties and signals will empower marketers to select the best candidate(s) to deploy in ‘nudging’, dependent on the specific objectives of the activity:

Step 1

Analyse current and previous brand properties across key touch-points (e.g. packaging, ATL, POS, sponsorship), based on scientific principles and rules, **in order to identify candidates** for relevant brand properties. Do this for both your own brand as well as for relevant competitors.

Step 2

Evaluate (a) the branding power and (b) the fit to brand values of each of these properties using an objective set of consumer data.

Step 3

Steer the development of these assets and their usage. Track development of the identified core assets on a regular basis using an ‘implicit’ measurement to support and help manage this.

Conclusions

- **Marketers should be aware of the significant opportunities to influence brand choice** that are accessible through **understanding the situation and environment at points close to the purchase decision.**
- **Successful ‘nudging’ at these points involves using established and distinct brand properties as signals** that trigger the brand and its appropriate motivating brand values.
- Many marketers are unaware of the full set of brand properties, instead having a narrower focus e.g. brand logos and slogans. To increase a brand’s success, **it is important to know the full set of brand properties for use in signalling, together with their relative strengths of association with the brand and with its key brand values.**

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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 Matrix¹⁸ 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 fails to act

¹⁸ 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."

accordingly when he is late for an important meeting with a prospective employer. Most people might be aware that 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™ Preferences

The BEA™ Preferences explain why and how individual people weigh and integrate the abovementioned social, psychological and economic costs in different ways. The BEA™ 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™ preferences have shown to differ and be manipulable within various different situations and contexts.

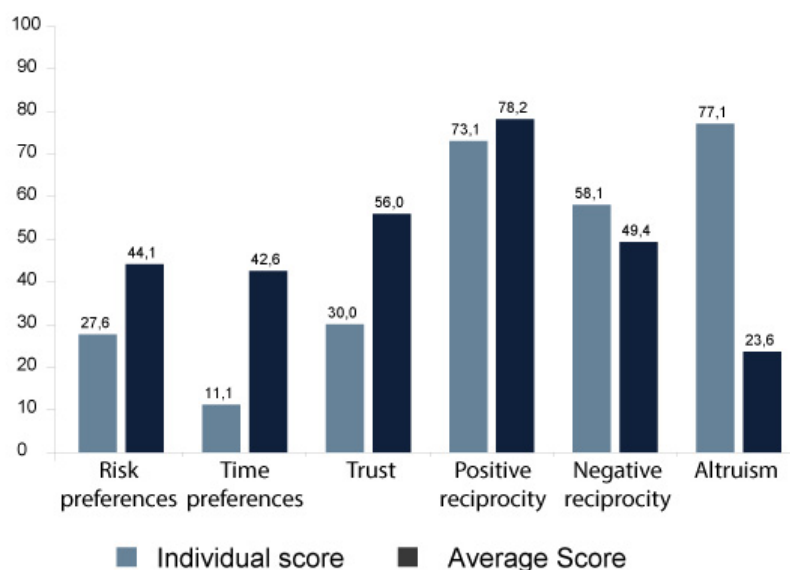


Figure 1: An example comparison between an individual's BEA™ Preferences and those of a population

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**.

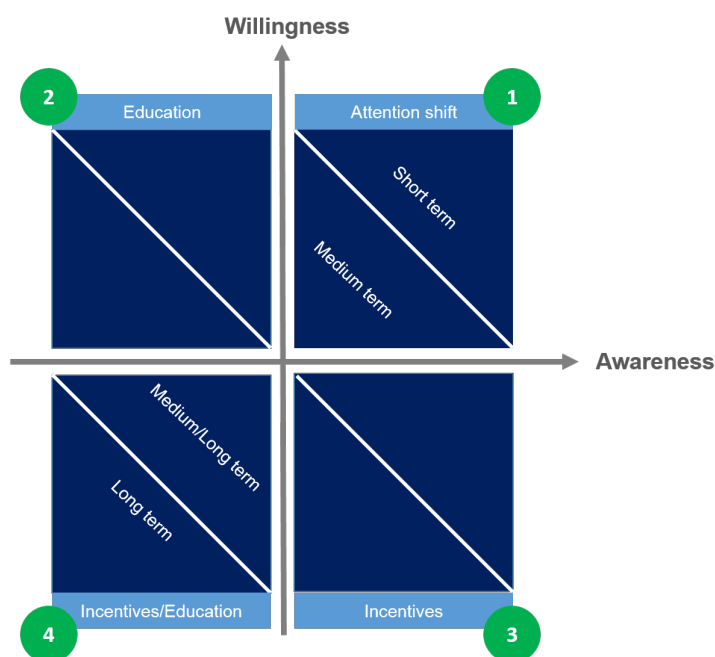


Figure 2: BEA™ Behavioral Change Matrix

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™ 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™ 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™ 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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The authors

Gerhard Fehr is Co-Founder, CEO and Managing Partner of FehrAdvice & Partners AG. He developed the BEATM Behavioral Change Matrix and has applied it in a variety of contexts, e.g. to increase cooperation between nurses and to guide change management processes in organizations.

Alain Kamm is Manager at FehrAdvice & Partners AG and co-author of a study analyzing littering behavior in Switzerland and an expert in designing fair and efficient compensation systems.

Moritz Jäger is Consultant at FehrAdvice & Partners AG and an expert in applying the BEATM Behavioral Change Matrix to societal and organizational challenges.

APPENDIX – AUTHOR AND CONTRIBUTING ORGANIZATION PROFILES

Author Profiles

Alain Samson (Editor)

Alain Samson is the editor of the Behavioral Economics Guide, owner of the [Behavioral Economics Group](#) and Managing Director of Behavioral Science Solutions, the company behind [BehavioralEconomics.com](#). He has worked as a consultant, researcher and scientific advisor on projects in media, consumer goods, higher education, energy, finance 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.

Dan Ariely (Introduction)

Dan Ariely is the James B. Duke Professor of Psychology and Behavioral Economics at Duke University, with appointments at the Sanford School of Public Policy, Fuqua School of Business, the Center for Cognitive Neuroscience, the department of Economics, and the Medical Center. Dan's research focuses on how people actually behave, rather than how they would behave if they were completely rational beings, and with some understanding of human failings, he attempts to offer solutions that could get us to live in a way that is closer to how we want to live.

Dan has published academic papers in economic, medical and psychology journals and is the author of Predictably Irrational (2008), The Upside of Irrationality (2010), The (Honest) Truth About Dishonesty (2012), and Irrationally Yours (2015), four bestselling general audience books about research in behavioral economics. Dan also helped create a documentary movie (Dis)Honesty – The Truth About Lies (2015), about our ability to view ourselves as honorable people while at the same time slipping our sticky fingers into the cookie jar.

Contributing Organizations

Behavioral Science Lab, LLC

Behavioral Science Lab was created to help our clients understand the full picture of how people make decisions in their daily lives. We know that current market research techniques can tell you who, what, when and where, but not truly why people buy or will buy your brand.

That's why we set out to rethink and redesign the entire research process, creating behavioral economics research tools that help our clients understand how people really think. Today, Behavioral Science Lab helps clients redefine how they understand people in their complexity; assisting them to design and create experiences that lead instead of follow customer demand.

With MINDGUIDESM and BrandEmbraceSM, two of our signature tools, we not only provide a clear, holistic and multidimensional view of purchase decision requirements, but we also provide our clients with predictive models that help them satisfy customers' requirements in creating demand and building loyalty.

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

Berkeley Research Group, LLC

Berkeley Research Group, LLC is a leading global strategic advisory and expert consulting firm that provides independent advice, data analytics, authoritative studies, expert testimony, investigations, and regulatory and dispute consulting to Fortune 500 corporations, financial institutions, government agencies, major law firms, and regulatory bodies around the world.

BRG experts and consultants combine intellectual rigor with practical, real-world experience and an in-depth understanding of industries and markets. Their expertise spans economics and finance, data analytics and statistics, and public policy in many of the major sectors of our economy, including healthcare, banking, information technology, energy, construction, and real estate. BRG is headquartered in Emeryville, California, with offices across the United States and in Australia, Canada, Latin America and the United Kingdom.

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

BrainJuicer

BrainJuicer is a strategy and branding consultancy. Our mission is to help clients build famous brands and fuel brand growth, using System 1 research to inform brand planning, optimise execution and monitor its performance.

Founded by John Kearon in 1999, BrainJuicer has grown rapidly to become one of the most influential and well-regarded research agencies. Behavioural Science infuses everything BrainJuicer does – from understanding the latent associations with brands and their distinctive assets for planning purposes, to the measurement of marketing execution (concepts, communications and POS materials) and brand growth performance monitoring.

In 2014, in the prestigious GRIT Report, BrainJuicer was voted the most innovative research company by research suppliers and buyers – for the fourth time in a row. Our reputation for innovation is based on our incorporation of Behavioural Science into our global full-service research business. BrainJuicer's dedicated Brand Strategy & Planning Team help companies put Behavioural Science at the heart of their brands' growth strategy.

BrainJuicer is based in London, with other offices in the US, Brazil, China, Singapore, France, Germany, The Netherlands, Switzerland, and India.

For more information, please visit www.brainjuicer.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.

Decode Marketing

Marketing is about behaviour change. Decode is a consultancy that leverages the latest insights from 'decision science' (cognitive & social psychology, neuroscience and behavioural economics) to increase marketing effectiveness. Understanding what drives decision-making and behaviour change gives greater analytical power, greater predictive power and helps companies to sell more.

Why did Dove's 'real women' campaign work in skincare but not in haircare? Why did the Tropicana redesign pass all the research hurdles yet lose \$27m in sales? How did T-Mobile's relaunch drive a 49% sales increase? The answers lie in decision science.

Decode stays at the leading edge of developments by collaborating with the pre-eminent Universities for neuroeconomics such as the California Institute of Technology. Its consultants still practise, at Professorial and Doctoral level, in academe. Together with practitioners from advertising and brand management they form an interdisciplinary team of experts with a unique blend of capabilities; translating the latest scientific learnings into pragmatic and concrete marketing application. Decode's latest publication is *Decoded: The Science Behind Why We Buy* (Wiley 2013).

For more information, please contact info@decodemarketing.co.uk (UK office) or info@decode-online.de (German office).

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, digitization & 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/