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Edited by
Alain Samson

Introduction by
Gerd Gigerenzer

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Author information:

Alain Samson (Editor)

Gerd Gigerenzer (Introduction)

Rachel Abbott, Liz Barker, Dan Bennett, Zoë Chance, Richard Chataway, Sarah Davies, Sian Davies, Ravi Dhar, Pete Dyson, Gerhard Fehr, Varun Gauri, Vishal George, Tim Gohmann, Christian Goy, Eleanor Heather, Crawford Hollingworth, Moritz Jäger, Alain Kamm, Roger Miles, Ronald S. Mundy, Henry Stott, Richard Thaler, Emma Williams (Contributing authors)

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INTRODUCTION

Taking Heuristics Seriously

Gerd Gigerenzer

A large retailer habitually sends special offers and catalogues to previous customers. Yet unfocused mass mailing is expensive – and annoying for recipients with no further interest in products from the company, who sometimes voice their complaints in online reviews. Thus, the retailer is keen to target offers at "active" customers who are likely to make purchases in the future, as opposed to "inactive" ones. Given a database with tens of thousands of past buyers, how can the marketing department distinguish active from inactive customers?

The conventional wisdom is to solve a complex problem by using a complex method. One such method is the Pareto/NBD model featured in marketing research, where NBD stands for "negative binomial distribution." Readers who are in marketing may be familiar with it; for the others it suffices to say that the model tries to estimate the purchase rates, dropout rates, and other factors from past data, and delivers exactly what companies want – the probability that a customer is still active. Thus, we might expect that every sensible manager applies this or similar analytical models. But that is not the case. Instead, experienced managers typically rely on simple rules. For instance, managers of a global airline use a rule based on the recency of a customer's last purchase (the hiatus rule):

> *If a customer has not made a purchase for nine months or longer, classify him/her as inactive, otherwise as active.*

Such rules that ignore part of the available information are called heuristics. The hiatus rule pays attention to only one good reason, the recency of purchase, and ignores the rest – how much a customer bought, the time between purchases, and everything else that complex algorithms such as Pareto/NDB carefully scrutinize and digest. No fancy statistical software is necessary.

For some behavioral economists, using heuristics seems naïve, even ludicrous. Annoyed by managers who refused to adopt complex models, Markus Wübben and Florian von Wangenheim, two professors of business administration, empirically tested both the hiatus rule and the Pareto/NBD model. Taking an airline, an apparel retailer, and an online CD retailer, they studied how many times the Pareto/NBD model and the hiatus heuristic correctly predicted which previous customers will make purchases in the future. The result was not what they expected (Figure 1). For the airline, the hiatus rule predicted 77% of customers correctly, whereas the complex model got only 74% right. For the apparel retailer, the difference was even larger, 83% versus 75%. Finally, for the online CD retailer, whose managers used a 6-month hiatus, the number of correct predictions tied. More data, more analysis, and more estimation did not lead to better predictions – on average, the simple heuristic that managers used came out first. More recently, a dozen other companies were tested, with the same result.

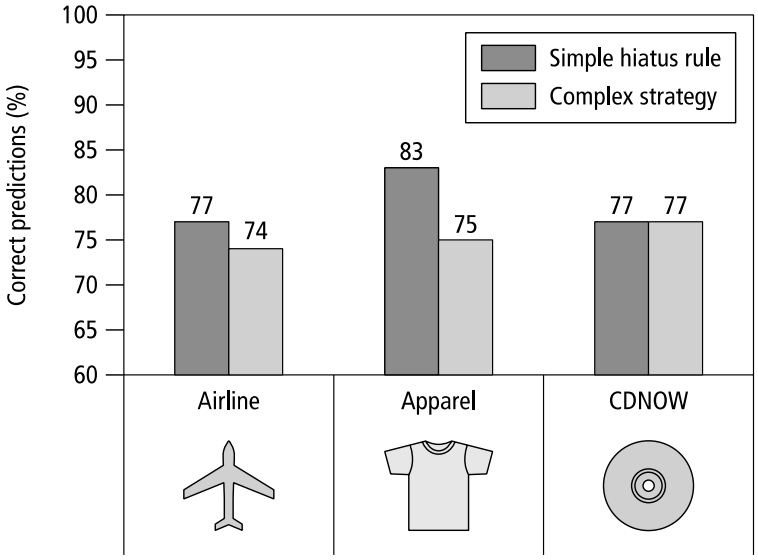

Figure 1: Less is more. The simple hiatus rule predicts customer behavior on average better than the complex Pareto/NBD model. In uncertain worlds, simple heuristics can predict more accurately than complex, fine-tuned models.

The phenomenon illustrated in Figure 1 is called a *less-is-more effect*: Although the complex model has more information than the heuristic and performs sophisticated estimations and calculations, the heuristic nevertheless makes better predictions, and with less effort. Less-is-more effects are nothing new. They were already observed in the early work of Robin Dawes and Robin Hogarth, who showed that linear rules with simple weights can do as well as or better than a multiple regression with fine-tuned beta weights. Interestingly, most textbooks in econometrics do not mention these well-established results, even in chapters that deal with predictive accuracy. To understand in more detail how and why heuristics function, I have systematically studied their use by individuals and institutions. Much of this research was and is conducted at the Max Planck Institute for Human Development by my interdisciplinary group of doctoral students, postdocs, and researchers, from whom I have learned a lot. We have been surprised more than once by the power of simplicity.

To give you a clearer idea of what heuristics are, here are a few other examples. To catch a baseball, rather than trying to calculate its trajectory, outfielders rely on the *gaze heuristic*, fixating their gaze on the ball and adjusting their running speed so that the angle of gaze remains constant. Dogs use the same heuristic to catch a Frisbee by keeping the optical angle constant while running. The pilots of the US Airways Flight 1549 who saved 155 lives in the "Miracle on the Hudson" relied on a version of this heuristic to determine whether they could make it back to the airport after colliding with a flock of geese. Amateur tennis players were asked to indicate the names they recognized of all players competing in the Wimbledon Gentlemen's singles matches, and this information was used to predict the winners. Picking a winning team or player purely on the basis of name recognition – the *recognition heuristic* – turned out to be as accurate as or better than the ATP rankings and the Wimbledon experts' seeding. Doctors use simple decision trees for

various purposes, such as for deciding whether to send a patient to the coronary care unit, inferring whether patients are infected with HIV, or determining whether a person with a sprained ankle requires an X-ray. In all these situations, simple heuristics are relied on to solve complex problems.

Daniel Kahneman and Amos Tversky should be congratulated for promoting the concept of heuristics in psychology and behavioral economics. Yet in their heuristics-and-biases program, heuristics unfortunately became linked to bias and systematic error. Other behavioral economists working in this tradition tell us that people are not only irrational, but predictably irrational; that they use heuristics that lead to systematic blunders; that they are notoriously overconfident; and that the impulsive, intuitive part of their brain ("System 1") misleads them into making snap decisions rather than taking the time to perform slow but reliable calculations. In other words, people rely on heuristics because they lack rationality or, more politely, because using a heuristic saves effort at the cost of a loss in accuracy. That is known as the *accuracy–effort trade-off*, which is often taken for granted as if it were a general law of nature. Yet, as the customer study illustrates, an empirical test calls this assumption into question.

A trade-off between accuracy and effort does take place in situations of "risk" but not necessarily in situations of "uncertainty." The distinction between "risk" and "uncertainty" has been emphasized by Hayek, Keynes, Knight, Simon, and others, but was downplayed in neo-classical economics. I use the term "risk" for situations where we know all alternatives, consequences, and their probabilities for certain. If you're set to play roulette in a casino this evening, you will be facing a situation of risk because you can calculate how much you can expect to lose in the long run. When risks are calculable, heuristics are a poorer strategy than fine-tuned probability models. In situations of uncertainty, by contrast, not everything is known for sure. The most important decisions we face are made under fundamental uncertainty: which medical treatment to follow, whom to marry, where to invest money. Similarly, the managers in the airline and retail businesses have to deal with uncertainty – customer preferences may change for unforeseen reasons. In these cases probability models are not sufficient and heuristics are needed. Under risk, it pays to fine-tune an algorithm to the past sample of available data because the world is known and stable, meaning that the future is like the past. Under uncertainty, where the future cannot be easily foretold, too much fine-tuning on the basis of past data can produce greatly distorted results because it entails "overfitting" the past. The Pareto/NBD model illustrates this danger. The important point is that when dealing with risk one should rely on probability theory and optimize; with uncertainty one should rely on heuristics and simplify. Risk and uncertainty are only poles of a continuum: most of the problems we deal with are a mixed bag, having a few consequences that we can calculate and others that are uncertain.

There is a mathematical principle to understand this continuum between risk and uncertainty. It also helps analyze when making use of less information and effort is a more effective strategy, and when the opposite holds, that is, when complex estimations pay. It goes by the name of the *bias–variance dilemma* and is well known in machine learning but less so in behavioral economics. The equation is: *total error* = $(bias)^2$ + *variance* + ε. This is not the place to delve into mathematics, but an analogy will make the point. Look at the dartboards in Figure 2. Ms. Bias, the player on the left, exhibits a systematic *bias* by consistently throwing too low and too much to the right of the bull's eye. A bias here is defined as the distance between the bull's eye and the mean dart position. At

the same time, she shows little variability in her throws, as seen by the fact that all the darts end up bunched closely together. This variability is called *variance*, that is, the variance of the individual throws around their mean. Now consider Mr. Variance, whose darts landed on the right-hand dartboard. His throws show no bias; the darts line up exactly around the bull's eye. However, he shows considerable variance in his throws. As one can see, despite her systematic bias, Ms. Bias scores better than Mr. Variance.

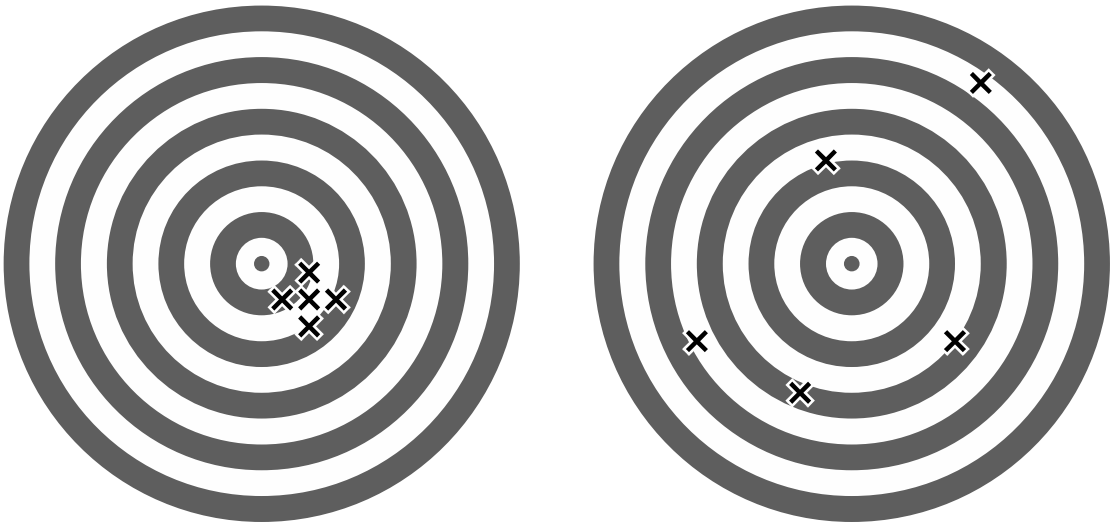

Figure 2: A visual depiction of the two errors in prediction, bias and variance. The bull's eye represents the unknown true value to be predicted. Each dart represents a predicted value, based on different random samples of information. Bias is the distance between the bull's eye and the mean dart location; variance is the variability of the individual darts around their mean.

The dart analogy helps to make a general point. In prediction, just as in darts, the total amount of error has two sources, bias and variance. Each dart corresponds to an estimate made from a random sample. The more that each estimate is fine-tuned to a specific sample, which is what a complex model does, the more the results will vary from sample to sample. That increases variance. A heuristic with fixed parameters – such as the hiatus rule, which sets a fixed hiatus of *x* months to identify a future customer – has no variance but only bias. It corresponds to the left-hand dartboard, but with all darts landing on the same spot. A complex model such as the Pareto/NBD model likely has a smaller bias but its fine-tuning generates errors due to variance, as illustrated by the right-hand dartboard. Variance reflects oversensitivity to the properties of a specific sample (also known as overfitting). The larger the sample and the smaller the number of free parameters, the lower the error due to variance. That should be sufficient to give you a general idea of why and when "less is more". To make good decisions under uncertainty, one needs to make a trade-off between bias and variance, that is, between considering too little and too much information. In other words, one needs to follow on Einstein's recommendation to make everything as simple as possible, but not simpler – in this case by ignoring part of the information.

In my opinion, behavioral economics could profit from rethinking some of its basic assumptions.

Here are a few thoughts.

1. Take Heuristics Seriously

Herbert Simon, one of the founders of behavioral economics, held that heuristics were rational tools in situations of uncertainty. In AI, heuristics are used to make computers smart, yet in some corners of behavioral economics, heuristics are still seen as the reason why people aren't smart. The catch phrase is that heuristics are "sometimes" useful but often lead to serious errors. That is so true that it cannot be wrong. But the same truism applies to all complex models, from Pareto/NBD to multiple regression to Bayes. The fact that complex, fine-tuned algorithms tend to fail in situations of uncertainty should be a take-home message from the last financial crisis, where ratings, risk-weighted measures, and value-at-risk computations failed. Fine-tuning can make a system fragile and at the same time create illusions of certainty.

Harry Markowitz was awarded the Nobel Memorial Prize in Economic Sciences for his mean-variance investment portfolio. When he made his own investments for retirement, he presumably used his optimization method, wouldn't you think? In fact, he used a simple heuristic known as *1/N*: distribute your money equally over the *N* options. Robert Merton, by contrast, stuck to his fine-tuned optimization technique, which worked well until something unexpected happened; the resulting disaster of Long Term Capital Management is history.

To rethink behavioral economics, we need to bury the negative rhetoric about heuristics and the false assumption that complexity is always better. The point I want to make here is not that heuristics are always better than complex methods. Instead, I encourage researchers to help work out the exact conditions under which a heuristic is likely to perform better or worse than some fine-tuned optimization method. First, we need to identify and study in detail the repertoire of heuristics that individuals and institutions rely on, which can be thought of as a box of cognitive tools. This program is called the analysis of the *adaptive toolbox* and is descriptive in its nature. Second, we need to analyze the environment or conditions under which a given heuristic (or complex model) is likely to succeed and fail. This second program, known as the study of the *ecological rationality* of heuristics (or complex models), is prescriptive in nature. For instance, relying on one good reason, as the hiatus rule does, is likely to be ecologically rational if the other reasons have comparatively small weights, if the sample size is small, and if customer behavior is unstable. Such a systematic study needs to be informed by two methodological principles.

Prediction, Not Data Fitting. As the customer study illustrates, a model should be evaluated on the basis of its ability to make accurate predictions, not to fit past data. Evaluation can be done by cross-validation or other means. Fitting data means little in itself, because R^2 in fitting can always be increased by adding more parameters. Data fitting corresponds to hindsight, prediction to foresight.

Competitive Testing, Not Null Hypothesis Tests. A model should be tested against competing models, as shown in Figure 1, and not simply by ascertaining whether its performance is significantly better than chance.

Both principles should become standard in behavioral economics.

2. Take Uncertainty Seriously

I am currently working with the Bank of England on a program called "Simple heuristics for a safer world of finance." In much of banking, including bank regulation, the belief still reigns (i) that complex problems always demand complex solutions, and (ii) that these solutions can be found in methods developed for situations of risk, as opposed to uncertainty. And when an existing regulatory framework does not work, then the idea is to make it more complex instead of simpler. For instance, the 1988 Basel I financial regulatory framework was 30 pages long; the revised framework Basel II in 2004 filled 347 pages; and its 2010 successor, Basel III, came in at 616 pages. The costs of this steadily rising regulatory tower are not trivial. To comply with the Basel III requirements and maintain documentation, a mid-sized European bank (with total assets over 1 billion euros) needs to finance about 200 full-time jobs. These costs would be justified if future financial crises were thereby prevented. Yet that does not appear likely. For instance, to estimate their risks, banks still rely on the same value-at-risk estimates that have prevented no crisis to date and – in Nassim Taleb's words – have missed every Black Swan. Today, a large bank has to estimate thousands of risk parameters and, because these are dependent, a covariance matrix in the order of millions. These estimates are based on fitting short historical samples, which amounts to considerable guesswork bordering on astrology. The size of the error due to "variance" is unknown but probably astronomical. In addition, because the banks are allowed to use their own "internal models" to generate these estimations, they can twist and tinker the results in the direction they want, that is, toward smaller capital requirements. As a result of this unnecessary complexity and inefficient regulation, financial systems today do not appear to be better safeguarded than before the crisis.

Mervyn King, former governor of the Bank of England, argued in favor of a simple leverage ratio, such as 10 to 1, to make the financial system safer. In our work, we showed that for the world's most complex banks, simple unweighted measures can predict bank failure better than the usual complex risk-weighted measures. This result conflicts with the current "risk-sensitive" doctrine that focuses on reducing bias but forgets about the massive estimation error incurred by overfitting past data, that is, variance. In 2012, Andy Haldane, then Director of Financial Stability at the Bank of England, devoted his Jackson Hole Talk (at the yearly meeting of central bankers) to heuristics, arguing that the fine-tuned complexity of models is part of the problem, not the solution.

3. Beware of the Bias Bias

In some corners of behavioral economics, researchers collect lists of people's biases, 175 of which are featured on Wikipedia. According to the *Economist*, human beings are fallible thinkers, being lazy, stupid, greedy, and weak. According to *Newsweek*, we are woefully muddled information processors who often stumble along ill-chosen shortcuts to reach bad conclusions. In their book *Nudge*, Thaler and Sunstein jokingly compare us with Homer Simpson, a character prone to bumbling stupidity, in order to justify governmental paternalism that protects us from ourselves. As you may know, this is not my view of humans. We already have plenty of paternalism, including an excess of surveillance, and certainly do not need more of it in the 21st century.

The bias bias is the tendency to diagnose biases in others without seriously examining whether a problem actually exists. In decision research, a bias is defined as a systematic deviation from (what

is believed to be) rational choice, which typically means that people are expected to add and weigh all information before making a decision. In the absence of an empirical analysis, the managers who rely on the hiatus heuristic would be diagnosed as having committed a number of biases: they pay no attention to customers' other attributes, let alone to the weight of these attributes and their dependency. Their stubborn refusal to perform extensive calculations might be labeled the "hiatus fallacy" – and provide entry number 176 in the list on Wikipedia. Yet many, including experts, don't add and weigh most of the time, and their behavior is not inevitably irrational. As the bias–variance dilemma shows, ignoring some information can help to reduce error from variance – the error that arises from fine-tuned estimates that produce mostly noise. Thus, a certain amount of bias can assist in making better decisions.

The bias bias blinds us to the benefits of simplicity and also prevents us from carefully analyzing what the rational behavior in a given situation actually is. I, along with others, have shown that more than a few of the items in the Wikipedia list have been deemed reasoning errors on the basis of a narrow idea of rationality and that they can instead be easily justified as intelligent actions (Gigerenzer et al., 2012).

The take-home message: If you are dealing with a situation of risk, in which all consequences and probabilities are known and where the future is like the past, then look for fine-tuned solutions such as complex optimization techniques. If, however, you are dealing with situations of uncertainty, then look for sufficiently robust solutions, including simple heuristics. Take heuristics seriously, take uncertainty seriously, and beware of the bias bias. These are three steps toward rethinking behavioral economics.

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PART I – EDITORIAL

Behavioral Economics in Perspective

Alain Samson
(alain@behavioraleconomics.com)

Behavioral Economics in 2016

Since the publication of last year's edition of the Behavioral Economics (BE) Guide, behavioral science has continued to exert its influence in various domains of scholarship and practical applications. The Guide's host, behavioraleconomics.com, has grown to become a popular online hub for behavioral science ideas and resources. Our domain's new blog publishes articles from academics and practitioners alike, reflecting the wide range of areas in which BE ideas are generated and used. We recently launched a new behavioral science job board which allows employers to advertise open positions and jobseekers to upload their resume. Our associated LinkedIn network, the Behavioral Economics Group, passed the 25,000-member mark at the end of 2015. The 2014 and 2015 BE Guides have become a very popular download and serve as an educational tool, a resource and inspiration to people in academia, business, and public policy.

Past editions of the BE Guide focused on BE theory (2014) and behavioral science practice (2015). The aim of this year's issue is to provide different perspectives on the field and novel applications. This editorial[1] offers a selection of recent (often critical) thinking around behavioral economics research and applications. It is followed by Q&As with Richard Thaler and Varun Gauri. The subsequent section provides a range of absorbing contributions from authors who work in applied behavioral science. The final section includes a further expanded encyclopedia of BE (and related) concepts, a new listing of behavioral science events, more graduate programs, and a larger selection of journals, reflecting the growth of the field and our continued efforts to compile relevant information.

Generalizability and Replicability in Psychology and Economics

Due to their broad relevance and appeal, publications on research methodology and metascience often have a very large impact within academic circles. Since the last edition of the BE Guide, there have been a number of promising papers on generalizability and replicability in both psychology and economics. An interesting meta-analysis in economics, by Daniel Herbst

[1] It would be rather presumptuous of me (or at least very ambitious) to attempt a systematic or comprehensive review of theoretical trends in BE that have emerged since the publication of the last BE Guide. If you would like to stay up to date with the latest scholarly theories, I would recommend browsing recent issues of relevant academic journals (see Journals section in this Guide), new publications listed in leading economist and psychologists' Google Scholar profiles (Dan Ariely, Colin Camerer, Ernst Fehr, Gerd Gigerenzer, Daniel Kahneman, George Loewenstein, Matthew Rabin, and Richard Thaler, to name a few), or highlights from recent events (see Events section in this Guide). More popular sources of ideas include various excellent blogs (Behavioraleconomics.com Blog, Dan Ariely's Blog, Decision Science News, Evonomics, Marginal Revolution, Misbehaving Blog, Psychology Today, and the Stirling Behavioral Science Blog, to name a few).

and Alexandre Mas (2015), examined the productivity spillover effect—the extent to which a worker's productivity affects the productivity of co-workers. Results indicate that laboratory studies in this particular domain of research generalize quantitatively very well to field ('real-world') studies. Gary Charness and Ernst Fehr (2015) consider the results encouraging, especially in view of the issues that are usually raised in the lab-to-field generalizability debate. One study (Mitchell, 2012) that had previously added to this debate found the correlation of lab-field effects to be quite low in social psychology, one of BE's allied disciplines.

Scholars are taking a greater interest in the generalizability across cultures of insights generated by behavioral economics. Savani et al. (2016) review the cultural context of judgment and decision-making (JDM), particularly the domains of risky decisions, preference-choice consistency, causal attributions, and optimism. The authors call for more research that identifies specific cultural factors (values, norms, self-construals, schemas, etc.) that may explain findings in the JDM arena.

Armin Falk and collaborators (2015) have presented fascinating evidence on the cross-cultural variability of the types of preferences that behavioral economists frequently study: Preferences about risk, the timing of rewards (future vs. present), altruism, reciprocity (positive and negative), and trust. Their dataset includes a sample of 80,000 people from 76 countries who responded to a behaviorally validated Global Preference Survey (GPS; see derived European examples for which data were available in Figure 1). This provides for a new reading of national and regional propensities and shows, for example, that that Northern European and Anglo-Saxon countries appear to be the most patient in terms of preferences about the timing of rewards. These countries are also the most negatively reciprocal. Preferences often vary more within countries than between countries. At the individual level, relationships between preferences and gender, age, and cognitive ability were also analyzed. Results reveal that throughout the world there are significant associations between cognitive skills, risk preferences, and patience, while other relationships vary substantially between regional cultures.

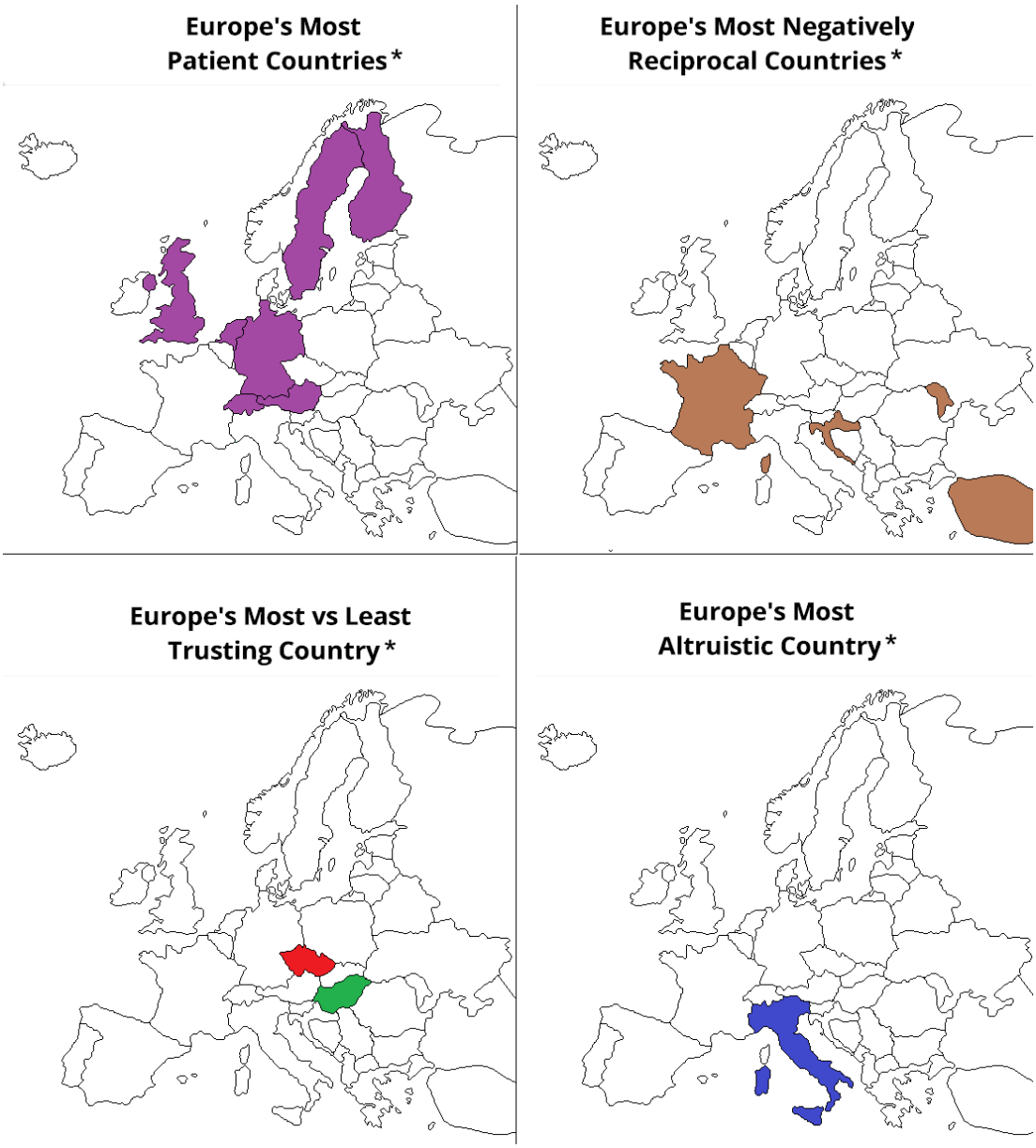

Figure 1: European map of preferences derived from Falk et al. (2015).
*** *Note:*** Classifications on this map are for illustration purposes only (do not represent statistically significant differences) and are based on a sample of European countries covered by the GPS data. Missing countries are Belgium, Denmark, Iceland, Ireland, Luxembourg, and Norway in Western Europe; Albania, Belarus, Bulgaria, Latvia, Macedonia, Montenegro, Slovakia, and Slovenia in Eastern Europe and the Balkans.

Two important papers on the replicability of experiments were published in the journal *Science.* The first of these tackled the discipline of psychology. A large number of teams, led by Brian Nosek (Open Science Collaboration, 2015), replicated 100 correlational and experimental studies previously published in social, cognitive, and general psychology journals. Fewer than 40% of studies that originally reported statistically significant results could be replicated. Subsequent comments by Daniel Gilbert and colleagues (2016) identified several methodological weaknesses

in this metascientific study that may have led to an underestimation of psychological science's reproducibility. Regardless of its potential shortcomings, however, the results should be cause for reflection. A second study by Colin Camerer et al. (2016), investigating the replicability of 18 economics experiments, found a replication rate of about 60%—an acceptable outcome, according to the authors.

So what's the issue with replication rates? Of course, there's a possibility of problems with research integrity (Mazar & Ariely, 2015) or bias (Nuzzo, 2015), but at its core the issue has to be about methodology and statistics. In response to meta studies' findings, Eric Luis Uhlmann, an INSEAD economist (Bohannon, 2016), notes that "it should not be surprising or discouraging that a substantial number of scientific findings across fields prove difficult to replicate." Moreover, conclusions should be based on multiple replication attempts; after all, "small samples are noisy and human populations are diverse."

Richard Nisbett would agree. In a conversation with Edge.org (Nisbett, 2016), the social psychologist implies that it's the bigger picture that matters. While sometimes an experiment might not replicate due to differences in context, accepted theories are based on more than one study. The body of work upon which they are based itself contains 'noise' partly in the form of replication failures. Both Gilbert et al. and Nisbett point to the nature of the population from which samples are drawn as one source of differences in results. Variations in subjects' cultural, demographic, and dispositional backgrounds can be major determinants of outcomes in behavioral experiments.

What are the implications of this problem for the flourishing 'test and learn', 'relentlessly empirical' approach in applied behavioral science that relies on experiments in the real world (see BE Guide 2015)? Field-to-field replication should be just as (or more) difficult. In practice, the test and learn approach often aims to investigate whether a theory developed in the lab can be used in a particular real-world context with a particular target population. In some cases, those target populations are diverse, and any changes in context would require re-testing.

It is tempting for practitioners to think of behavioral insights as one-size-fits-all solutions. However, as pointed out in Johnson and colleagues (2012; see BE Guide 2015), choice architects need to design decision environments in light of knowledge not only about the decision environment, but also about the characteristics of the decision-makers. They should know how the target population will make sense of and process information, as well as what their goals are; older people, for example, may rely more on System 1 thinking and favor simpler choices (Hollingworth & Barker, 2015).

After the Nudge

How effective are nudges in the long run? The characteristics of the decision-maker may not only influence responsiveness to choice environments, but they can also play a role in determining whether an intervention leads to lasting behavioral change. While this a less central factor for infrequent decisions, such as pension enrolment, it is an important consideration in other domains, such as food choices. Consider new work by Eric VanEpps and fellow researchers (in press) at Carnegie Mellon University. The team conducted field studies at cafeterias and investigated the relationship between time delays and meal content. In one of their

experiments, staff at a large company were randomly assigned to placing orders either in advance (before 10am) or at lunchtime (after 11am). People in the advance order group ordered lunches that were 30 calories lower on average (approximately 5% of the lunch calorie content for this sample). Future longitudinal research might establish whether implementing an advance ordering system would lead staff to make lasting dietary changes.

Erin Frey and Todd Rogers (2014) present a useful framework showing how treatment effects persist after an intervention has stopped. They identify four pathways: Habit formation (repeated and automatic behavior), what or how people think (attitudes and beliefs), future costs (material resources, time, attention, self-control, or effort), and external reinforcement (exposing people to settings or experiences, such as social situations, which strengthen the desired behavior). Frey and Rogers (p. 174) use an energy-efficiency company (partnering with utilities to provide customers with feedback about their energy usage) as an example for their framework (see Table 1). Critics of a nudging approach to behavior change have noted that nudges may backfire (Mols et al., 2015; see also my discussion in last year's BE Guide) or lead to lasting behavior only if decision-makers' attitudes, knowledge, or beliefs are changed as well. For example, the use of social cues as a nudge to affect people's choices is unlikely to have a lasting effect if social norms are not internalized.

Four Persistence Pathways		
Pathway	***Definition***	***How pathway may contribute to energy savings persistence***
Habit	**Treatment produces an automatic tendency to repeat a particular behavioral response, triggered by a stable context in which the behavior is performed.**	**Home energy reports (HERs) may make people consciously turn off the lights when they leave rooms; eventually the contextual cue (exiting the room) automatically triggers the behavior (turning off lights).**
Changing How or What People Think	**Treatment permanently changes an element of how or what people think (for example, beliefs, identities, interpretations) that is causally consequential for the target behavior.**	**HERs may make people realize they are not as energy efficient as they had believed, which prompts them to continuously look for conservation opportunities.** **HERs may change people's identities and make them come to see themselves as "energy efficient" people, which influences future energy conservation.** **HERs may make people interpret a warm house in the summer in a more positive way ("I'm saving energy"), thus reducing the intensity of their air conditioning use.**
Changing Future Costs	**Treatment induces people to perform behaviors that change the costliness of a future target behavior; the treatment may decrease the cost of performing a target behavior, or increase the cost of failing to perform a target behavior.**	**HERs may make people purchase energy-efficient appliances; this makes saving energy in the future require less effort and thought because it happens automatically.**

Pathway	*Definition*	*How pathway may contribute to energy savings persistence*
External Reinforcement	**Treatment induces people to perform a behavior that then exposes them to on-going external processes (including social processes) that they would not have been exposed to otherwise; these external processes cause the changed behavior to persist.**	**HERs may make people buy energy-efficient appliances with rebates, which cause people to be added to marketing lists for other energy efficiency products, which they may subsequently purchase and which regularly remind them of the need to conserve energy. HERs may make people talk about energy efficiency with their friends and family. These friends and family may then continue to ask what the OPOWER customers are doing to conserve energy, which causes them to continue to reduce their energy use.**

Table 1: Four persistence pathways (Frey & Rogers, 2014, p. 174)

Gerd Gigerenzer (2015) has written that while he does not wish to argue against nudging per se, he does oppose the libertarian paternalistic justification of nudging on the basis of people's lack of rationality. This justification blames the individual mind for societal problems, "closing our eyes to institutions that steer individual behavior so that they can take advantage of it, and it misleadingly suggests that a more sustainable solution, educating people, is a hopeless endeavor" (p. 363).

Regardless of the philosophical view that one chooses to adopt, clearly not all nudges and behaviors are created equal when it comes to lasting behavior change. Daniel Mochon et al. (2015), for example, conducted a study with a six-month intervention asking participants to pre-commit to increasing their purchase of healthy groceries by five percentage points. Failure to reach this goal would incur a penalty of losing food discount benefits. The experiment found improvements in healthy shopping, which persisted for another six months following the intervention. The authors of the research reckon that the extended time period of the intervention is likely to have contributed to the good post-intervention results. In addition, compared to other domains of health behavior, such as exercise, food purchasing habits may be more automatic and rely less on ongoing self-control, which makes lasting change more likely.

The extent to which behavior change endures is also a product of how nudges are defined and applied. Behavioral science insights can and should be applied not only to superficial aspects of the decision architecture, but also to the objects and processes of interaction in decision-

making, i.e. behavioral design (e.g. Naumof, 2015). For example, carmakers and insurance companies can go beyond road safety nudges by using psychological insights in the behavioral design of automobiles, leading to potentially more sustainable behavior change, due to technological change. Behavioral design applies to the entire decision-making context to support action, including the product itself, the user, the surrounding decision-making environment, and the action the user is taking (Wendel, 2013). This approach benefits from a broader conception of human behavior and behavior change, such as the interaction between natural and social science approaches embraced by the UK's Behavioural Design Lab.

The question of whether nudges or choice architecture design produces lasting changes in behavior is of essential importance to BE practitioners in the public sector, especially in regulated markets such as financial services, where BE principles have been (nominally) embraced. The depth of political commitment to BE in principle, rather than as an expedient, remains open to question (see Shafir's comments in the Financial Regulation section below). The continuing impact of BE in the public policy domain is considered next.

Behavioral Science and Public Policy

The practical uses of behavioral economics and related disciplines are increasingly evident in public policy. In this domain, BE can help in the development of new policy tools, improve predictions about existing policies' effects, and generate new welfare implications (Chetty, 2015). In September of 2015, an event at the Brookings Institution discussed policy lessons from behavioral economics in the domains of labor, tax, personal finance, and health. The same month, and occurring a year after the creation of the Social and Behavioral Sciences Team, President Obama signed an executive order on "using behavioral science insights to better serve the American people." The team has already implemented a number of successful programs that encourage behaviors ranging from college enrollment to double-sided printing.

An initiative with more international scope was launched by the World Bank, which created a new Global Insights Initiative (GINI). Its mission is to assist governments in the application and testing of behavioral insights, recognizing the complementary nature of traditional economic interventions and behavioral approaches in problems relating to development. The World Bank has adopted a more culturally informed approach to BE. The lead economist in the bank's research department, Karla Hoff (World Bank, 2016), refers to this perspective as the "Second Strand of Behavioral Economics."

In Europe, the European Commission's behavioral consumer research framework has already produced a few interesting insights into domains such as food labels, online gambling, and bank fees. A 2016 report by the European Commission's Joint Research Centre provides an account of European behavioral initiatives and makes recommendations for the future (Sousa Lourenço et al., 2016). Furthermore, a new round of EC-funded projects kicked off in 2016 and will be undertaken by a handful of research partnerships, including a consortium led by the London School of Economics.

The UK's Behavioural Insights Team (BIT), or 'Nudge Unit', remains one of the organizations at the forefront of policy-oriented behavioral research and application. Shortly after the publication of last year's BE Guide, David Halpern (2015), head of the BIT, published the book

Inside the Nudge Unit. According to the BIT, its approach has saved the UK's public purse millions of pounds and has improved citizens' health, wealth, and wellbeing in the process. But behavioral policies have their limits, as *The Economist* (2015) observes. A more critical take on behavioral insights in public policy suggests that this trend has "promised to redefine the relationship between science, politics and citizens during a period of increasing public skepticism towards both, new public management as well as evidence-based policy" (Strassheim et al., 2015, p. 251). From this point of view, applied behavioral science, specifically nudging, may serve as a convenient shortcut to revive evidence-based policy.

A highly anticipated recent event in the world of behavioral science and public policy was the 'Behavioural Exchange' conference held in London, attracting eminent speakers and attendees from around the globe. The conference's most popular session was probably Daniel Kahneman (the psychologist who, along with Amos Tversky, has helped shape BE) being interviewed by Richard Thaler (the economist widely recognized as the founding father of BE). The interview addressed a diverse selection of topics (Kahneman, 2015).

Of particular interest to practitioners was one of its core themes, decision-making in organizations. For consultants who seek to advise organizations about improving decision-making, the actual implementation of ideas often poses substantial challenges, and introducing change is fraught with difficulty. According to Kahneman, this is especially true if change goes against established procedures and if a stakeholder's status, prestige, or power is at stake. Kahneman argues that potential losers will fight a lot harder against change than winners (loss aversion). He advises professionals faced with the task of introducing change to identify first potential losers and the resistance they might encounter. Kahneman also revealed his recent interest in the problem of *noise*. In contrast to bias, noise consists of a range of non-systematic deviations of decisions across independent decision-makers, such as people in an organization. Additionally, noise is often unrecognized, but it can be addressed by breaking problems into elements and dealing with them sequentially and independently.

Debiasing

Reducing bias and noise is about adding structure to decision-making and recognizing human shortcomings. The practice of bias reduction has been referred to as debiasing. In the most simple terms, behavioral interventions can be designed to counteract the source of biases in the intuitive System 1 by activating System 2 reflection (traditional debiasing), or by working with existing biases to eliminate other biases (counter-biasing, as argued by Cristiano Codagnone and colleagues [2014] in a previous edition of the BE Guide). Cognitive Bias Modification (CBM) techniques, for example, sometimes work with attention bias by retraining people's automatic attentional process involving emotionally salient cues, such as alcohol among drinkers (Eberl et al., 2013). The LSE's Paul Dolan has recently launched such an online tool to help people reduce their alcohol consumption.

The legal scholars Jolls and Sunstein (2004) define the debiasing of boundedly rational actors as "using techniques that intervene in and alter the situation that produces the boundedly rational behavior, without operating on the degree of motivation or effort an actor brings to the task" (p. 16). People are asked to consider particular sorts of information or arguments designed to

reduce bias. For example, persons involved in a lawsuit may be asked to consider reasons why the judge might rule against them, in order to reduce the self-serving bias (a perception of events that favors the subject). To give another example provided by Gerd Gigerenzer (1996) in response to Kahneman and Tversky (1996), people are less likely to exhibit biases, such as overconfidence, under certain conditions, if they are given a problem that involves frequencies rather than probabilities.

In their definition of debiasing, Jolls and Sunstein deliberately exclude practices that involve extrinsic factors, such as financial incentives or punishments. Racial bias, for example, could be addressed by creating financial penalties, but would this effectively combat unconscious processes, especially in the long run? There are undoubtedly better approaches. Consider work by Tinna Nielsen (2016), who helps organizations increase gender equality at work. Nielsen's behavior change approach involves different types of 'inclusion nudges', such as what the author calls "feel the need" nudges that make people aware of their own biases. For example, a behavior change consultant can make identical CVs with different pictures, genders, and names. Key decision-makers are then asked to rate them and often discover that their rating of candidates was influenced more by the gender, appearance, or name than by performance or competences. The resulting cognitive dissonance among managers encourages reflection and behavior change.

There has been a debate about human agency in applied behavioral science. Does the practice of nudging undermine it? Cass Sunstein (2015) has argued that it does not. The question of agency can also be applied to debiasing. When people are sufficiently motivated, they may self-debias (e.g. Arlen & Tontrup, 2013). In science, problems with the replicability of studies have contributed to a growing call for self-policing and self-debiasing (see Table 2; Nuzzo, 2015). Alternatively, and taking the domain of eating again, Brian Wansink and colleagues have shown how cues ranging from plate size (Wansink & van Ittersum, 2006) to a waiter's BMI (Döring & Wansink, in press) non-consciously affect the amount and quality of how much food people consume—their 'mindless eating'. Just as recent trends like 'bowl food' (Baraniuk, 2016) may show that how food is served can affect food appreciation, health-conscious consumers can debias their behavior by not only changing what they put into their stomachs, but also how they eat. (This may be helped by practices and philosophies such as mindfulness, which is itself going increasingly mainstream [Booth, 2015].)

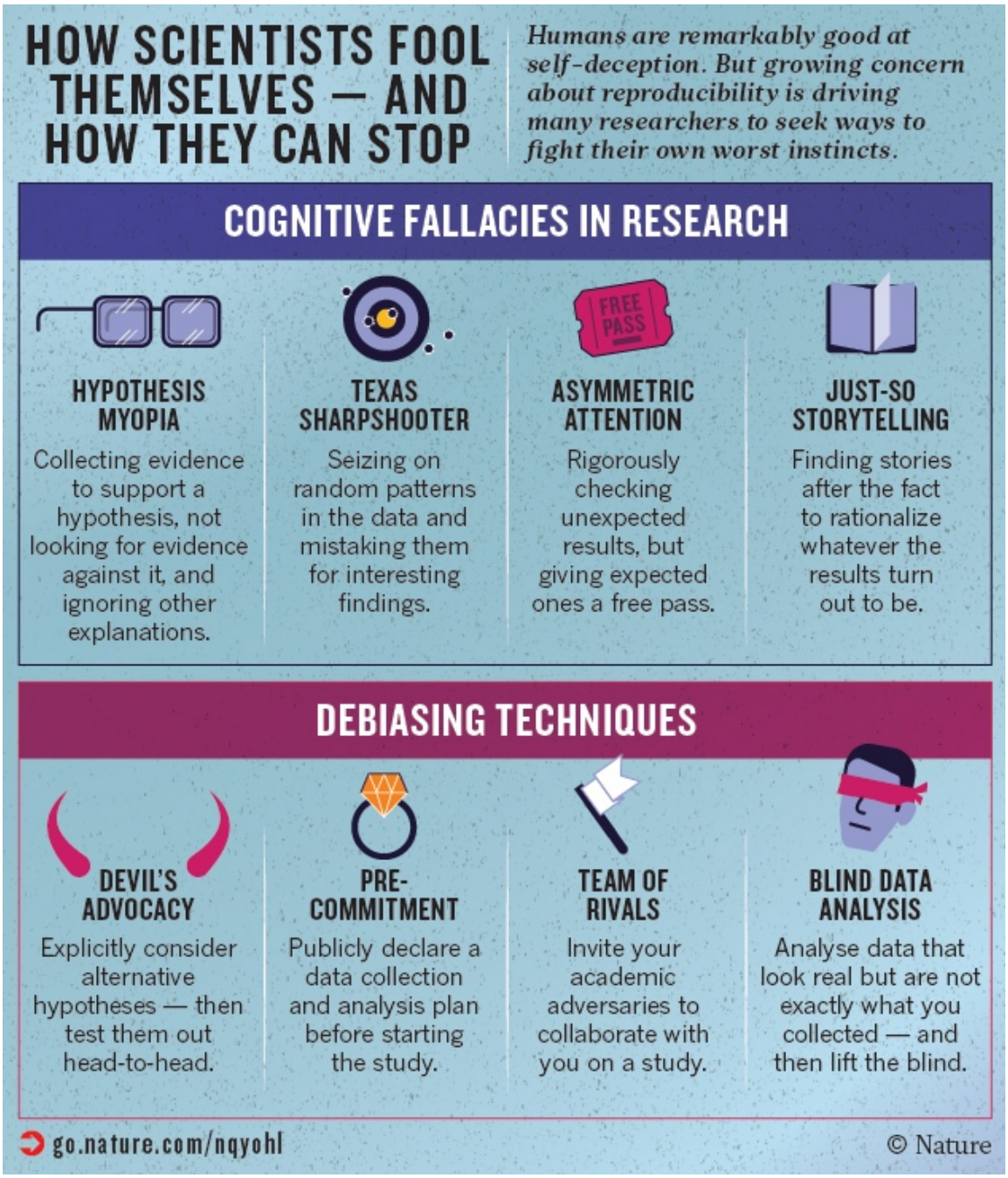

Table 2: Scientists' cognitive biases and debiasing techniques (Nuzzo, 2015; Reprinted by permission from Macmillan Publishers Ltd: Nature News. doi:10.1038/526182a).

'Fast & Frugal' vs. 'Heuristics & Biases'

Most of us would probably agree that bias is or can be a problem. Scientific fields of inquiry are themselves subject to bias. One very pervasive and systemic example is publication bias—the selective reporting of research. The behavioral sciences are not immune to this problem (Gigerenzer, 2015). Bias is also evident in humanity's history of discrimination against certain social groups, for example. It's difficult to argue against the usefulness of debiasing in science, the justice system, or hiring practices. However, the growing popularity of behavioral economics

may have led to an obsession with individual-level cognitive biases that explain deviations from a rational norm. Jason Collins (2015), who echoes Gerd Gigerenzer's critical voice in this Guide's introduction, likens the bias-focused paradigm to ancient astronomy in which celestial objects were thought to orbit the Earth and the apparent retrograde motion of planets was explained by adding mini-orbits upon orbits (epicycles). If behavioral economics needs to resort to dozens or even hundreds of biases to explain human behavior (to be fair, most of them are from psychology, not BE), perhaps there's something wrong with its theoretical foundation. Is a focus on biases a useful model of human psychology and behavior? According to Laurie Santos and Alexandra Rosati (2015), who provide an extensive review of economic decision-making in humans vs. nonhuman primates, many biases that appear to be irrational from a 'rational choice' perspective are rational from a biological or an evolutionary point of view.

Identifying biases depends on the problem that is posed in the first place and its context, an issue addressed by Gerd Gigerenzer's 'fast and frugal' perspective (see introduction to this Guide). Take the recognition heuristic, for example (which is conceptually similar to the availability heuristic in Kahneman and Tversky's 'heuristics and biases' tradition). In contexts of uncertainty, where the recognition of a product is correlated with quality and other information is not available, it is a good strategy for a consumer to choose a product that s/he recognizes. In contexts where this correlation is low, and when other information about the product is readily available, recognition is not such a good heuristic. Bounded rationality, in this view, is the result of our organism's adaptation to a world that does not provide perfect conditions for fully rational actors in the normative sense. Humans are ecologically rational—we have evolved to make decisions within the opportunities and constraints imposed by our environment and organism. In his interview at 'Behavioural Exchange' 2015, Kahneman encouraged people to consider a problem *before having an intuition* about it rather than thereafter. Gigerenzer implies that sometimes we should let *intuition come first*.

Is Gigerenzer's approach to decision-making completely at odds with Kahneman and Tversky's (or 'mainstream' BE's) focus on heuristics and biases? To some people in the applied behavioral sciences, the two perspectives may just be different sides of the same coin. An improved understanding of why and when certain types of decision-making processes are used, however, should be of great value to academics and practitioners alike. Take contexts that involve time pressure, such as hospital emergency rooms, where critical decisions with uncertain outcomes have to be made quickly. Gigerenzer's work (Gigerenzer & Kurzenhäuser, 2005) suggests that understanding decision-making under those conditions, as well as working with a fast and frugal approach, can improve outcomes vis-a-vis classical decision-making.[2]

[2] Even consumers faced with the uncertainty that arises in *complex* decisions (either in terms of process or objects) can benefit from more intuitive decision-making. One study found decisions about paintings, apartments, and jellybeans to be less consistent when they were made with careful deliberation (Nordgren & Dijksterhuis, 2009). The authors of this research suggest that sometimes deliberation can be a distraction that draws attention away from the most relevant information, thereby reducing decision accuracy.

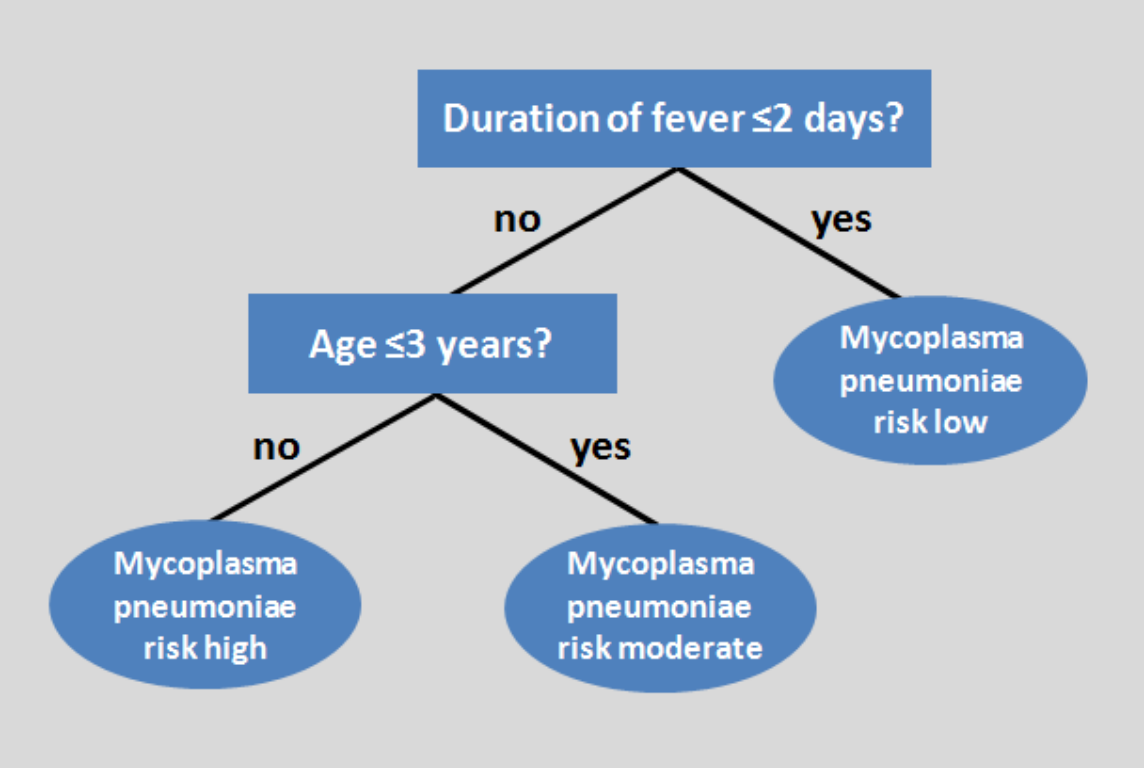

Figure 2: A fast-and-frugal tree for making decisions about macrolide prescriptions (Fisher et al., 2002; adapted from Marewski & Gigerenzer, 2012). The fast-and-frugal tree signals that first-line macrolide treatment may be limited to individuals with community-acquired pneumonia who have had a fever for more than two days and who are older than three years.

Behavioral and Data Science

Gigerenzer's research shows that sometimes less is more. One of the most challenging recent questions on the minds of researchers, consultants, and practitioners relates to how the abundance of data generated in our information society—so-called 'big data'—can be used to generate insights. Last year's BE Guide discussed the 'test and learn' approach evident in the employment of randomized controlled trials (RCTs) as an alternative to big data analytics. But behavioral science and data science do not necessarily present conflicting perspectives on behavior; they may also complement one another. (A 2016 conference on 'Behavioral Economics and Big Data' was devoted to this question.)

I believe that there are three ways in which behavioral science and big data can work together. Firstly, they can produce insights from mixed-methods research. Duke University's Center for Behavioral Economics and Healthy Food Choice Research, for instance, uses primary data from field-based RCTs and secondary (e.g. scanner) big data in tandem, to generate insights. Secondly, behavioral science can inform hypotheses that are tested with secondary (big) data. In so doing, data science is not exclusively concerned with pattern detection but also looks at hypothesis testing through natural experiments or predictive analytics (Chang et al., 2014). As argued by Gerd Gigerenzer in the introduction to this Guide, researchers should adopt a standard of testing hypotheses competitively and adopting predictive rather than data-fitting

approaches. Finally, big data (data science) can help improve nudging or the design of behavior change initiatives through segmentation or targeting.

Jim Guszcza (2015) reflected on this last point in a piece on what he calls a "last mile problem." The challenge, according to Guszcza, is to combine predictive data analytics (data science) and behavioral science. Analytical models can be used to target or segment individuals and behavioral nudges, and then trigger the desired behavior. Such an approach could be used with people who lack health insurance, for example, as Timothy Murphy (2016) suggests. Using data to divide people into low-, medium-, and high-effort segments would help policymakers allocate resources more efficiently and effectively. Resource-intensive interventions that require education and traditional economic incentives would be assigned to the high-effort segment, and low-cost nudges (such as defaults or commitment devices) would be used in the low-effort segment.

As with many other technological innovations, commercial forces have been at the forefront of data science advances. Turning real-world behavior into insights is nothing new in the increasingly data-driven world of marketing, whether it's about understanding consumers' buying habits through supermarket loyalty card schemes or targeting people based on their online behavior. The latter has been termed behavioral marketing, or behavioral targeting. The intersection of marketing, data science, and behavioral science has become more frequently reflected in topics covered by digital marketing and marketing analytics conferences. The UK Market Research Society's (MRS) 2016 conference raised questions about the role of technology in drawing insights from data and how to extract meaning from data with ever-growing sources and volume, and it also discussed whether there is a new era in which researchers act as 'data curators'.

Consumer Behavior and Neuroscience

The 2015 Behavioral Marketing Forum (the 'behavioral marketing' term was used here in a behavioral science rather than in the targeting sense) in New York showed that behavioral science in marketing now has a multitude of disciplinary and methodological bedfellows. This includes 'System 1 measurement', exemplified by implicit attitude tests and biometrics (e.g. facial response), as well as more technologically demanding neuromarketing, such as fMRI or EEG-based methodologies.

The *Journal of Marketing Research* devoted a special issue to neuroscience in 2015. Two of the issue's articles dealt with consumer preferences evident in product choice. The first of these studies (Telpaz et al., 2015) presents the first ever EEG[3] study to predict product choices without relying on consumer responses. Their research recorded EEG data when consumers were viewing consumer goods in isolation. The resulting data's prediction rate for binary product choices was 0.64 and significantly above chance. EEG measures—which are relatively inexpensive, compared to some other neuroscience techniques—eliminate the need to elicit preferences directly from consumers and thereby avoid elicitation biases and interferences in the valuation process.

[3] An EEG, or electroencephalogram, is a recording of brain activity. The test picks up and records signals through small (generally noninvasive) sensors on the scalp. The signals represent fluctuations in electrical currents in the brain.

EEG can help predict movie box office sales as well, as shown in a second study (Boksem & Smidts, 2015). The researchers measured the brain activity of 32 participants who viewed 18 movie trailers. They also rated the movies, stated how much they were willing to pay for the DVD, and sorted the DVDs into descending order of preference. Results showed that stated preferences alone were not a significant predictor of a movie's box office performance (population preference). EEG data, on the other hand, were a good predictor. The data showed that the more consumers were engaged in viewing the trailer, the more popular the movie turned out to be.

In neuroeconomics, binary choices are an established method for measuring valuation processes in the brain. More particularly, scientists are trying to establish the link between valuation and choice via neural representations. According to Krajbich and Dean (2015), there is growing evidence that the same functional units in the brain are responsible for most economic choices. This means that understanding different types of preferences of interest to behavioral economists, namely risk preferences, time preferences, and social preferences, can be captured by the same neuroeconomic model (Krajbich et al., 2014). In turn, this implies that there may be a unified approach towards decision-making, but it will undoubtedly require a great deal of work to bridge the disciplinary gap between neuroscience and the social sciences (Fitzgerald & Callard, 2015), and ultimately their practical applications.

Nudging for Good and Bad

Neuroscience's growing ability to explain and predict economic behavior is exciting, but most practitioners (and academics) are probably still trying to come to terms with behavioral implications from psychology and economics. Over the last few years, online content that provides how-to lists for marketers have become increasingly abundant: 5 Behavioral Economics Principles Marketers Can't Afford to Ignore, A Marketer's Guide to Behavioral Economics, 9 Ways Behavioral Economics Can Help Increase Conversion, Retention and ROI, and 8 Marketing Takeaways from Behavioral Economics, just to name a few. The most popular marketing tools inspired by the behavioral sciences tend to include well-established nudges, such as social proof or scarcity, along with biases related to loss (the endowment effect, fear of missing out, etc.), framing, defaults, the decoy effect, and anchoring. Other favorites include the influence of expectations (e.g. based on price) on perception and more generally the effect of emotions on actions. These lists usually mention the problem of choice overload and the need to simplify choices, but (not surprisingly) examples on using behavioral principles to help companies outweigh those on helping consumers.

Clearly, however, it would be far too simplistic to think of BE applied to marketing in black and white terms, since many initiatives informed by behavioral science ideas endeavor to help companies by helping customers. Behavioral design, mentioned previously, can be used to improve goods and services through behavioral insight. Similarly, McKinsey consultants, have applied their behavioral science framework to better understand customer journeys and enhance customer experiences (Bhattacharjee et al., 2016). One would hope that businesses who nudge customers into quick and dirty sales, without regard for the fundamentals (their product and customers), are unlikely to succeed in the long run.

There's an ongoing and important debate about the ethics of nudging in marketing. In a recent *New York Times* article, *The Power of Nudges, for Good and Bad*, Richard Thaler (2015) argued that the use of nudges should be guided by three principles. Firstly, nudging should be transparent and not misleading. Secondly, it should be easy to opt out of the nudge. Thirdly, there should be "good reason to believe that the behavior being encouraged will improve the welfare of those being nudged." Thaler used examples from online newspaper subscriptions and airline bookings to illustrate cases that fall short of meeting those guidelines. George Akerlof and Robert Shiller's new (2015) book *Phishing for Phools* provides a heap of examples about manipulation and deception in the economic system. (A review by *The Economist* [2015] calls the book "thought-provoking" but laments its inability to answer certain interesting questions, such as why phishing occurs in some domains but not in others, or what could be done to prevent it.)

Finance, Regulation and the Limits of Nudging

Akerlof and Shiller's book offers a wider look at phenomena related to the now popular expression 'irrational exuberance' in financial markets. Financial markets are at the nexus of multiple strands of applied behavioral science in both the public and the private sector. As a result, finance is concerned with a range of stakeholders, from corporate actors to private investors. According to Noah Smith (2015) at Bloomberg, finance seems to have embraced the behavioral turn more than macroeconomics. He argues that researchers in finance are pragmatic and interested mainly in approaches that work. Another reason mentioned by Smith relates to the meaning of 'behavioral' in finance. While BE represents the use of psychology to alter models of economic behavior, behavioral finance covers "anything that doesn't conform to the Efficient Markets Hypothesis (which says that you can only earn market-beating returns by taking on extra risk)." Behavioral finance has embraced psychology to some extent, Smith surmises, but it's easier to show that standard finance theory fails than to provide evidence of the psychological mechanisms that produce the failure.

Finance is a world full of complexity and uncertainty. Banks need to manage risk that arises both internally (inside their organization) and externally (e.g. in natural, economic, and political environments). The latter includes pressure surrounding compliance and uncertainty over the direction and application of government regulations. Behavioral regulators are now heading in the direction of bias correction, although the practical (and intuitive) objections to implementing this policy remain unanswered (Miles, 2014). Internally, bias correction can help financial institutions increase staff performance. With respect to external factors, bias correction also includes banks' relationships with customers and regulators.

In 2013, the then-CEO of the UK's new Financial Conduct Authority (FCA), Martin Wheatley, gave a talk at the London School of Economics, explaining the new direction that financial regulation is taking in terms of the relationship between firms and consumers. Wheatley noted that, historically, regulation was all about robotic compliance—reliance on rules, processes, and disclosure. Today, the FCA assigns an important role to behavioral considerations throughout its process of regulatory analysis (Iscenko et al., 2016). A core domain covered by the FCA's framework is consumer behavior[4]. For the purpose of understanding poor market performance,

[4] A new book by Fred van Raaij (2016) aimed at scholars and policy makers provides a comprehensive review of consumer financial behavior in terms of both different domains (saving, credit, insurance, tax, etc.) and psychological

the FCA's framework (see Table 3) identifies supply-side behavior and market structure, as well as other market distortions, alongside four key drivers in consumer behavior (Iscenko et al., 2016, p. 21):

Consumer Behavior Drivers of Poor Market Outcomes (Finance)
1. Appropriate **information** about products is not available or not used by consumers
2. Difficulty in **comparing** products and services, and their value (e.g. due to complexity or bundling)
3. Behavioral or rational **inertia** in taking appropriate action (e.g. switching)
4. Errors by consumers in assessing their own **long-term needs**

Table 3: Eleven systematic drivers of poor market outcomes. Driver group: Consumer behavior (Iscenko et al., 2016).

The FCA now has an in-house behavioral science team looking at problem areas such as auto-enrolment/renewal, information disclosure, and product complexity. The former area is the focus of a new report on the auto-renewal of insurance policies (Adams et al., 2015). In the UK, most home and car insurance policies renew automatically on an annual basis, at a price determined by the provider. While auto-renewal ensures that customers continue to be covered, there have been concerns that some consumers, particularly the elderly and vulnerable, pay higher prices if they do not actively switch or negotiate. The FCA conducted a large-scale field trial testing the effect of different types of treatments in the form of reference prices (last year's premium), simpler language, an information leaflet, and reminders on the consumers' likelihood to take action. Research results show limited differences between control and treatment conditions for most interventions. However, the disclosure of last year's home insurance premium alongside the new one was associated with a 3.2 percentage point higher rate of taking action (switching or negotiating) compared to the control group. For motor insurance, customers receiving this treatment increased shopping around by 7.3 percentage points.

Consumer inertia can be a problem in some auto-renewal contexts, but it has also been used for good in a counter-biasing approach, namely auto-enrolment in pension plans. Overall, financial institution and regulators' greater awareness of psychological shortcomings in decision-making

explanations (preferences about risk and time, self-regulation, loss aversion, etc.). Van Raaij also discusses how individual differences and decision architecture affect preferences and outcomes in decision-making.

must be applauded, although there have also been critical voices, as evident in a *New York Times* article by Eduardo Porter (2016). The author points out that while interventions like auto-enrolment in retirement plans are effective, they do not solve underlying problems. The popularity of behavioral science in public policy (according to Eldar Shafir) is due not only to its useful insights, but also to political helplessness and lack of funds. Porter notes that nudging is not designed to increase society's wealth; among the poorest strata of society, economic realities not only compromise mental bandwidth in decision-making (Mullainathan & Shafir, 2013), they also mean that there may not be enough money to be put into savings in the first place, as a new study by Loibl, Jones, Haisley and Loewenstein (2016) shows.

Porter's argument is thought-provoking but certainly not devastating for proponents of applied behavioral science; rather, it reinforces the view that the role of behavioral interventions varies across problem domains, populations and decision-making conditions. Nudging is just one available tool for achieving change. and should be considered along with other approaches. Most importantly, behavioral interventions must be tested prior to their implementation.

Practitioner Contributions in this Edition

At the heart of this year's Behavioral Economics Guide are once again articles written by behavioral science practitioners from both sides of the Atlantic, which you can find in Part 2 of this publication (after Q&As with Richard Thaler and Varun Gauri). Two of these, by Crawford Hollingworth and Liz Barker, as well as by Richard Chataway and colleagues, provide very useful guidelines for practitioners who need to design behavior change initiatives. Other articles offer valuable insights into some core BE ideas and applications, such as consumer preferences (Tim Gohmann et al.), consumer (brand) trust (Henry Stott), and behavioral risk (Roger Miles). Last but not least, there are contributions that present behavioral models or frameworks and their applications by Gerhard Fehr and colleagues, as well as by Zoë Chance and Ravi Dhar. All of these articles not only go beyond behavioral theory, but also share a view of behavioral science that is multi-faceted and often critical. I hope you will find them interesting and most importantly, useful.

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Q&A with Richard Thaler *

Richard Thaler is Charles R. Walgreen Distinguished Service Professor of Behavioral Science and Economics at the University of Chicago Booth School of Business.

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There are many different definitions of behavioral economics and what it encompasses. What is your preferred definition?

I view behavioral economics to be economics that is based on realistic assumptions and descriptions of human behavior. It is just economics with more explanatory power because the models are a better fit with the data.

What do you think should be the roles of behavioral and experimental economics within economic theory? Are there any special methodological issues economists should be concerned with in order to do quality BE research?

I don't think behavioral economics requires any special tools or techniques. I like to call it "evidence based economics." Let the data tell you what is going on, both in empirical work and in theory development. But behavioral economics papers look very much like any other kind of economics. No special tricks.

You have done groundbreaking research on loss aversion, mental accounting and the endowment effect over the last 30 years. What is the most important lesson that you draw from your research in this area, and where do you see it leading in the future?

I think the most important lesson to take from behavioral economics, and my research in particular, is that economists should be real social scientists and should pay attention to the world around them. I began my "research" on mental accounting just by watching and listening to my friends, including fellow economists, talk about how they think about money. As I describe in my recent book *Misbehaving*, I began one line of mental accounting research by playing poker with my economist colleagues. I noticed that they played differently depending on whether they were ahead or behind in the game that evening, in spite of the fact that the stakes were quite small relative to their income or wealth. The insights gained there were later used to offer an explanation of the equity premium puzzle, i.e., the empirical fact that stocks have outperformed bonds by an amount that seems to be too big. The same ideas can be used to understand why volume dries up when housing markets go down. So, watching behavior in the small can help you understand behavior in the large.

In a recent review of Misbehaving *in the journal* Regulation*, economist David Henderson argued that you often won debates about the merits of behavioral economics. Do you think that behavioral economics has won over the profession or are there still significant points of resistance that need to be overcome?*

I think that most economists under the age of 40 don't view behavioral economics as controversial. The resistance came from older economists of my generation. I would not say that we have "won", but I would say that many of the best young economists in the world are devoting some of their research energies to behavioral approaches.

In your opinion, what are the limitations of a behavioral approach to government? Do you believe the recent Executive Order published by the White House (September 15th, 2015) will impact the way public policies are designed in the United States?

Of course it is too soon to say what the long-term impact of President Obama's executive order will have, but in the UK, where the Behavioural Insights Team has been up and running for over five years, there is clear evidence that the results from their trials are influencing policy. I hope for the same in the United States, but that will of course depend on who the next president is and the make-up of Congress. This is too bad because our approach should be appealing to both parties. David Cameron is a Conservative and Obama is a Democrat and both have embraced behavioral science. The same is true in a wide range of countries around the world. So I am hopeful.

What is a "good" nudge in your opinion? What are the main sources of objections you have encountered since your best-selling book Nudge (2008), co-authored with Cass Sunstein, was published? Do people see nudges where they don't exist?

The most frequent criticisms are based on misunderstandings of our approach. People forget that we describe our policy as libertarian paternalism. We try to devise policies in which people can ignore or opt out of any "nudge" with little or no cost, ideally one mouse click. Yet we are accused to wanting to tell people what to do. I view nudging as similar to GPS. When people use GPS they input their own desired destination and are free to override the app's directions, but they get lost less often. That will also be true of well-designed nudges. They will help people achieve their own goals. We have also been accused of trying to manipulate people but we insist that all nudges be transparent. Are the signs reminding pedestrians in London to "look right" for oncoming traffic "manipulation" or helpful reminders?

As one of the founders of behavioral economics and behavioral finance, how would you describe the challenges, setbacks, and successes that you've encountered along the way? Would you have any special advice for academics and practitioners who are working in countries where BE is not yet widely recognized?

Behavioral finance was greeted with much skepticism in the early days because people just "knew" that markets were efficient. We were only able to make inroads by making the debate based on empirical facts. The facts are now pretty well known and not every controversial. We are now left just to argue about the interpretation of those facts. Theoretical advances have also been important, but when it comes to new approaches it seems that we must start with data and specifically with anomalies. That is the way to get the attention of the profession.

Q&A with Varun Gauri *

Varun Gauri is Head of the Global Insights Initiative (GINI) and Senior Economist with the Development Research Group of the World Bank

* Originally published in Portuguese in the Guia de Economia Comportamental e Experimental

Behavioral economics has recently begun to inspire the theory as well as the practice of development economics and policy. In your opinion, what are the main reasons why we need behaviorally informed development policies?

Public policymaking typically subsidizes or lowers the cost of activities that authorities want to encourage and raises the cost of those to be discouraged. Underlying this approach is the notion that human behavior arises from choices in which individuals take account of all relevant information and incentives, and carefully calculate costs and benefits for themselves. That approach has proven very powerful.

At the same time, the assumption that individuals consistently and exclusively maximize self-interest, and use all readily available information when doing so, has proven less useful in other domains. Important development challenges, including increasing social inclusion, raising productivity, improving sanitation practices, strengthening institutions, and promoting energy conservation, have proven intractable in many places. Successfully confronting those problems may well require the use of policies premised on alternative assumptions about what drives human behavior.

Why do you think this field of research [BE] and its empirical applications have gained momentum in the last years? How have behavioral economics and other experimental approaches entered the complex field of development economics?

In the discipline of economics, the prevailing view has been that an analytically relevant account of decision making need not be, and perhaps cannot be, descriptively accurate. At least since the economist Milton Friedman's 1953 essay, "The Methodology of Positive Economics," most economists have believed that analyzing and explaining human decision making *as if* people "knew the relevant cost and demand functions" is a methodological outlook whose predictive power is unrivaled in scope and accuracy, despite it being manifestly obvious that "businessmen do not actually and literally solve the system of simultaneous equations" that economists model them to deploy. Friedman had suggested that competition and expertise lead people to make choices consistent with the predictions of mathematical economics; his examples were businessmen in competitive markets and expert billiards players. Gary Becker extended the approach to a much wider nonmarket realm in which everyone's decisions about whether and whom to marry, commit a

crime, have a child, and wait in line are best predicted with imputed "shadow" prices that incorporate the various costs and benefits.

Recently, research on decision making from across the social sciences has converged to an extent that it is beginning to challenge Friedman's argument that descriptive accuracy is irrelevant. The research shows that real individuals use a variety of heuristics, or shortcuts when they think, are subject to a series of predictable biases, have social preferences and follow social norms, and interpret information through cultural lenses. These research findings suggest that the accuracy of economic predictions can be increased if the methods and assumptions economists use were based on better descriptions of how people actually think, decide, and choose. What recent behavioral and social sciences have offered is a new set of guidelines for how to use and apply economic explanations to real people, with all their foibles, limitations, and emotions. In some ways, this constitutes a return to the approach that the economists originally took, as is apparent if you read the work of Adam Smith.

Can you give us some interesting examples of the behavioral approach to policy design and its implementation?

In Kenya simply providing a safe and designated place to save money for the specific goal of covering health emergencies increased people's ability to cope with shocks. The savings products increased health savings "by facilitating mental allocation of the savings to a specific use, a form of mental accounting called labeling." A simple and safe place to save increased preventive health investment by 66 percent and increased the likelihood that people reached their savings goals by 14 percentage points within a year. Other individuals benefited from making savings in a group setting, which helped them lock themselves into savings plans. The intervention did not create a new opportunity (there were already safe savings products). Rather, it made a particular kind of savings more *salient*: more prominent or accessible to the mind. The effect of the policy was to increase savings for emergencies and enable households to make life-saving health expenditures.

The city of Bogotá varied the structure of payments in a conditional cash transfer program targeted to families with children in secondary school. Some households received transfers every two months after meeting conditions related to the health and schooling of their children. Others received only two-thirds of the benefit every two months, while the remaining third was saved in a bank account for them. These households were then given the backlog of payments in one lump sum in December, when students are supposed to enroll for the next school year. While both types of transfers were equally effective in improving school attendance, the savings variant was more successful in increasing rates of re-enrollment, especially for those students most in danger of dropping out. This intervention changed the timing of payments, shifting the subsidy toward two landmark events—graduation and enrollment. It timed the payments in such a way that when the money was available when the fees for enrolling in school came due.

Given how everyday thinking operates, policies that emphasize simplification can have large effects. In Brazil, the introduction of voting technology that used visual aids to make electoral preferences easier to express reduced the number of error-ridden and undercounted votes. One study found that the new technology effectively enfranchised 11 percent of the electorate, and triggered a shift in the background of legislators, which in turn led to a shift in government spending on health care, a pro-poor budget, improved health services, and fewer low-weight births in the population.

Chapter 10 of the World Development Report 2015: Mind, Society, and Behavior *presents and discusses biases of professionals in the area of development. To what extent does this discussion illuminate the prospects and challenges of the behavioral approach?*

We are all biased. Experts, policy makers, and development professionals are subject to the same biases, rely on mental short-cuts (heuristics), and social and cultural influences as everyone else. Staff from the World Bank, for example, were asked to solve a quantitative problem. One group of respondents was tasked with evaluating the effectiveness of a skin cream in reducing a rash. Another group faced an identical quantitative problem, only they had to evaluate the effectiveness of a minimum wage law in reducing poverty. Staff found it easier to solve the problem when posed in terms of the skin rash. Policy-makers' biases and taken-for-granted beliefs can also differ substantially from those held by the low income populations for whom the policy makers are designing programs.

Overcoming these very natural limitations may require borrowing and adapting methods from other industries. *Dog-fooding* in the technology industry, for example, is the practice in which company employees themselves use a product to experience everything that it entails and discover its flaws, in order to work out its kinks before releasing it to the marketplace. Policy designers could try to sign up for their own programs or access existing services to diagnose problems firsthand. Similarly, the practice of *red-teaming* in the military could help uncover weaknesses in initial program designs. In red-teaming, an outside group is brought in whose role is to challenge the plans, procedures, capabilities, and assumptions of an operational design, with the goal of taking the perspective of potential partners or adversaries.

Do you have any special advice for academics and practitioners that are working in countries in which BE is not yet widely recognized?

Every policy makes assumptions about human behavior. Governments build health clinics and schools on the assumption that bringing services closer to people lowers the cost of use, and that lowering costs increases utilization. Many governments believed that user fees for primary education could increase revenues without affecting enrollment because they assumed that people calculate the long-term benefits of education, compare them to the small fees of school attendance, and still pay to attend school, borrowing when necessary. Public or private matches for retirement savings plans assume that the prospect of higher future returns will increase savings rates.

Simply start asking yourself and your colleagues what assumptions they are making about human behavior, whether those assumptions are accurate, and what policies would follow if you made alternative assumptions.

What is the most important lesson, or main lessons, that you draw from being the co-director of the World Development Report 2015 and leading this challenging project since the beginning?

The WDR 2015 shows that there is enormous scope for psychologically and socially inspired polices and interventions – social norms campaigns, educational entertainment, aspirational messages, reminders, new default options, commitment devices – to help people make choices that promote their own interests.

As we've discussed, we ourselves – development professionals – are not exempt from this universal phenomenon. The WDR team certainly found that we, too, are susceptible to confirmation bias, sunk cost bias, and other cognitive illusions. In addition, our models of how poor individuals think and behave are sometimes inaccurate.

We should have used this in our work! For instance, the team certainly would have benefited from a commitment device. We should have signed a contract requiring us to produce a blank-verse epic poem singing the praises of neoclassical economics whenever we missed one of our internal deadlines. We likely suffered from confirmation bias, too, and may in places have underweighted evidence contrary to our storyline. I rest in peace, however, knowing that critics will be kind enough to identify those places for us.

The Global Insights Initiative (GINI) was launched on October 22, 2015. Can you tell a little about the initiative?

The Global Insights Initiative aims to bring the ideas and findings of the WDR 2015 to development policy. Our value proposition is that development policy is more effective when it is based on an accurate picture of how people think and behave. That is the reason we are setting up the Global Insights Initiative.

We plan to work in three ways. First, we will collaborate with World Bank teams to incorporate behavioral and social insights into project design, and then evaluate the impact of those new designs. Second, we will support governments who want to use behavioral and social insights, both by incorporating social and behavioral insights into intervention and policy design, and through capacity building. Finally, we want to change the mental model of policymakers. We want policymakers to understand that mindsets, social norms, mental models, and psychology have large effects on economic development. To do that, we will do outreach through workshops and conferences, and conduct our own research.

PART 2 – APPLICATIONS

Behavioral Science in Practice

Disclaimer:

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How to Apply Behavioural Science with Success: Learning from Application Around the World

Crawford Hollingworth and Liz Barker, The Behavioural Architects

(crawford@thebearchitects.com, liz@thebearchitects.com)

"Moving forward in behaviour change should be a mix of applying insights from literature and learning from application"

Daniel Kahneman, 2015

Introduction

Behavioural science is increasingly being applied all around the world by **companies** - such as Google, eBay, Prudential, Disney and Unilever - by **governments** – including the UK, US, Australia and Canada, and by **not-for-profit organisations** such as the World Bank and DfiD.

You know the application of behavioural science has become mainstream when the President of the United States issues an Executive Order to ensure behavioural science is used to design better government policies. Commenting on the move, Barack Obama said:

"Adopting the insights of behavioral science will help bring our government into the 21st century in a wide range of ways - from delivering services more efficiently and effectively; to accelerating the transition to a clean energy economy; to helping workers find better jobs, gain access to educational opportunity, and lead longer, healthier lives." (The White House, 2015)

We have also seen **global platforms** springing up, such as the Behavioural Exchange and Behavioral Science & Policy Association (BSPA) conferences, attracting delegates from science, government and the corporate sector; platforms through which the latest insights from behavioural science can be disseminated, which provide a bridge into the academic world and enable academics to meet face to face with practitioners who have the influence, access to data, consumers and budgets to make things happen.

The development of behavioural science has also required a new type of research and strategic consultancy. Since our inception in 2011, we have seen many new research companies emerge leveraging behavioural science and seen older, more traditional companies at least include it as part of their offer.

We have also seen organisations appointing **in-house behavioural scientists and teams,** enabling them to embed behavioural science deep within the organisation, whether consumer facing, or amongst the team (Hollingworth, 2014). For example:

- At Uber, Keith Chen is both Head of Economic Research and an Associate Professor of Economics, UCLA Anderson. By analysing their behavioural data, Uber are uncovering valuable insights into consumer travel behaviour. For example, consumers are more likely to pay for surge pricing if their smartphone is low on battery (NPR, 2016).
- At Hellowallet, the financial services software platform, Steve Wendel is their in-house behavioural scientist. They are continually thinking how to improve response rates and behaviour to help customers better manage their money.

Overall, these developments mean we have now moved on from an era of dissemination and understanding, into a **new era of effective application focused on impact, refinement and nuance**. We now have the widespread traction, but how can we really get the best out of applied behavioural science? It clearly has considerable power, but there is growing demand for better guidelines in order to use it effectively and carefully (Hollingworth, 2015).

Based on years of experience with some of the largest companies in the world, and from keeping a keen eye on academic output and the experiences of other practitioners, we have identified **four rules of thumb** for achieving effective, sustainable behaviour change. Below, we illustrate these points with examples from companies and organisations around the world.

1. Frame Your Goal as a Behavioural Challenge

Focus on understanding and changing *behaviour* rather than attitudes. In this digital era, we live in a fast-paced, distraction-heavy 'System 1' world, meaning that the 'intention-behaviour' gap is more common than ever; even if people have a certain attitude or intention, the chances that they will follow through on it are small.

Most of our global clients focus on how best to create behavioural change and to *measure* that change rather than trying to change and measure attitudes. Measurement is particularly prevalent and easier in companies who have a wealth of consumer behavioural data at their fingertips to learn from.

2. 'Context is King': Understand the Existing Context

Before we can set about changing behaviour, it is crucial to understand existing behaviour(s), the surrounding context and factors – the external triggers, internal biases and perceptions – which might be influencing behaviour. For example, we might ask:

- How is the current environment and context shaping behaviour?
- What is the social and cultural context, the purchase and consumption context?
- What are people doing habitually or automatically?

A classic example of context influencing choice is illustrated by work by Dilip Soman who found that 3 in 4 people around the world select the middle coffee cup size, even though absolute sizes

of these cups vary between vendor (Soman, 2015). We are influenced by extremes and tend to compromise with the middle option.

The benefits of first understanding context

Interventions which research and recognise the surrounding context are likely to deliver more effective behavioural change. A **Poverty Action Lab** project to improve water sanitation in Kenya recognised that people's daily routines involved trips to the water pump to collect water. So they placed simple chlorine dispensers at the pumps which piggybacked to existing habits and routines, leveraged social pressure from peers at the pump and made it easy for households to add chlorine to their water. Dispenser use increased from 2% to 61% of households. (Kremer et al., 2011).

Project ACE, an initiative based in Bristol, UK, with the goal of increasing physical activity among older people, identified first that one of the main barriers preventing the old from exercising was their lack of confidence and ability to 'get out and about'. So they designed an initial intervention to break down this barrier by pairing participants with local volunteers to help them get out and be more involved in their community so that participants might then be more capable and confident about doing more exercise (Stathi, 2014).

Two social benefit projects that we initiated also illustrate the value of taking time to understand context. Developing an intervention to improve **medication adherence** among non-adherent diabetes patients, we took into account the everyday context and surrounding physical and social environment of patients by incorporating insights, observations and behavioural understanding not only from patients, but also from diabetes nurses and GPs. We were then able to design a successful trial which went on to increase adherence in 7 out of 10 patients with a corresponding shift in healthier lifestyles of over 50%.

Similarly, in a 2015 initiative designed to promote greater **harmony between London cyclists and motorists** and reduce numbers of cyclists jumping red lights, we observed cyclist behaviour at different types of junctions and interviewed cyclists and taxi drivers before designing our intervention.

What can happen when we fail to fully understand context

Interventions can run into numerous problems without this initial understanding of the context.

For example, the **World Bank** identified a behavioural challenge to improve parenting practices and so ensure better child development in Nicaragua. Yet, their chosen intervention – providing parents with mobile phones through which the Bank could communicate parenting advice – ran into immediate problems.

Only a quarter of people in Nicaragua owned mobiles so the Bank had to provide many parents with mobiles. It transpired provision was difficult – phones had to be delivered with armed guards to prevent theft. Mobile reception was poor in remoter areas, sporadic electricity supply made it difficult to charge phones, many parents could not afford to top up their credit and phones often developed faults when tucked into sweaty shirts and dresses in the hot weather. Ethnographic

research in some of these homes and villages would have quickly revealed these critical contextual details and enabled a more suitable intervention.

Another example arose earlier this year, when Google's **Gmail** suffered an embarrassing PR disaster because they didn't acknowledge how people send emails on autopilot. On April Fools' Day, Gmail included an option to add a comical 'drop the mike' gif image to email sign offs. While this might have been funny to some recipients, problems arose when senders often added it unintentionally. Sending an email follows a largely automatic routine to which we pay little conscious attention.

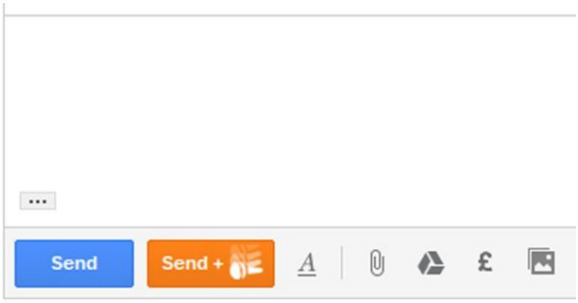

Figure 1: Gmail's April Fools' Day email send buttons

Positioned right beside Gmail's normal, blue 'send' button, senders of emails mistakenly clicked on the equally salient, but similar looking orange prank button. With no pop up to double check senders *wanted* to attach the gif, email recipients were offended and senders put in awkward positions, upsetting friends and colleagues and even losing job offers. Best practice design incorporates and adapts to existing user habits, anticipating potential unconscious errors.

3. Understand the Impact of an Intervention at a Holistic Behavioural Level

There is also a need to consider the wider-reaching holistic effects of nudging and steering behaviour in order to be sure of the overall outcome from an intervention. Holistic effects comprise four concepts which can have positive, negative or neutralising effects on a nudge:

- **Spillover effects** – if we steer behaviour change in one area, does it also change related behaviours? For example, exercising more can inspire healthier eating behaviours or encouraging hotel guests to reuse towels may also prompt them to turn off the lights (Baca-Motes et al., 2013).
- **Displacement effects** – if we nudge in one place, does it simply shift behaviour elsewhere? For example, anti-cycle theft signs placed above a bike rack in Newcastle University reduced bike theft by 62% compared to the previous year *at that location*. Yet other campus bike racks without signs saw thefts increase by 65% (Nettle et al., 2012).
- **Licensing effects** – if we successfully nudge a positive behaviour in the morning, do people 'nudge back' in the afternoon and license themselves to do something less 'good'? For example, a morning gym session may mean people license themselves to have an unhealthy lunch.

- **Compensating effects** – if our behaviour has been less than exemplary we might try to compensate by doing something worthy. For example, we might commute to work on our bike after a series of long haul business flights.

Considering the entire behavioural journey like this, across time and contexts, can ensure that any interventions to create behaviour change can be accurately assessed and their true impact measured.

4. Aim for Long Term, Sustainable Behavioural Change

Finally, there has also been a realisation that most behaviour change initiatives need to be sustainable, focused not just on building, but also maintaining new habits.

Many interventions are only run for a short time – not long enough to know if behaviour has been influenced for the long term. From a cost/ROI point of view, knowing when an intervention can be withdrawn after habits are embedded is also extremely valuable. How best to create sustainable, long-term behaviour change is a question we are often asked by our clients and is now the ultimate goal for the best companies. We outline two case studies below.

i. Building sustained engagement in Google AdWords

Google wanted to build a sustainable customer base for its AdWords service. They trialled two simple offers:

- Offer 1: '$75 AdWords for free';
- Offer 2: 'Pay $25 for $100 worth of AdWords'.

Although Offer 1 led to higher conversion than Offer 2, it seemed to attract the *wrong kind* of users. Businesses attracted by the free service didn't fully engage and so were less likely to continue. Offer 2 users, on the other hand, who had paid a little money were more engaged, spent more time and effort using the service, achieved more success and were therefore likely to become **committed** users.

Google also used a technique in behavioural science known as **implementation intentions** to ensure engagement and retention among AdWords customers. The scheme aimed to narrow the 'intention-behaviour gap' by helping people build and commit to a **specific plan** to use AdWords. By ensuring people followed through on their intentions to make use of AdWords, Google not only achieved an 18% increase in applications, but crucially a 14% increase in retention over the longer term (Hollingworth, 2015).[1]

ii. Increasing physical activity levels long term

We recently worked with **Sport England** to understand how they might increase numbers of people living active lifestyles. Investigating which interventions showed strong evidence of increasing physical activity in the long-term, we found that a significant proportion of the existing

[1] A presentation on Google's interventions can also be viewed on youtube: https://www.youtube.com/watch?v=BdE0_AXODMI

research lacks sufficient – or indeed any – follow-up making it difficult to ascertain if any real exercise habit has been embedded for the long term.

Therefore, we focused *only* on research which provided evidence of long term behaviour change (6+ months), in order to provide Sport England with a sound base on which to build their strategy. We found some interventions – such as financial incentives – have only a short-term impact on active lifestyles. Others, such as getting people to make a specific plan to exercise, are more likely to result in long term behaviour change.

Conclusion

With behavioural science application growing fast, the best practitioners are now thinking far beyond simple nudges and following these four rules of thumb in order to achieve effective, sustainable behaviour change. There are myriad opportunities to apply behavioural science, but successful, sustainable application can only be achieved carefully and cleverly.

The Authors

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

Liz Barker is Global Head of BE Intelligence & Networks at The Behavioural Architects. Her background is in Economics across a wide range of contexts, from global business and finance to international development, with a BA and MSc in Economics from Cambridge and Oxford.

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Case Study: Nudging and Steering Swimming in England, 2015

Rachel Abbott, The Behavioural Architects

(rachel@thebearchitects.com)

This project involved blending Behavioural Economics (BE) with in-context qualitative research to develop actionable insights for guiding the Amateur Swimming Association's (ASA's) strategy to grow swimming participation in England. The resulting BE-inspired strategic framework has subsequently been rolled out across the wider swimming industry to guide behavioural change measures.

The Challenge

Swimming is England's top sport for participation, but numbers of swimmers have seen a steep decline in recent years.

The ASA commissioned The Behavioural Architects (TBA) to identify actions for reversing this downward trend, with two clear behaviour change objectives:

1. To nudge and steer participation among those who don't currently swim
2. To strengthen swimming habits of existing swimmers, to reduce drop out

The Approach

TBA used a multi-staged research methodology informed by behavioural science:

1. Developing behavioural hypotheses - looking at the client's existing knowledge through a 'BE-lens' to develop an initial set of triggers and barriers to swimming, underpinned by BE concepts and habit theories – notably the habit loop model (Figure 1) (Hollingworth & Barker, 2014).

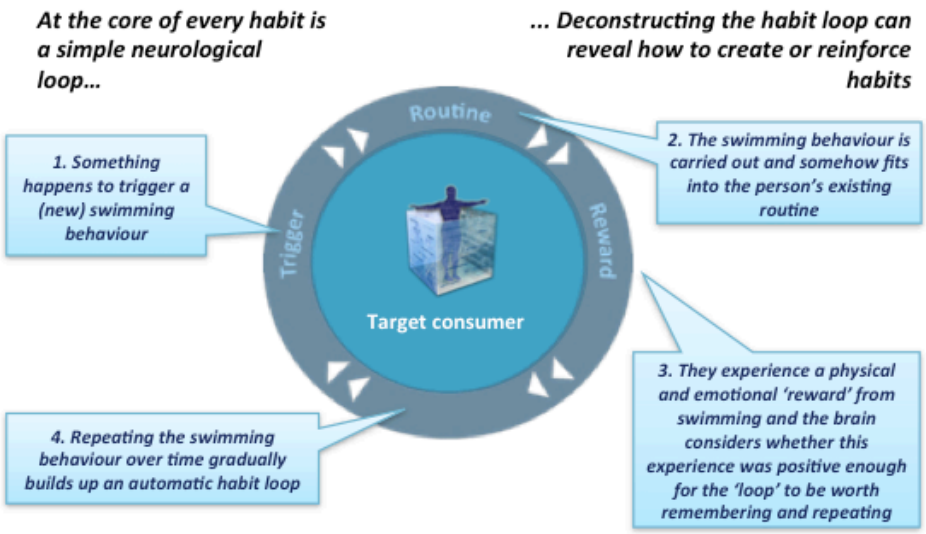

Figure 1: The Swimming Habit Loop

2. In-context qualitative research to explore hypotheses, including:

- Priming research participants as 'swimming detectives' on a mission to capture clues about what affects the swimming experience when visiting their local pool.
- Behaviour change journey maps – surfacing actual versus claimed triggers and barriers to swimming throughout people's lives, and identifying potential 'teachable moments'.
- Co-creating ideas for getting people swimming, including capturing instant (System 1) reactions, reflective (System 2) thoughts around early stage concepts.

3. Applying Behavioural Science to structure analysis and identify opportunities

Systematically applying BE to deepen insight, ensuring the findings fully accounted for contextual and subconscious factors. For example:

- *Priming* – people are not primed to swim in everyday life. They often don't see the pool at the leisure centre, making it easy to forget it's even there.
- *Cognitive strain* trying to find key information e.g. about timetables and prices.
- *Anchoring* – dominant reference points of childhood lessons and lane swimming often make swimming feel irrelevant, intimidating or uninspiring for adults.

4. Embedding a strategic framework for driving action!

From these behavioural insights we developed a framework called 'Three Frontiers' to trigger new audiences to swim, and keep customers coming back.

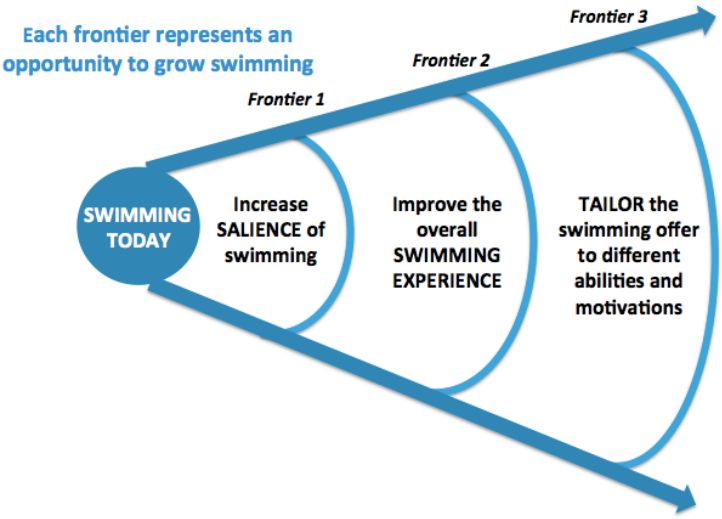

Figure 2: The Three Frontiers Framework for growing swimming

The framework was delivered in an interactive client workshop where inter-disciplinary ASA teams *committed* to actions they could take to address each frontier. The Behavioural Architects also suggested thought-starters; for example priming a more inviting environment by printing 'Clean Team' on pool staff T-shirts.

Impact

The behavioural insights incorporated in the Three Frontiers framework now underpin the ASA's new strategy to get more people swimming. It has transformed how the organisation analyses the challenges facing swimming and has provided a framework for making improvements across the sector:

- The framework has become a tool for identifying and sharing best practice around participation, financial benefits to pool operators and social return on investment across the swimming industry – over 5,000 pools across England.
- The ASA has developed a national tracker around the insights, enabling them to monitor indicators important for sustained behaviour change.
- The framework acts as a simple, practical checklist for providers to guide and facilitate collaborative improvement planning.
- Articulating behavioural insights into jargon-free actions has resulted in providers proactively asking to engage with customer insights and the added value the ASA can offer them, for the first time in a decade.

The Author

Rachel Abbott is a Director at The Behavioural Architects and heads their Social Behaviour Change research.

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Case Study: Optimising Customer Communications through Behavioural Economics

Emma Williams, Barclays

Sarah Davies and Sian Davies, The Behavioural Architects

(sian@thebearchitects.com, sarah@thebearchitects.com)

Context

There has been much written on the application of Behavioural Economics in the Financial Services Industry including a report from PWC articulating how its use can 'drive better customer outcomes'.

With its customer-centric culture, Barclays is always looking at new and innovative ways to better engage with customers and improve their experiences of interacting with Barclays. Led by the Premier Insight and Engagement teams, in collaboration with The Behavioural Architects, Barclays has been pioneering a programme that cements Behavioural Economics at the centre of communication development, affecting real cultural and behavioural change.

The Challenge

Within Barclays, Premier customers are a key segment. These customers are affluent, with sophisticated and complex financial needs, and high expectations to match. As a cohort they have many demands for their attention and energy.

The subject matter of the communications they receive is frequently technical and subject to legal and compliance requirements. Communications also vary in complexity, depending on the specific objective at hand, and a range of customer behavioural outcomes may be desired, including:

- Ensuring customers **understand** and **absorb** key messages
- Ensuring customers **act on** information as required
- Driving **customer** engagement

Barclays undertook a 6 month project to optimise communications to Premier customers by embedding a formalised Behavioural Economics approach.

The main objective was to put **customers at the heart of the communications development process** and to give internal staff the **tools and training to deploy Behavioural Economics** best practice in writing to customers.

Behavioural Economics-Inspired Approach

A 4-stage approach was developed, underpinned by the need to clearly define the audience and strategic communications objective before writing anything. To achieve this, it's important to

conceptualise the 'customer journey' when reacting to a piece of communication. This includes understanding the range of likely customer responses – including emotional and intuitive 'System 1' responses and considered and reflective 'System 2' responses.

Behavioural Economics principles can then be applied to optimise the communication to achieve the desired behavioural outcomes. It provides powerful concepts and frameworks with which to interrogate and refine communications. Even small tweaks to the wording or visual design of communications can have a transformative impact on response e.g. breaking up a detailed letter into chunked up paragraphs with clear headings makes the individual messages far more salient.

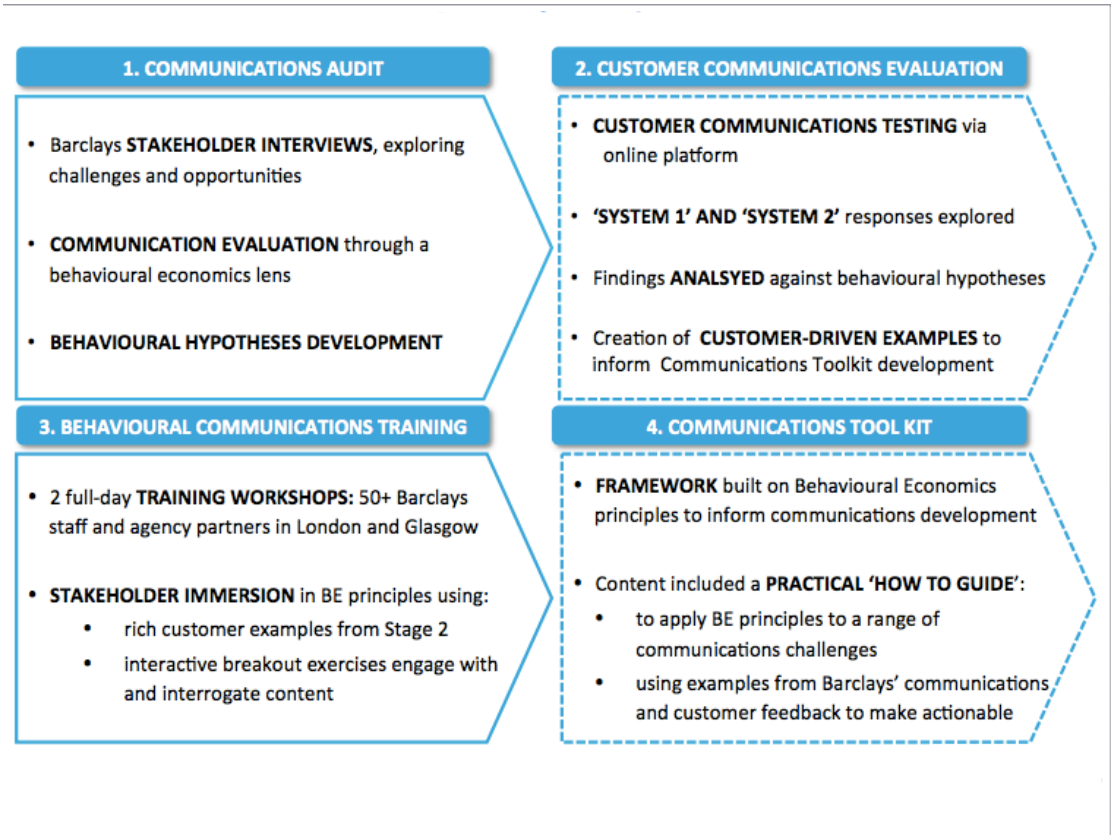

Figure 1: Approach overview

Key Insights and Impact

This approach facilitated a real cultural shift in communication development within Barclays, leaving behind a formalised process including:

1. A **FRAMEWORK** to audit communications and develop hypotheses about behavioural outcomes.
2. A Communications **TOOLKIT** with key Behavioural Economics concepts brought to life with feedback from actual customers for use in communication development
3. A bespoke **TRAINING COURSE** for Barclays staff and support agencies to embed the concepts (50+ trained to date)

4. A **PREMIER FORUM** for approving all Premier customer communications through a Behavioural Economics lens. (Since inception, 84 unique pieces of communication, impacting 1.5 million customers have been approved by forum.)

There has been excellent feedback and buy-in from Barclays' staff. The Behavioural Economics training and toolkits have given them a simple, but effective, way of structuring and developing their communications.

While still early in the journey, initial indications are positive: there has been an increase in desired behavioural outcomes from key communications; a reduction in contact for clarification purposes; and, fewer complaints on more complex issues.

The Behavioural Economics approach has empowered Barclays' staff in delivering customer-centric communications, allowing us to have much clearer conversations with customers and build deeper on-going engagement with them.

The approach was also highly successful in engaging senior stakeholders, including those who were initially sceptical about using behavioural insights. Advocacy across Premier is now so high the programme is being rolled out to the wider Barclays business.

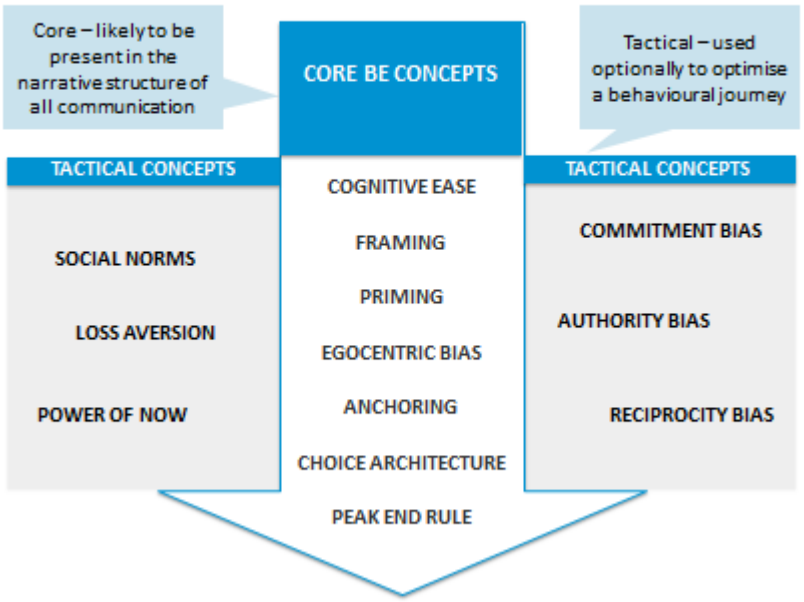

Figure 2: The communications toolkit is centred around key BE principles

The Authors

Emma Williams is Head of Premier Insight at Barclays.

Sian Davies and **Sarah Davies** are Co-founders of The Behavioural Architects.

Why Only Behavioral Economics Can Explain Preference

Tim Gohmann, Ronald S. Mundy and Christian Goy, Behavioral Science Lab
(Corresponding author: tim@behavioralsciencelab.com)

Where Are We Going?

Behavioral Economics is becoming the modern synonym for psychology, as psychology is defined by the Oxford dictionary, "The scientific study of the human mind and its functions, especially those affecting behavior in a given context." Thus, everywhere we turn, we see a BE explanation for behavior such as "loss aversion," "risk avoidance" or "endowment bias." BE is now successfully offered by a well-known consulting company as a basis of customer relationship improvement[1], and some of us even teach these concepts as "windows" to the mind of the consumer. BE has become not only the definition of psychology in commercial practice, but that long-sought-after psychological grail — the one-size-fits all explanation of behavior. We even apply our own pejorative biases such as "irrational" or "nonoptimal" decision making to help us more easily apply the grail truths. We risk the commercialization of BE becoming the funding agent of its science.

Some eschew this direction. In *The Nature and Predictive Power of Preferences: Global Evidence*, described elsewhere in the 2016 Guide, Armin Falk and his collaborators measured preference across a wide range of tasks across 76 countries. Although there was a county-of-origin main effect predictive of preference, the most significant covariates of preference were between respondent differences in the propensity to take risk, and dealing with uncertainty and delayed rewards. The only universal truth was that preferences were based on individual differences defined on psychological constructs.

Preference in Marketing

Oddly coincidental to the GPS, in 2015 a comprehensive investigation of the predictors of consumer marketshare change across nine categories and 85 brands was reported by the Marketing Accountability Standards Board (MASB)[2]. This landmark project isolated MSW-ARS preference as the sole reliable predictor of consumer purchase. Unfortunately, attempts at moving "up" the causal chain and predicting brand preference have been largely unsuccessful. Isolating the antecedents of preference has long suffered from a weak or inconsistent relationship to preference using a one-size-fits-all mentality. Unfortunately, this inability to predict preference resulted in practitioners relying on more predictable but less valid alternatives to preference on which to make marketing decisions such as brand awareness, "likeability" or "recognition." The result was that marketers fell into the "bad habit" of using decision rules that had little if any

[1] See http://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/putting-behavioral-psychology-to-work-to-improve-the-customer-experience
[2] See https://themasb.org/projects/completed/brand-valuation-project-phase-1/

scientific value in predicting share change and, therefore, little if any chance of adding financial value to their organizations.

Trying to Understand

In 2011, what was to become the Behavioral Science Lab the following year, began to attempt to understand why the consumer chose one purchase alternative over another, i.e., consumer preference. We started this process by asking ourselves why previous attempts of which we were aware had failed. Failures to predict preference fell into two types: 1) cases in which predictability was fairly high because generalized end states of usage were used as predictors but provided only very general guidance for improvement to marketers, or 2) cases that were characterized by a weak predictive relationship to preference, but whose variables contained sufficient specificity to provide clear guidance for improvement to marketers. It appeared to us that providing both with clear specificity with a strong relationship to preference was where we needed to go. Somehow, the way we had been conducting research had gotten us into this dilemma. The results of our internal analysis are shown in Table 1 below.

RELATIONSHIP TO BRAND PREFERENCE	Result-of-purchase States/Benefits	Specific Product/Service Perceptions
High Predictability – Low Practitioner Utility	X	-
Low Predictability – High User Utility	-	X

Table 1

What we needed was a model that provided linkage between the perceived characteristics of the product or service and the resulting expected value (utility) to the buyer. Why were there no good cases? Wrong variables? Not enough variables? Single- and not multiple-level models? Wrong math underlying the model(s)? Wrong scaling technique? What was happening to so limit our ability to forecast utility, predict preference and, thereby, link to the likelihood of purchase? If respondents could do it in the real world, why couldn't we in a research environment? What was wrong?

Our conclusion was that it was not one thing but something systematic about the way research was being conducted that limited its ability to fully describe the basis of preference. So we began by listing all of the potential sources of error or bias in the research techniques that had led us to the conclusions in Table 1. Table 2 below lists them.

POTENTIAL SOURCE OF ERROR/BIAS	Qualitative	Quantitative
Client Expectations/Goals	X	
Interviewer/ Group Moderator Guide	X	
"Pleasing" Interviewer/Focus Group Moderator	X	
Loudmouth/Wallflower Bias	X	
Bias due to Responses of Other Group Participants	X	
Lack of Respondent Knowledge	X	
Respondent Self-censoring/Participation	X	
Interviewer Interpretation to "Please" Client	X	
Questionnaire Content and Order		X
Lack of Unity of Meaning of Questionnaire Words		X
Incompleteness of Questionnaire/Questions		X
"External" Data Modeling Approach		X
Lack of Individual Models		X
Lack of Individual Decision Rules		X
Inability of the Model To Be Systemic/Recursive		X
Results Interpretation to Meet Client Expectations		X

Table 2

Then we looked at research approaches to minimize or eliminate each source of bias/error in Table 2. We worried that even our own questions were "leading" respondents to "pleasing" us with their answers. (We later learned that the research industry had already done a quite good job of training respondents to volunteer what they felt researchers wanted to hear.) Unfortunately, our own biases, beliefs and bad habits acquired after more than 60 combined years of managing many thousands of studies, limited our perspective. So we looked at approaches outside of marketing research for guidance in answering each of the four questions shown in Table 3 below.

Question	Pheno-menology	Herme-neutics	Decision Theory	Systems Theory
Is the respondent providing the best information?	X			
Is the information translated accurately?		X		
How do individuals use their information?			X	
How do individuals make or not make decisions?			X	X

Table 3

Phenomenology told us that the root of preference is likely an individual experience for which a conscious process or even words may not be present. Assuming that the respondent had little or no ability to either accurately describe its components or trace the process with which it occurs, we needed a methodology that optimized the respondent's access to the experience most closely linked to making a preference choice.

Hermeneutics suggested that the words associated with an experience or concept may be so idiosyncratic that misinterpretation is more likely than not. We needed a process by which the owner of the phenomenon was empowered to accurately convey its meaning to others without fear of censorship or misinterpretation.

Decision Theory gave us the perspective of how a calculus compiled bits of information into the basis of a preference decision. We needed to apply whichever process respondents actually used.

Systems Theory suggested that there was order, direction, and stability as to how relationships between elements (in this case pieces of information) were managed and how different systems were, in fact, "templates" of how utilities were constructed. We needed to model whichever templates individual respondents actually used.

Goals

Based on the disciplines above, we first developed a conceptual model of what we were trying to accomplish, as shown in Figure 1 below. We believed that brand preference was the result of a brand utility expectation that was driven by both psychological and economic factors. In this way we set out a model of preference that could capture all potential drivers of utility. We also forecasted that differences between expected and obtained utility would be reflected in changes in preference. In short, we specified a conceptual model for which no data existed, and believed that no data acquired using currently available techniques would be sufficient.

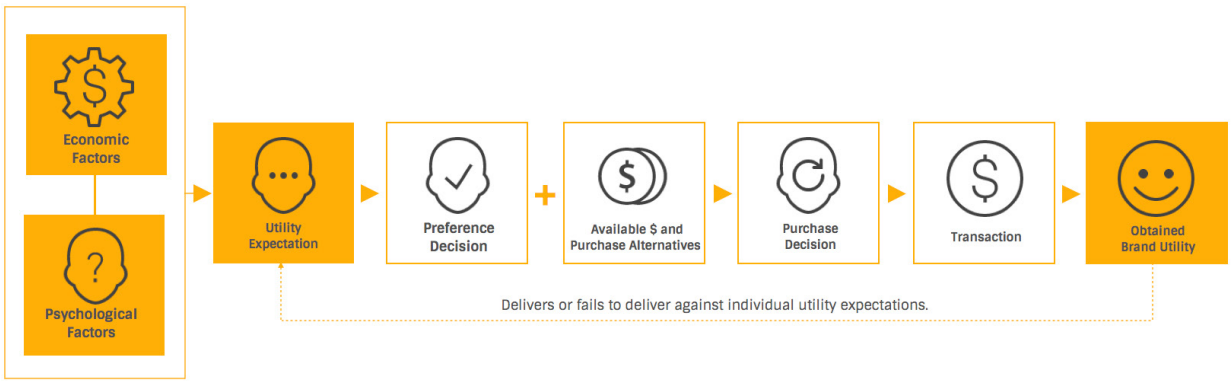

Figure 1: Behavioral Economics Model

With the goal of "filling" the conceptual model with data that did not yet exist and relying on the four disciplines on which to base the development of methodologies, we developed a series of data collection and analyses processes outlined in Table 4 below but with one directive — remove external sources of bias and minimize the likelihood of misinterpretation of results. To accomplish this, respondents would have to be "in charge" of their own qualitative process so that the material developed could be used in the subsequent quantitative portion.

Process Output	Qualitative	Quantitative
Psychological "Safety" and Empowerment	X	
Respondent Focus on the Purchase Decision	X	
Surfacing Mental Material Related to the Decision	X	
Organization of the Mental Material	X	
Naming of the Mental Material	X	
Utility Calculus and Templates	X	
Preference Validation	X	
Respondent-level Utility Calculus and Templates		X
Respondent-level Preference Validation		X

Table 4

Results To-Date

Based on all completed studies, including two using MSW-ARS brand preference, we have found the following:

1. In the qualitative data collection and analysis process, several hundred individual raw "bits" of material related to utility are obtained. Both the content and volume of this material often surprises respondents for whom it had not been previously available.
2. Raw material bits are organized by respondents into six to nine types (or "bins") each containing related concepts, relationships or beliefs that play a role in the construction of

individual respondent-level utility. On an individual level, each bin contains an expectation linking one facet of their product/service ownership/usage experience to their relationship(s) to or feelings about others or themselves.

3. For each respondent, one of the six to nine driver types or bins of material plays a role of the "first" to the "last" rank in the psychological order of contribution to the utility "sum" of the choice option.
4. For each driver type, there is a buyer segment that places that driver type in the "first" rank position; therefore, there are as many buyer segments as there are driver types.
5. Buyer segments can be rationalized on the basis of unique economic and social environments and appear stable over time.
6. Large share products/services tend to be purchased by buyers in the largest decision template segments.
7. Preference is determined on an individual level on the basis of which brand choice alternative has the higher expected utility.
8. Equal individual levels of utility give rise to equal individual levels of preference but may be based on different decision templates.
9. Changes in preference can be predicted based on a lower level of utility caused by a brand's inability to deliver on one or more of the bins and their role in each decision template.
10. Brand switching is the result of a change in preference driven by the expected utility for one brand falling below another.
11. Brand loyalty (preference perseveration) appears to be the result of first-rank utility expectations always being fulfilled.

Conclusions

1. It appears that there is a limit of between six and nine factors that play a role in the level of expected utility.
2. Relative utility expectation underpins preference; preference can be "decomposed" only to the extent that its underlying utility expectation can be explained.
3. Only BE provides the full and proper context within which the derivation of the utility expectation can be determined.
4. The bases of utility expectation are similar when the meaning of the terms used to describe them is assured to be invariant but the calculus is different across individuals.
5. Standard research techniques are likely too error laden to provide the scientific rigor needed for the understanding of real-world utility expectation and resulting preferences.

Questions

If we fail to understand how we as humans make real-world decisions, how do we expect machines to do it correctly for us?

Isn't it more appropriate to define Behavioral Economics as the study of the "economy of the psyche?"

The Authors

Christian Goy is Co-founder and Managing Director at Behavioral Science Lab, LLC.

Starting his career in strategic planning on both the client and agency side, Christian felt there was a lack of substantial data showing why consumers make the purchase decisions they do, leading to his desire to answer the unknown questions of WHY. Combining his passion and curiosity for arts and science, a native of Germany, Christian embarked on the entrepreneurial journey to help develop behavioral economics research tools that today are used for multiple marketing and business applications. As former Olympic hopeful, Christian holds a B.A. in management and organization leadership as well as an MBA with a focus in marketing.

Tim Gohmann, Ph.D., is Co-founder and Chief Science Officer at Behavioral Science Lab, LLC.

Dr. Gohmann has served clients since 1971. During that time, he founded three consulting companies, directed the business units of two large global research firms, introduced new products for multiple global marketers and developed telephone sampling and personnel selection systems for two others. Tim's experience includes forecasting for packaged goods, automotive, hospitality, energy, technology and manufacturing clients, enterprise performance management, personnel selection, and corporate reputation management. He developed the first sessions on data analysis for Burke Research Seminar program, served as a consulting editor of the Journal of Marketing Research and taught at the University of Cincinnati.

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Case Study: Turning a 16 Billion Dollar Problem into Doing Good

Christian Goy, Behavioral Science Lab
(christian@behavioralsciencelab.com)

You want to change the world. You want to build a company that does good. You want to take something that is broken and fix it. That is exactly what Stephen Garten did by creating Charity Charge. This is his story how behavioral economics helped him fulfill his vision.

Every year, on average, an American household donates $1,296 (Gohmann & Goy, 2014) to five charities. This does not include schools or religious organizations. Also on average, Americans carry 3.6 credit cards (Holmes, 2014) and accumulate approximately $56 billion in loyalty and credit card points alone.[1]

What do these two facts have in common? Nothing. That is until Garten realized they were related and could be used to change the world.

Although an average American household donates $1,296 annually, it also wastes $205 per year in unredeemed credit card points. The value of unredeemed points has increased since 2011, and $16 billion dollars in free flights, hotel nights, gas or simply cash back go unredeemed.[3]

"What if we could transform those $16 billion in unredeemed points into positive, real-world change?" What if there was a credit card that would turn those precious, hard-earned rewards points into useful reward points?

The key here is useful. But how do you create a useful credit card? A credit card that people would choose over a bank? A credit card unlike any other charity-giving card?

With those questions and the social good in mind, Garten consulted experts in credit cards, branding and the Behavioral Science Lab.

What Garten wanted was these questions answered and to be reassured that his vision for a better credit card wouldn't be dismissed as just a quixotic idea.

Since human beings are notoriously bad explainers of their own behavior, the Behavioral Science Lab has developed tools like MINDGUIDE® and BrandEmbrace® to help clients understand their audience — their biases, expectations and decision models.

The decision to choose a credit card or give to a charity is not made in a vacuum. They don't just happen online or offline. Each brand, product or service is surrounded by a set of elements that play a vital role in one's decision to adopt that card or give to that charity.

[1] See Gordon and Hlavinka (2011). 2010 perceived value of points issued in the United States across industries was $48 billion. GDP in the U.S. in 2010 was 14.96 trillion. The resulting ratio of 0.0032 was then applied to 2014 data.

This understanding is behavioral economics. The interaction of multiple elements — economic and psychological — directs consumers to decide whether a product is fulfilling their expectation and delivers utility.

We told Garten and team that the secret to success was to make it easy for people to give. If they would create a credit card that allowed people to give to their specific charity and deliver on the inherent drivers of their decision, Charity Charge would create utility for their consumers.

Our charitable giving study showed that the majority of donors gave to a charity because of a *Personal Connection to a Cause*. Additionally, if a charity wanted to deliver utility, it had to satisfy the secondary driver of *Personal Connection to Cause* for four additional Decision Types (Gohmann & Goy, 2014; see Figure 1 below.)

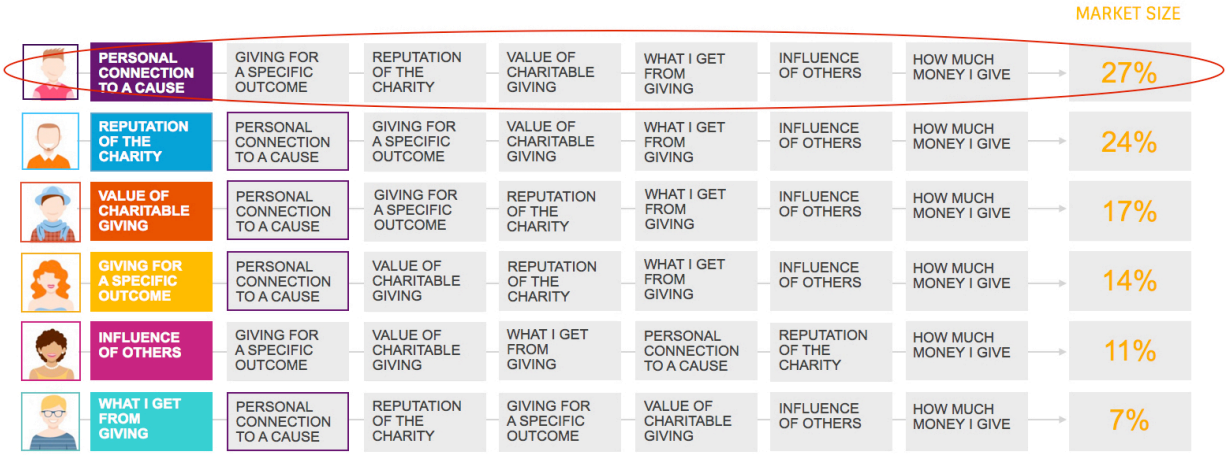

Figure 1: Charitable giving decision types

When making a decision or defining the expected utility of a product, humans use a unique set of elements in a special order, creating individual decision templates. These templates are the evaluation mechanisms establishing a Utility Expectation that drives preference, purchase and ultimately an obtainment of brand utility. (See Figure 2 below.)

Figure 2: Behavioral Economics Model

It is important to note that a brand needs to fulfill each element's expectation in the decision template starting with the primary driver on the left. (See Figure 3 below.)

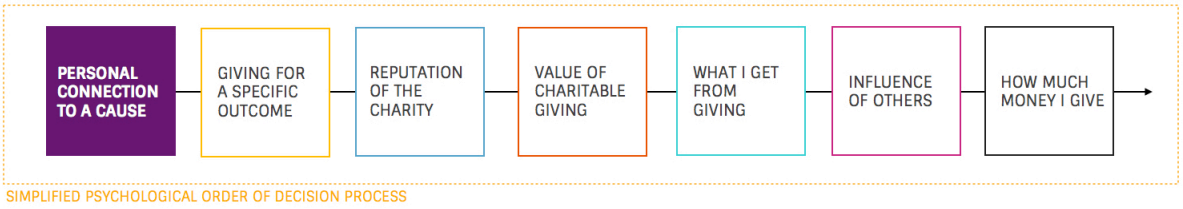

Figure 3: Understanding utility expectation for one decision type

In giving the majority of donors the option to engage with their particular charity, it was vital that the credit card not only serviced one charity, as it was typical, but as many charities as possible. In the end, Charity Charge designed a credit card that wasn't only on par with regular credit cards, but instead of earning points for airline miles or hotel stays, customers carrying the card donate money by spending money.

Today, the Charity Charge credit card lets consumers spend money on anything they want, while simultaneously earning 1% on every purchase for donations to any nonprofit of their choice, including schools and religious organizations.

Substantiating Charity Charge's intuition with concrete data — about how and why human beings give to charities — helped secure a partnership with MasterCard. The Charity Charge credit card is available in the U.S. in June 2016.

The Author

Christian Goy is Co-founder and Managing Director at Behavioral Science Lab, LLC.

Starting his career in strategic planning on both the client and agency side, Christian felt there was a lack of substantial data showing why consumers make the purchase decisions they do, leading to his desire to answer the unknown questions of WHY. Combining his passion and curiosity for arts and science, a native of Germany, Christian embarked on the entrepreneurial journey to help develop behavioral economics research tools that today are used for multiple marketing and business applications. As former Olympic hopeful, Christian holds a B.A. in management and organization leadership as well as an MBA with a focus in marketing.

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Risk Science or Realpolitik: What's Driving the Worldwide Boom in Conduct Regulation?[1]

Roger Miles, Berkeley Research Group
(rmiles@thinkbrg.com)

Introduction

How things change: Each senior financial manager in the United Kingdom has just had a bulls eye painted on their forehead by a behavioural regulator[2]. It's hard to believe that it is only three years since that same regulator, the Financial Conduct Authority (FCA) led the world as its first self-proclaimed enforcer of good behaviour in financial markets. In the past year alone, competition for world leadership in conduct control has ramped up significantly; the FCA itself is now being chased by newer, swifter behavioural enforcers in other countries. So-called behavioural regulation has been a surprise hit, with conduct risk enforcement creating a gold rush for its sponsors. With modes of enforcement now changing rapidly, it's worth recalling how this all came about, to better question what's really driving the boom in behaviour-based controls against errant bankers.

Surveying the debris of wholesale and consumer financial markets post-2008, politicians needed urgently to reassert their authority and legitimacy. Voters everywhere weren't only puzzling out what had just happened – feeling the pain of evictions, foreclosures and tax-funded bailouts – they were also starting to turn their rage towards their elected representatives who seemed somehow to have caused it all by losing control.

Casting around for a new template for regulation, public officials seized on behavioural economics, as an unconventional branch of science that seemed to offer hope. BE seemed to suggest that by regulating the *behaviour* of people in financial markets, rather than the products they sold, all would be well again. There was another political payoff: the new behavioural alchemy of 'nudging' promised to give politicians a superheroic new power to make big social changes without having to spend public money—they could "do more with less",[3] true to the manifesto of an austerity government (Cameron, 2013). (In superhero league, Do-More-With-Less Man may not feature in the top team, admittedly.)

[1] An abstract of this paper was first published in the Financial Times. Risk Section, Financial Times, London (March 14, 2016), p. 2.
[2] From April of 2016, under its new Senior Managers Regime the UK regulator (FCA) can personally indict pretty much anyone who manages any regulated aspect of a financial business. Cynics have described this as "mounting heads on spikes".
[3] The "permanent task" of a "leaner, more efficient state", as defined by its Prime Minister (Cameron, 2013).

As repurposed into financial regulation, BE has since garnered more than $300 billion in penalty and restitution payments (McCormick & Stears, 2016). As a new revenue stream—a flood, even—this application of BE has far exceeded its political sponsors' expectations.[4]

The sponsors also appreciate the expressive effect of the new controls in action. The new regulators' blockbusting fines present a popular form of political theatre, as do the prosecutions of individuals: these are a modern form of public shaming, spurred on by a dubious ethic of revenge for past suffering caused to consumers. Never mind that personal prosecutions may be a form of fundamental attribution error (or, if you're legally minded, a *circumstantial ad hominem fallacy*).[5]

Then there's the straightforward conclusion of the cost/benefit analysis. Besides generating a heap of cash, conduct regulation saves on agency running costs. By prosecuting individual managers, enforcers needn't waste public money building a technical case against entire organisations or product ranges.

These political dividends appear to point the way for the regulator's sponsors, further comforting those sponsors about their own prospects of re-election—assuming, of course, that voters notice any of this happening. Noting all of this, now is a good time to look a little harder and delve into other explanations of these recent developments, taking a straightforwardly empirical, behavioural view; or, as normal people call it, "What Actually Happens".

Is This Science at Work, or Something Simpler?

Back in 2008, taking stock of "What Just Happened", legislators and market-watchers saw a systemic failure of risk controls that had rested heavily on certain assumptions of traditional economics, notably that markets are self-correcting and populated by rational resource maximisers. This viewpoint had failed to explain, let alone foresee, irrational behaviour in markets, such as bubbles, liquidity failures, runs and crashes. Indeed, the traditional "Econ" viewpoint barely distinguished between *irrational* and *unpredictable* behaviour. Although events such as liquidity droughts and customer runs on banks were unusual pre-2008, they certainly weren't unknown; clearly, some new form of early warning system was needed. To understand and be able to predict these effects, we needed to see them in a different light. It was time for the old economic order to stop pretending that markets are always rational and self-correcting, and that panic effects are always outliers; time, in short, to get on with understanding "normal people" (Camerer, 2003).

We have since uncovered many flaws in traditional regulatory control designs, with their fatal reliance on econometrics. Looking back, it now seems strangely optimistic—not to say wrongheaded—that anyone would design a system of market restraint around the idea of asking sellers to self-report on their contract volumes and prices, calibrating the probity of their trading in terms of historic movements of money. As an approach to control design, this seemed almost to invite abuse, failing completely to register, for instance, real-time human truths such as traders' herding and mirroring.

[4] … albeit, the $300 billion total received a topical boost from the latest bouts of bad behaviour, thanks to certain firms' adventures in payment protection insurance mis-selling and benchmark rate-fixing (see *Conduct Costs*, 2016, above).

[5] For context, see Hans Hansen, "Fallacies," in *Stanford Encyclopedia of Philosophy* (2015), available at http://plato.stanford.edu/entries/fallacies/

It comes as no surprise, then, that abuse is exactly what had happened, emerging as numerous cases have since come to light. The reporting of risk was widely "gamed"; market benchmarks manipulated; salespeople oversold; trading line losses were buried deep inside aggregated reports; proscribed trading partners were given anonymous accounts. There was no transparent account of how salespeople were behaving day to day; if there had been, perhaps alarm bells might have rung sooner.

During the political maelstrom that followed the global crash, public officials pulled behavioural economics from the fringes of science into the mainstream. Intuitively for politicians, and very usefully, BE offered new ways to describe everyday human experience in scientific terms, starting with our all being *predictably irrational* (Ariely, 2009). It also held out the hope of overcoming the cognitive blind-spots of the 'Econ' legacy. What mainly mattered, though, was that governments in every major economy were in a state of some alarm about rising public anger and so were super-receptive to—indeed, urgently needed—a change of focus for their control efforts. A future Prime Minister[6], no less, was urging colleagues to read *Nudge* (Sunstein & Thaler, 2009). This shortly became a core political 'rebrand', as the book's bemused co-author found on arrival at the (by then) new Prime Minister's office to help reframe public policy.[7]

In the United Kingdom, six years and two general elections later, the political (and cash) dividends of applying BE to financial regulation have outpaced its sponsors' highest expectations. Word has it that one senior regulator may even have lost his job for applying nudge methods too enthusiastically. Money talks to politicians, too: more than $300 billion of windfall revenue is a lot of cash for indebted governments suddenly to find they are free to redeploy.

With the UK's new regulatory jackpot positively shouting for attention, other jurisdictions crowded in for a slice of the action. Spectacular revenues raised by other early arrivals at the new regulators' party, such as the US Consumer Financial Protection Bureau, confirmed the premise.[8] To the objective behavioural analyst, the global boom in conduct regulation appears less about science than *realpolitik*. Time to take a longer view of what has been happening here.

The Place Where All Regulation Comes From

The long view is simply this: All regulation is the product of failure. No national leader has ever woken up one sunny morning with the thought that "I fancy a spot of regulatory drafting".

In the aftermath of the financial crash, every government that had been affected by it—most of the developed world—faced not just a financial crisis, but also an existential one, as voters asked: how effective is my government which let *this* happen on its watch? After a financial crash, as with any crisis in national life, a government looks to reassert its authority and legitimacy. To succeed, it needs to assert this plainly, without the jargon that public administrators normally use. Just as citizens caught up in a tsunami don't much care about hydrodynamics—they're too busy trying to stay alive—so voters hurt by the financial crash cared less about the mechanics of repackaged debt, more about finding cash to pay the household bills. To a newly jobless voter, a taxpayer-funded bank bailout looks like social injustice. Many voters remain deeply troubled by the

[6] One David Cameron.
[7] As cheerfully confessed by that author – see Chapter 33 of *Misbehaving* (Thaler, 2015).
[8] Set up four years ago, CFPB has so far raised $10 billion.

perception that their elected representatives had lost traction over financial firms or, worse, have ceded power to 'big finance' interests. In the public mind, it's all the same tune; as a chorus, their protest votes launch a curious range of 'outsiders' as leaders. Reprising the tune in a new key, the Panama Papers 'prove' how self-serving the old political class remains.

Back in 2008, standing on an earlier cliff-edge of public trust, politicians quickly needed to find a new regulatory frame to displace public anger and preferably to overlay it cheaply onto the existing control agencies. In the jargon of the Washington beltway and the Westminster bubble: regulation needed a new narrative. Against that somewhat desperate brief, behaviour-based regulation must have seemed like the answer to politicians' prayers.

Boom Times for Publishers ...and Jargon-Users

Given governments' single-minded focus on this mission, we shouldn't be surprised that behavioural science—or at least its pop-science variants—took off in such a big way soon after. Within a year *Nudge*, together with Kahneman's *Thinking Fast and Slow* and Dobelli's *The Art of Thinking Clearly*, had each become million-copy bestsellers. Web resources such as *Predictably Irrational*,[9] *Understanding Uncertainty*[10] and our own *Behavioral Economics Guides* have meanwhile become viral hits.

Besides giving our fellow book publishers and bloggers a welcome boost, this new tide of science has made everyone feel more comfortable indulging in the armchair sport of criticizing the behavioural traits of public figures. It's still gossip, but now with added science, so that's okay: see that politician who lost the election because of his Dunning-Kruger problem?; how about her, she's a bit on the empathy-deficient spectrum?; here's why this CEO is quite like a school bully; look, derivatives traders behave the same as primeval tribesmen; and hey, here's why my Board meeting is just like a children's party. It's BE bingo! - what's not to like?

Of course, this may all be simply the latest periodic revival of that mass instinct for prurience that made earlier titles such as *The Naked Ape* (Morris, 1967), *Influence: The Psychology of Persuasion* (Cialdini, 1984) and *Watching the English* (Fox, 2004) into huge pop-science hits. Then again, anything which helps us to understand our collective selves probably delivers some good to society as a whole, eventually.

On a more parochial note, as the UK's financial senior managers start to wander into the enforcer's cross-hairs, we may expect a sharp upswing in the quantity of human-factor case stories and case studies. We foresee that the FCA will be intent on making some examples, *pour encourager les autres* (Voltaire, 1759).[11]

[9] (*BE Guide* co-contributor) Prof. Dan Ariely, at danariely.com/tag/predictably-irrational/
[10] Prof. Sir David Spiegelhalter's blog at the University of Cambridge: understandinguncertainty.org/
[11] After Voltaire's satirical observation that many enforcement actions are primarily symbolic. In the name of "popular" justice, the British Government executed the hapless Admiral Byng for losing a sea battle at Minorca in 1756. Voltaire's take on it: "In this country, it is good to kill an admiral from time to time to encourage the others." (*Dans ce pays-ci, il est bon de tuer de temps en temps un amiral pour encourager les autres*).

'Behaviour-Based' Regulation or Populism?

Now that, also, the proceeds of conduct enforcements against UK financial firms have exceeded £30 billion (Carney, 2015), this is a total sum that succeeds in getting bankers' attention where previous regulatory approaches had failed. Within that £30bn are individual mega-fines which have even pierced the sacred core of the banks concerned – their Tier 1 capital[12].

Wider consequences are rippling around the world, as new conduct regulators have started to unroll their own conduct control toolkits, with varying degrees of respect for the underlying behavioural science. To any behavioural science types, it seems that the boom in behaviour-based regulation owes less to scientific principles than to *realpolitik*. Conduct regulation has handed governments that rare prize, a frictionless multiple win: it's a low-cost, tax-neutral way to reduce public deficits; to "nail" the business leaders who'd previously "got away with it"; and to recast its political sponsors as fearless champions of consumer rights.

One eminent behavioural scientist[13] has recently lamented in national media how his "beautiful" research field has been hijacked by governments whose only motives are "lack of funds and political helplessness" (Porter, 2016). He's not alone. Even the UK's public auditor is cynical about the new regulation: a National Audit Office review (NAO, 2016) has just challenged the FCA's "lack of evidence" that its conduct prosecutions actually reduce mis-selling.

Then again, the same NAO paper also urges the FCA to do more behavioural testing of customer perceptions and experiences. For all the corrupting influence of easy money, we may hope that regulators have not quite forgotten where true behavioural insight begins, and will get on with watching What Actually Happens at point of sale.

For now, conduct-based enforcement is pressing ahead, with agents making the most of its lower thresholds of proof and personal focus to prosecute token senior individuals; it's beginning to look a lot like enforcement as theatre. Wanting to move even faster, at one point British regulators had sought to "reverse the burden of proof"—that is, presuming every suspect to be guilty unless they could show otherwise—until someone pointed out that this also reversed exactly 800 years' worth of defendants' rights, as originally enshrined in Magna Carta[14]. Targeting a single senior manager for a loosely defined conduct infraction clearly remains the most tempting enforcement option for any trust-deficient government looking for popular approval.

Another politically expedient element of conduct regulation is to recast fines as punishments measured against the perceived level of suffering caused to customers. If at first in 2013 the scale of the new conduct-based fines was unclear, it wasn't so for long: within two years the cost of conduct fines and sanctions reached 40 times previous levels, more than once jeopardising

[12] The statutory minimum reserve of capital that a bank must have, to show regulators that it can settle its main debts.

[13] Prof. Eldar Shafir, of Princeton University, quoted by Porter (2016)

[14] The "Great Charter of Liberties" (*Magna Carta Libertatum*) protecting prominent citizens against illegal imprisonment, as signed in the year 1215 CE by a reluctant King John of England. Designated an "Icon of Liberty" by the American Bar Association, as the model for the American Declaration of Independence, and later the US Constitution and Bill of Rights, the text of Magna Carta is displayed in the US Capitol building, Washington, DC. The original document is an official "Treasure" of the British Library in London (www.bl.uk/magna-carta).

providers' capital adequacy. To describe this as a change in the pattern of enforcement scarcely begins to capture its tectonic impact on regulatees' risk management arrangements.

A Freely Exportable Commodity

When the conduct risk project evidently began to solve UK government problems of both control practice and public perception, other financial regulators around the world changed their own stance, moving from polite interest to fierce curiosity to replication.

Of course, most regulators had known for years about the power of symbolic enforcement, as pioneered by Wall Street enforcers' use of various performative exercises such as 'the perp walk' and 'yacht day'. But this new regime offered every government something better. Whatever country you called home, if you were a finance minister still stuck on the back foot after the crisis, or a discredited regulator looking to retrieve a few quick wins, the behavioural approach could take care of it. By allowing you to prosecute any individual who simply looks as if they're behaving badly, it plays to an enduring public preconception that bankers are bad people. As observers of corrupt public governance have long noted, from ancient Rome to the present day, a great way for a struggling government to woo its electorate is to show 'respect' for the voters' current prejudices by enacting populist laws (Sunstein, 1996). Populism can also (at first) look like moral strength: the regulator can present itself as valuing the interests of the customer above all other concerns. How the customer experiences a transaction thus becomes the paramount measure of "acceptable and expected conduct"; in due course, the regulator may look to measure this experience, using indicators to enforce defined standards for it.

This reversal of regulatory focus, from producers to customers, is in many ways a reasonable and overdue change, recognising customers' real needs and former powerlessness. On reflection, it was always bizarre that a customer-facing industry should need to face a regulatory initiative called *Treating Customers Fairly* (FSA, 2007). However, the new approach now explicitly requires producers to turn their own compliance lenses inside out, or more accurately outside in, after decades of introspection and self-certified assurances.

In the end, the money raised and the populist manager-bashing, far more than the philosophical merits of behavioural science, have endeared conduct regulation to governments wherever financial services operate—and increasingly in other regulated sectors, too. The past 18 months have seen a surge of behaviourally informed activity among regulators in jurisdictions far beyond the United Kingdom.

If you are minded to detect amongst all this an emergent conspiracy involving the world's regulators, you are not alone; although the regulators themselves would see it more as a simple matter of collegiately pooling their formative experiences in this new field. Observing this, analyst colleagues have mapped out an emergent "global taxonomy" of conduct risk (Corlytics, in press). Each national regulator has already begun to codify conduct offences and group them under conceptual headings, such as market abuse, oversight failure, customer care failure or careless reporting or recordkeeping. Intuitively, these conceptual group labels are often consistent across many territories. The taxonomy study now has *predictive* power, taking real data from conduct prosecutions and synthesising this to foresee hotspots of liability in other jurisdictions.

Global taxonomy analysis reveals, for example, that Australia's ASIC has two currently notable characteristics: a highly publicised push for its new behaviourally based agenda and an established tendency to lock up twice as many misconduct defendants as any other jurisdiction. The same analysis shows, in broad-brush terms, that the 'first mover' initiative in behavioural regulation has moved on from the UK's FCA and now resides with Australia's ASIC, closely followed by domestic regulators in Singapore and Hong Kong; but that the US's SEC and others will soon be taking forward the initiative. This offers clear lessons, warnings and even specific risk predictions for practitioners, especially in multinational businesses where product lines face differential exposures from market to market.

Most of all, the global taxonomy approach answers the simple and stupid-sounding yet vital question asked by regulatees at every conduct risk event: "What does good behaviour look like?" With, as ever, vast sums of compliance budget riding on the right answer, now is the conduct risk analysts' time to shine.

Key terms explained

Behavioural risk = *the potential cost that may result from anything your staff do that undermines trust or value in your business.*

Conduct risk = *the potential cost resulting from your employees or suppliers committing any newly regulated conduct offence.*

Behaviour-based regulation, aka **Conduct regulation** = *disciplinary offences as conceived by regulators using ideas from cognitive and behavioural science (for example,* biases *and* information asymmetry*).*

Prediction: It Will Get Worse before it Gets Better

Some commentators have suggested that the $300 billion (McCormick & Steare, 2016) raised by conduct regulators represents a high-water mark of the new regime, and that we should now expect "an end of banker-bashing".[15] As circumstantial evidence for this, they cite changes in direction of leadership;[16] the softening of prosecutors' powers under the Senior Managers Regime (SMR);[17] and the dropping of plans for public investigations into bank culture[18] and tax evasion.[19]

Yet there remains a rare degree of agreement among politicians, publishers, enforcers and customers: everyone wants to use more behavioural science—whether as raw material for pub-

[15] Widely reported; e.g., Dunkley (2015).
[16] The first head of the FCA, Martin Wheatley, has now been replaced by Andrew Bailey, former head of the UK's other major financial regulator, the Prudential Regulation Authority. It has been suggested that this change signalled a softening of explicit political support for the 'conduct project'.
[17] Draft new SMR conduct controls had threatened to "presume" senior managers' personal responsibility for any breach of regulations. After an industry outcry that "presuming guilty" contradicts a key principle of English Common Law (that guilt must be proved), the "presumption" clause was removed in October 2015.
[18] Having announced a plan for a public review of the culture at retail and wholesale banks, the FCA withdrew this plan in December 2015.
[19] As of February 2016, there will be no further conduct investigation into HSBC's Swiss advisory services, who had been alleged to have helped wealthy individuals evade tax.

psychology conversations or as a tool for populist restraint of, and even revenge against, "bad bankers". The political chatterati remain anxious about becoming targets for still-seething public resentment over bank bailouts. Post-crash, and post-Panama Papers, the reservoir of public anger remains full. In several countries, more than three in every four voters still want to see tighter regulation of financial firms, and very few, anywhere, want to see any rules relaxed (Edelman 2015, 2016).[20]

Among regulators, the response has been to spread discussions about conduct control across a wider (and increasingly supranational) group of enforcement agencies. "Deterring misconduct" now heads the agenda at, for example, FINRA[21] and super-regulators FSB[22] and IOSCO.[23]

So whilst conduct-based regulation may indeed work on its own terms, far more significant if you're a politician facing electoral meltdown is its signal value in proving the sincerity of your efforts to win back public trust – or possibly just at reputational rehab. In any event (whether the political motive is rationalist, pro-social, or simply selfish), the conduct regime provides a quick way to "nail" a token senior manager; massive fines, that seem to avenge customers' suffering; and delivery of great big windfall revenues. Strikingly, after UK banks raised a total of £30 billion in private equity (2009–2015), they expended *all* of this hard-won investment in settling fines and redress payments. That startling fact led the central bank to comment that high levels of misconduct have not only drained capital resources, but also "undercut public trust and hindered progress" (Carney, 2015). Across EU banks in the same period, misconduct fines alone have totalled €50 billion, a waste of resources that has "direct implications for the real economy… [that wasted] capital could have supported €1 trillion of lending" (Carney, 2015). Going forward, central banks will include potential misconduct costs in stress tests; in the next five years, UK banks alone will have to find an extra £40 billion to provide for this (Bank of England, 2015).[24]

Conclusion

For anyone who originally advocated behaviour-based regulation on principle,[25] there is now an ironic tension between its idealistic aims—to, well, encourage good behaviour by regulated people—and the cold political calculus of how the principle is now applied in practice. In their defence, regulators do continue to express good intentions and to convene discussions with high ideals (e.g. FCA, 2016). Yet in everyday practice as currently applied, conduct control hands politicians a rare triple win: a low-cost, fiscally neutral way to reduce public deficits, with the vote-

[20] Public responses to the question: "Is Government regulation of the financial services industry not enough, or too much?" UK response: not enough: 77%; too much: 2%. (Global benchmark: 54%/15%. US: 45%/27%. Hong Kong: 58%/7% (Edelman, 2015). Gaps accounted for by "don't knows"). Financial services is meanwhile continuing its eight-year streak as the "least trusted sector" (Edelman, 2016).

[21] The US Financial Industry Regulatory Authority, which polices investment brokers.

[22] The Financial Stability Board, comprising central bankers from the G20 nations, in 2016 prioritises "addressing new and emerging vulnerabilities in the financial system, including potential risks associated with… conduct" (FSB, 2016).

[23] The International Organization of Securities Commissions, the global standard-setter for the securities sector. As a super-regulator, IOSCO prefers to devise its own language for conduct risk, designating it "harmful contact" (IOSCO, 2016).

[24] The Bank of England has concluded that "Over the five [future] years of the stress scenario stressed misconduct costs are assumed to reduce banks'pre-tax profits by around £40 billion". (Bank of England, 2015)

[25] Including fellow travellers at behavioraleconomics.com, lse.ac.uk/accounting/CARR and businessandeconomics.mq.edu.au

winning bonus of pointing directly at named senior managers who until now perhaps seemed to have "gotten away with it". For the government of any country with an active financial market, these attractions are irresistible. An asymmetric incentive for some dodgy populism, even?

All that political energy invested in conduct regulation itself raises serious questions about the behavioural biases of governments. It is salutary to look at the massive cost of past, overenthusiastic and failed, regulatory interventions (King & Crewe, 2014), which often deferred unduly to expert opinion and underweighted lay public ('normal') perceptions (Weick & Sutcliffe, 2015). The law of unintended consequences[26] is now alive and thriving, as conduct penalties have dented certain banks' capital adequacy (a core focus of prudential regulation itself), deterring investment opportunities.[27]

The **Law of Unintended Consequences** often refers to **unexpected detriment** resulting from a well-meant public policy or innovation; or to a **perverse effect**, where an intended solution makes a problem worse. The topic has frequently attracted scholarly attention, from John Locke (1691), through Adam Smith (1776) to Robert Merton (1936), Edward Tenner (1997), Bevan and Hood (2005) and beyond, as it continues to be a staple of human interest. Modern news media, and especially social media, have taken to it with enthusiasm. Try searching any of these:

Streisand Effect	Mister Splashypants	We Love John Sergeant
Death Cigarettes	Relax, Don't Do It	Scoonthorpe Problem
Parental Advisory	Trafigura Superinjunction	Boaty McBoatface

True to the spirit of unintended consequences, some bankers' reaction to the UK regulator's new SMR regime has been to 'juniorise' themselves (Reuters, 2016)—downgrading their own job titles in a bid to escape personal responsibility—whilst other risk reporting functions are becoming 'temporised'.[28] Meanwhile, on the client side, a new wave of risk aversion has led to some bizarre 'de-risking'[29] decisions, cutting off established customers' access to financial services; and to new restrictions on lending, which some analysts see as bad for entrepreneurs in general (Clement, James & Van der Wee, 2014). There's a serious hazard here to future good governance: we can foresee these line-level trends escalating into a new, wider crisis of talent and quality in senior management across the financial sector.

For all of its official backing and scientific credentials, let's remember that behaviour-based regulation has also taken hold for one simple reason: it plays to everyone's natural prurience

[26] Mooted by John Locke (in 1691) and Adam Smith (in 1776), but first fully explored by Robert Merton (Merton, 1936). See sidebar.

[27] R. Miles, Berkeley Research Group, private research among leading bank Chief Risk Officers, June 2016; enquire rmiles@thinkbrg.com .

[28] That is, to avoid risk of prosecution, no jobholder will accept a full-time contract of employment. The effect is most strikingly seen in anti-money laundering (AML) reporting roles which have now largely devolved to short-term contracts. This greatly diminishes personal accountability and organizations' 'human capital' capacity to prevent financial crime (R.Miles, BRG, as above).

[29] Such as where a bank unilaterally ends its business relationship with a client "to avoid, rather than manage" the risk, thereby reducing the general level of access to banking services (World Bank, 2015).

about human nature. Suddenly, we are allowed to study the personal habits of the once-aloof banking community and to see its members as just another subspecies of fallible human animal.

Although the current pop-science phase will pass soon enough, the longer term legacy of putting behavioural research into financial selling may be to yield to society at large at least a few of the wider benefits that the pioneers of our new science have looked for: its original, prosocial purpose. We are already starting to frame a more robust answer to the naïve yet vital question so often raised at conduct risk conferences: "What does good behaviour look like?" Vast corporate budget decisions now hinge on how conduct risk analysts resolve this question; all of which keeps this author busy.

And, my goodness, by constructing a **behavioural lens** for bankers to use (Miles, in press), one might even equip them collectively to recover their misplaced social purpose. Now *that* would be a revolutionary chapter in the history of risk management—never mind all the political background noise.

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The Author

Roger Miles explores and advises on human factors in risk governance, as Managing Director, Behavioural Risk, at Berkeley Research Group in London. He equips senior managers with new behavioural tools to remove unreliable assumptions, support robust decisions, and address conduct-related challenges. He has previously headed communications at a major EU business advocacy group; and risk communications for a ministerial office of HM Government. His *Beyond the Risk Register* workshops are regularly commissioned by public-sector bodies, global brands and NGOs who want to "work risk-aware" to protect and enhance their service value. His recent research commissions include analyses of strategic risk and uncertainty for market leaders in finance and the professions, national infrastructure, higher education and public healthcare.

Dr Miles presents the *Conduct Compliance: Right First Time* seminar series for British Bankers' Association, teaches and researches at Cambridge Judge Business School and UK Defence Academy. His recent publications include *Risk Culture* commentaries for ThomsonReuters, Berkeley Research Group and *Financial Times*, and behavioural best-practice guidance for the BBA, IOR, OCEG and GARP. His study of compromised bank CROs, 2007–2009, published in *OpRisk: New Frontiers Explored* (2012), predicted the creation and behavioural control agenda of the FCA, ASIC and other conduct regulators.

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The Devil You Know: The Consumer Psychology of Brand Trust

Henry Stott, Decision Technology

(enquiries@dectech.co.uk)

Trust is central to commerce and government. Brands that lose the trust of their customers will not survive long in a competitive market. But what do consumers mean when they describe a brand as trustworthy? And, more importantly, what can managers do to nurture and protect this valuable commercial asset? Here we outline the findings of our recent research into consumer trust in brands, including how to define and measure trust, the most and least trusted brands, and how trust is gained or lost through customers' personal experiences. Based on these results, we present four strategies for building and maintaining trust.

Introduction

There are lots of people out there peddling advice about who you can trust. "Trust in me" said Kaa, the python. "Never trust a man with two first names" said someone else[1]. "Never trust a man who, when left alone with a tea cosy, doesn't try it on" was Billy Connolly's contribution. This work enters that fray. What is trust and how can you get some?

Trust is crucial to both commerce and government. The News of the World closure, Lehman Brothers' collapse and the Greek bailout(s) were all characterised by a crisis in confidence. Each institution faced substantial underlying problems. But that was then amplified by a mounting tide of distrust that eventually overwhelmed them. Trust is simply central to human interaction and, accordingly, the loss of trust has disastrous consequences.

We define and measure consumer trust in different institutions and brands. We then describe the processes that generate trust (or distrust). Based on this, we provide a set of guidelines for building and maintaining trust, without the need to don any teapot-insulating headgear.

Human Touch

How is trust defined? Formally, trust is a choice by a trustor that relies on the actions of a trustee to bring about a desired outcome. Typically the trustor has no direct control over the trustee, is uncertain about how they will behave and is taking a risk on that behaviour. So when a consumer purchases your products, they are exhibiting trust. They trust you to have competitive prices, stock products that are fit for purpose, provide good after-sales service, and so on.

[1] There's an extended version which ends "...especially if one of them is a woman's". Debate rages on the origins, but it was in circulation by 1989, three years before Billy Ray Cyrus recorded "Achy Breaky Heart". Kaa is the python in The Jungle Book.

So trust is more than simple risk-taking. If you don't carry an umbrella then you've taken a risk on the behaviour of an inanimate object, the weather, and you tend to blame yourself when it rains[2]. If you travelled across London having phoned ahead about some limited edition baby clothing, as we recently did, and it wasn't in stock when you got there, then you blame the retailer. You trusted them and they let you down.

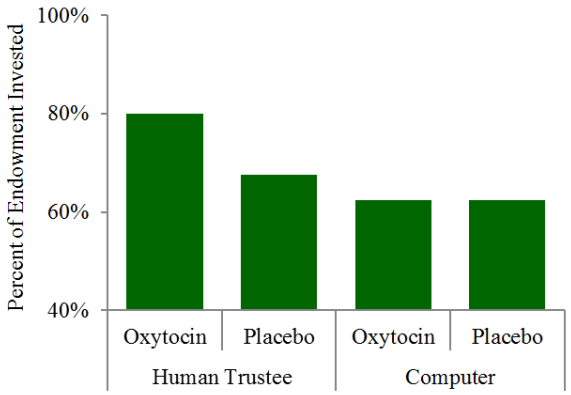

Figure 1: Oxytocin and trust

Trust, and its distinction from risk-taking, has deep biological roots. A 2005 study[3] examined the circumstances under which people exhibit greater trust by investing more money during a game. Figure 1 shows how people who received a dose of oxytocin, the love hormone, displayed greater trust than those who didn't. But this was only true when the trustee was a person, rather than a computer.

Battle of the Brands

Human personality is complex, but there's a long-standing, well-researched general model which describes each of us using five traits: openness, conscientiousness, extroversion, agreeableness and neuroticism. Similarly our research shows how brands and organisations can be characterised using five dimensions: honesty, innovation, prestige, power and greenness[4]. Since 2005 we've run an annual survey on thousands of UK consumers to track these perceptions across hundreds of brands. Figure 2 shows the honesty rankings from a recent survey across various industries.

[2] Though there is clearly a tendency to anthropomorphise and blame the weather too. Reading Epley, Waytz and Cacioppo (2007) will help you come to terms with the urge to call your car "Herbie".
[3] See Kosfeld, Heinrichs, Zak, Fischbacher and Fehr (2005). Oxytocin is a neuromodulating hormone that plays a wide-ranging role, in conjunction with the music of Barry White, in human reproductive behaviour, including pair-bonding, orgasm, childbirth, and breast-feeding.
[4] And there's a literature on this too, including Slaughter, Zickar, Highhouse and Mohr (2004), and Aaker (1997).

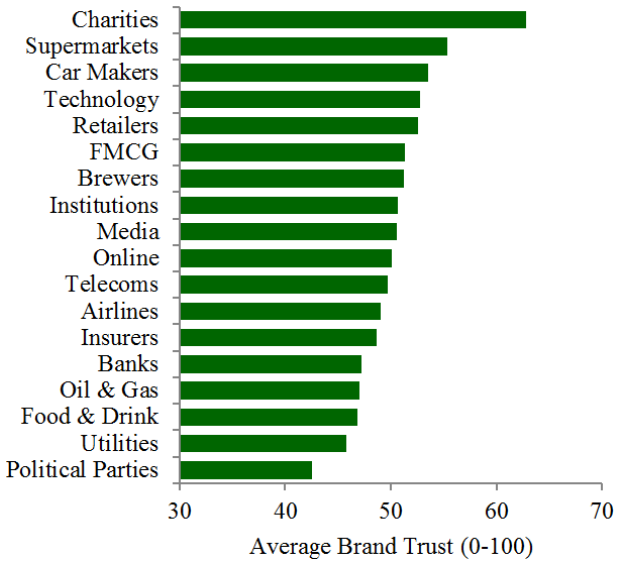

Figure 2: Industry honesty

Trusted brands are those that people describe using adjectives like "honest", "caring" and "trustworthy". It's therefore no surprise that the most trusted brands include charities like the RSPB and Cancer Research, as well as academic institutions like Oxford, a few points ahead of Cambridge (ahem). What you may find more surprising is that this year's top ten includes retailers John Lewis and M&S. And previous top tens have also included Boots, Waitrose, Amazon and The Body Shop.

At the other end of the scale, scandal-hit FIFA is the most mistrusted institution in our tracker, followed by all three major UK political parties and the British and European Parliaments. But intriguingly, despite the severity of the 2008 financial crisis and all the other shenanigans, trust in financial institutions barely wavered. What sustained banks' brands through such turbulent times?

The User Experience

To answer such questions, we have developed a model of how institutional trust is created and destroyed. Essentially, trust is constructed from memories of experiences. Accordingly, our model quantitatively captures the brand experiences that people tend to encounter (and remember) and the impact those memories then have on trust perception[5].

In this model, we separate the impact of day-to-day events (e.g. adverts or product purchasing) from more long-term, memorable events (e.g. product or PR disasters). Figure 3 shows the typical annual frequency and impact of various day-to-day events. The graph shows how consumers typically experience about 300 brand touchpoints, like adverts or product interactions, per year. The most trust creating and destroying events are product purchases and problems. Those occur

[5] In taking this approach we essentially treat memory as a database of episodic events along the lines described in Brown, Neath and Chater (2007). Semantic understanding, like brand beliefs, can then be derived from these episodic memories.

on average 54 and 11 times per year respectively, but this varies greatly between brands, creating variations in trust.

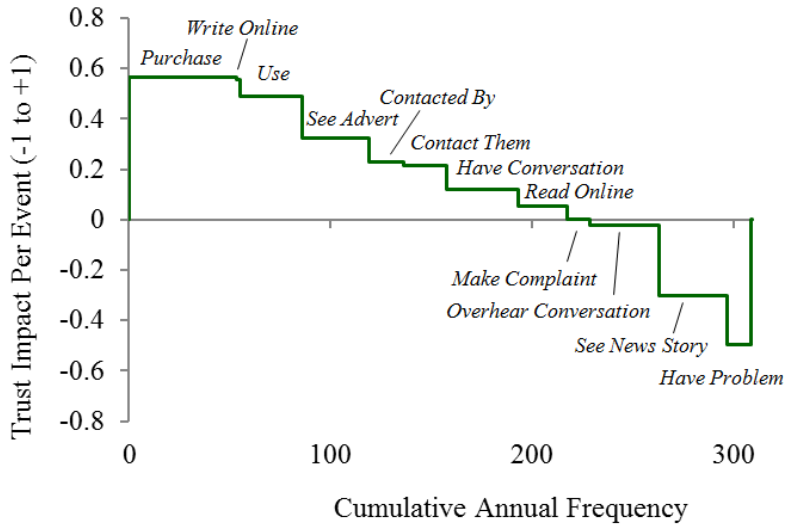

Figure 3: Impact of day-to-day events

The chart contains other insights into trust formation. First, whilst product problems are negative, making a complaint can either build or destroy trust, yielding an overall neutral effect. Good customer service and efficient problem resolution are important trust levers. Second, bad news sells, so being in the press typically dents trust. Third, both in-bound and out-bound customer contact help to create trust and happen often enough to exert a material influence.

Airline Fracture

Using this framework, we can deconstruct the image of a company or sector. For example, in Figure 2 the average airline trust score is just under 50. Figure 4 shows how that score was generated. First, there are the positive events. We may fly infrequently, but as shown in Figure 3, product use exerts a large impact. Since it involves being hermetically sealed into an aluminium box and hurled across the sky at 500mph, we're understandably grateful for an incident-free flight. Likewise media events, such as seeing an advert or responding to an air miles offer, build trust, albeit these are much lower impact and much higher frequency. By the time we've added up all these pluses, the industry would score 56 and be the most trusted commercial sector.

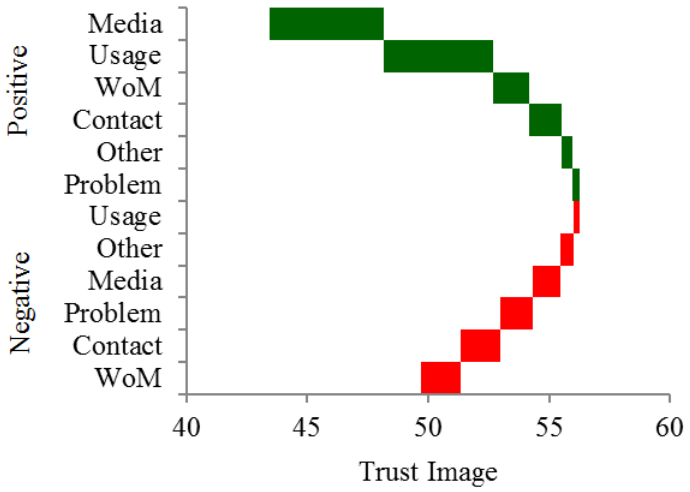

Figure 4: Trust in airlines

But then come all the bad events. Airlines inevitably encounter problems, like delayed flights and lost trunkis, and typically they don't manage to turn these situations around. Likewise, Contact (i.e. getting in touch for advice) and WoM (word of mouth) generate as much distrust as trust. After you add it up, airlines come in around the middle.

Fare versus Fair

Based on this deconstruction, we can contrast how some institutions inspire trust and vice versa. Figure 5 outlines how the three main political parties and four major supermarkets perform on different experiences.

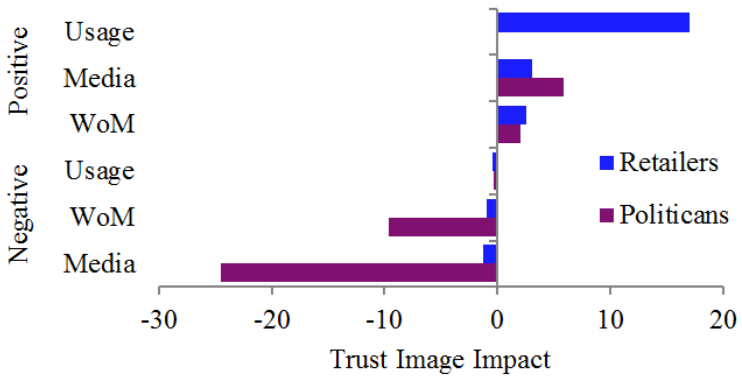

Figure 5: Comparison of trust drivers

Essentially people trust supermarkets because they generally stay out of the papers and fulfil our weekly shopping needs. By contrast, politicians can't win. Everyone talks about them, rarely with a

good word to say, and they have no daily direct contact[6] to act as a counterbalance. With supermarkets it's about "fresh for you every day" whereas political parties offer us an abstract and detached "future fair for all".

And this contrast explains the continued trust in banks. The City may have betrayed society's trust, but my bank continues to deliver cashpoints, card transactions and other day-to-day services. In this sense, IT problems that directly impact consumers will be more damaging to trust than scandals such as LIBOR manipulation, though the latter may provoke more management fallout and a greater regulatory response. So our advice to the City is to keep a low profile and concentrate on reliably delivering great service and innovation.

Summary

Continuing on that theme, what are the general implications for management? Trust is crucial to commerce, so how can you get more? The research prescribes the following four strategies which, in keeping with a traditional consulting conceit, all begin with "C":

Competence: The greatest trust lever at your disposal is your product. Offer the best in class and aim to anticipate and prevent every problem.

Complaints: Given some problems are inevitable, see them as opportunities to build trust by offering outstanding problem resolution[7].

Contact: Staff-customer interactions are key so look for ways to increase the frequency and positive effect of such events.

Comms: Trust will be destroyed by bad press or word of mouth. Play war games with your PR team and develop effective counter-measures.

Meanwhile, our results highlight one additional simple truth. Trust takes time to build, but can be lost in a moment. Likewise, once trust is lost, it is hard to regain. Bad memories can taint a brand for a decade. In this sense, trust is a fundamental component of your brand value and hence your market to book ratio.

Just One More Thing…

Finally, just for fun, we also investigated whether people who work in different industries are more or less altruistic. In an ultimatum game, people indicate how much they would offer a stranger from a £10 pot. The stranger can either accept, and the person gets to keep the remainder, or refuse, and they both get nothing. It's rational to offer 1p, since the stranger is still better off. But in reality strangers typically shoot down anything under £3-£4 and people tend to offer this or more, up to a very egalitarian £5.

[6] Clearly politicians collectively authorise a vast number of our daily experiences, but voters either don't see this as direct contact or don't think of politicians as directly responsible.

[7] This is the "recovery paradox". People will trust you more if you deal well with a problem you created. For cautionary tales about over-booking your hotel see McCollough (2000).

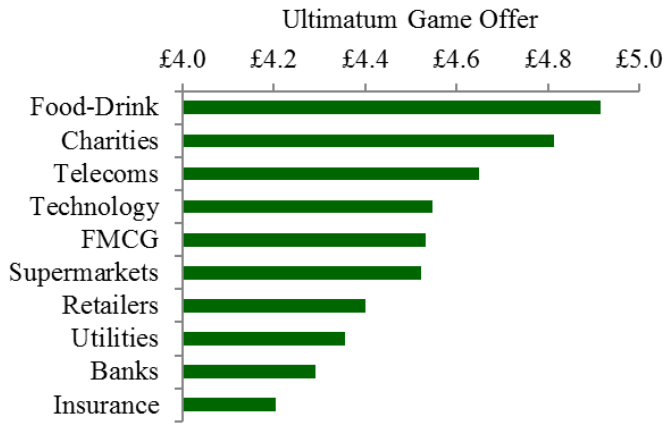

Figure 6: Employee altruism

Figure 6 shows the results. People working in hospitality, charities and telecoms offer about £4.80. Bank and insurance industry workers offer the least, at about £4.25. There's just over a 70p difference between the top and the bottom.

This behaviour by financial service workers is consistent with prior research[8]. On the one hand the people in these industries are being economically rational. But on the other hand, they are being naïve about how societies function and the retaliatory risks they are incurring. Cultural change is probably the only long-term solution. Having everyone spend the afternoon wearing a tea cosy could be a good start.

The Author

Henry Stott is Co-founder and Managing Director of Decision Technology. He has a PhD in decision-making and is a Certified Member of the MRS. At Decision Technology Henry helps businesses and policymakers understand and manage customer decision-making. He has also co-authored the Times' Fink Tank football column for over ten years. Henry was previously a Director of Oliver Wyman, a financial services strategy consultancy, where he helped found their highly respected Risk Practice, developing many of their proprietary techniques in credit risk measurement and business valuation.

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[8] Carter and Irons (1991) report how Economics majors offer 71 cents less, out of a $10 pot, than other students. They then go on to hand wring about whether Economists are ruining the world. Hmmmmh.

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

Gerhard Fehr, Alain Kamm and Moritz Jäger, FehrAdvice & Partners AG
(Corresponding author: gerhard.fehr@fehradvice.com)

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

Two Deciding Drivers of Behavioral Change

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

Awareness

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

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

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

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

Willingness to contribute

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

Social Norms and the Costs of Not Following Them

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

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

Burdens and Fairness Perceptions: Psychological Costs

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

Economic Costs

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

BEA™ 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.

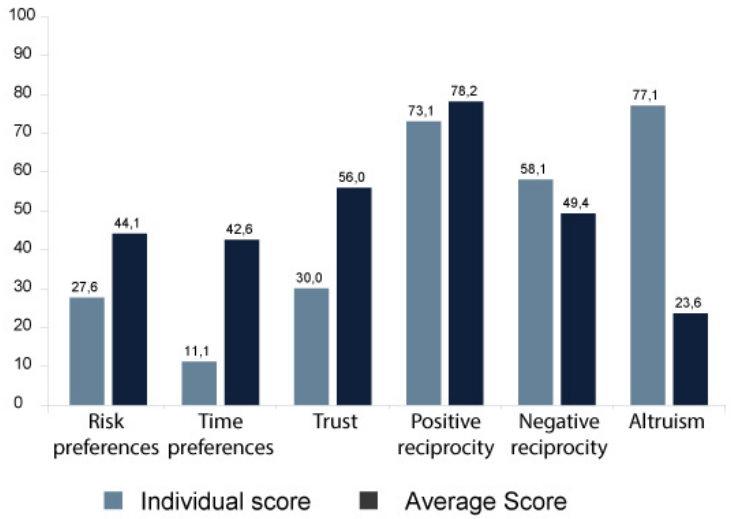

Figure 1: An example comparison between an individual's BEA™ Preferences and those of a population

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**.

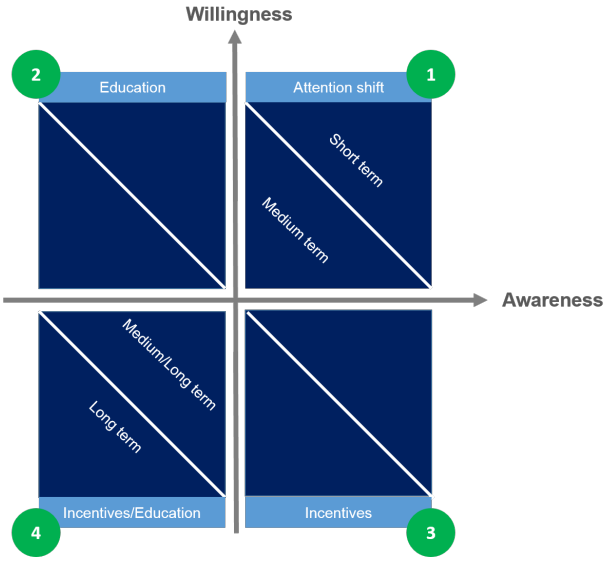

Figure 2: BEA™ Behavioral Change Matrix

*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^{TM} Behavioral Change Toolbox.

Case Studies

A civic responsibility project in the Middle East

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

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

A study on littering in Switzerland

In a large online experimental study with more than 15,000 participants in 2013, FehrAdvice & Partners AG used the BEA^{TM} 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^{TM} 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^{TM} 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.

The Authors

Gerhard Fehr is Co-founder, CEO and Managing Partner of FehrAdvice & Partners AG. He developed the BEA^{TM} 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 BEA™ Behavioral Change Matrix to societal and organizational challenges.

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Behaviour Change: What to Watch out For

The Ogilvy Change Team

Introduction

Richard Chataway

This year's 'Nudgestock'[1] was titled 'The Evolution of Behavioural Economics', this name was a reflection of both the speakers specialisms and the continual change in the application of BE. Certainly the experience of our team, as we will describe, has been that there has been an evolution in popular understanding and usage – and consequently application.

Accordingly, you will see a huge variety in the nature of the challenges addressed in the essays below. As behavioural science gains traction across sectors and industries, the interest in and scope of our work grows. From addressing hand hygiene in a food-processing factory, to improving newspaper subscription rates, to getting children to turn up to school – the briefs we respond to are as myriad and as complex as humans themselves. The only commonality is that we have delivered effective behaviour change through fusing a rigorous application of behavioural science with a creative, often oblique, solution.

Therefore, what follows is a reflection of that work and some things we have learnt along the way. Some of these findings are consistent with existing industry knowledge, such as the power of the IKEA effect and the importance of RCTs. Others are more surprising – that the very language we use in describing and selling our work is as critical to success as the language used in the intervention itself, for example.

We hope you find it interesting – and who knows, it may even evolve your own thinking a little.

1. What Behaviour...to Change?

Pete Dyson

When push comes to shove, I think a behaviour change approach consists of so much more than is often appreciated. The team here at Ogilvy Change are (relatively) small and we are mindful we sit within a building of more than a thousand communications specialists, each with a legitimate claim to being experts in their approach to getting a message across and affecting positive change. However, when you talk about behaviour change it quickly becomes clear you enter an altogether more tangible, measureable and different space. In this section, I'll cover two key watch-outs relating to behaviour change language and strategy.

Rather than objectives starting with the kind of phrases we see in the left hand column of Table 1, which make perfect sense and are supremely valuable to many campaigns, once a behaviour

[1] Nudgestock is the annual festival of behavioural science, created by Ogilvy Change and now in its fourth year.

change approach is embraced you learn to really spot a lot more of the phrases in the right hand column. In this transition, I think we move unequivocally from *attitude* to *action*.

From attitude…	**…To action**
Get customers to *start thinking* about… Get mum to *consider switching* their…	Get people to *click* the button to sign up to…
Everyone should *be aware* of the new…	Get customers to *tell a friend* about… Get people in store to *pick up* X for the first time…

Table 1: From attitude to action

The first 'watch out' therefore relates to language. It can be illuminating to make a mental note of the number of times you find yourself saying (probably unconsciously) the following keywords; notice, feel, consider and be aware. Of course these are not bad words in and of themselves, but they don't seem to help much when you're trying to define the challenge of changing behaviour. To the behaviour change specialist, the things that go on in people's heads really only become critical when they manifest as behaviours in the real world. For instance, 'get children to feel better about going to school every day' might translate into 'reduces instances of late arrivals to school on Monday mornings'.

Now we're aligned on the approach, we can talk more about behaviour change strategy. It's natural to *love* a simple brief, but over time it has become apparent that even the clearest behaviours have several 'sub-behaviours' or 'bridging behaviours' that ladder up to final action itself.
For instance, when tasked with improving hand washing among workers in a food processing plant the behaviour to change initially seemed blindingly obvious, to 'get workers to wash their hands'. However, the devil really is in the detail. Upon closer inspection it's clear we need to clarify the classic W's; where, when and who.

> **When;** is it at the pre-shift cleaning wash, the mid-shift lunch break wash, or the post-work wash?
>
> **Who;** are we seeking to reach entrenched 'non-washers' or people that wash a little but not currently enough? Are we talking to new workers or those that have worked here for many years?
>
> **Where;** are we looking at the communal wash station, the lunch break area, or the stations *between* areas?

With this in mind, the second watch out is to break apart even the simplest behavioural challenges. Many times, especially in public health, you have to start with a series of much smaller bridging behaviours that will eventually ladder up to the bigger behaviour change (like building

towards quitting smoking altogether, for instance). In this respect, patience is a virtue and a keen eye for detail pays for itself many times over!

2. Understanding Behaviour

Pete Dyson

It's fair to say it's flattering to read that Amos Tversky once said he merely examined in a scientific way things about behaviour that were already known to "advertisers and used-car salesmen." We owe this to decades of smart, insightful and subtle advertising campaigns to earn this reputation, but left unchecked, I fear any claim to be intuitive experts in understanding behaviour is at risk. Here's why.

Any given behaviour change intervention is likely to have started life by first understanding and diagnosing *why* a behaviour is occurring. The logic follows that if you want to change something you must first understand it, but without an eye on the end goal this stage can more closely resemble estimating the number of angels that can dance on the head of a pin. Really quite interesting, but practically useless. The value of understanding comes with precious few insights gained, rather than the number of mechanisms created.

The first watch-out is to know the difference between *clocks* and *clouds*, which is a distinction made by Karl Popper to explain *complicated* and *complex* systems. The former is a logical and predictable mechanism, the latter is a thorny array of positive and negative feedback loops where small changes can have big effects. If you hold this in your head when looking at behavioural models you'll see the boxes and arrows look a lot more like an electrical circuit diagram than a painting of the sky above our heads!

Perhaps unsurprising, if you spot a behaviour change practitioner holding a copy of the book "ABC of Behaviour Change Theories" you'll likely see a puzzled look on their face. With no less than 83 behavioural models to choose from (many of which overlap), you find you really need a model to determine which model to choose. Now this isn't to say the book should be shelved, quite the opposite, it should be examined carefully. Just as you might listen intently to the upcoming weekend weather forecast with scepticism, it should be known that the boxes are an aid to thinking, not a substitute for it.

The second watch-out surrounds a much larger topic of what we might charitably call 'heuristic fetishism'. The value of secondary research is undeniable. When tasked with addressing issues of school attendance for East Sussex County Council the process of investigating behavioural barriers and drivers, understanding child psychology, and reviewing trials already conducted (such as an excellent test of the efficacy of providing breakfast as a pre-school nudge in New Zealand by Ni Mhurchu et al. (2013) served to unearth new ideas, allow for lateral thinking and act as stimulus when creating locally relevant interventions.

However, the burgeoning field of behavioural sciences could certainly be charged with 'heuristic fetishism', or what you might alternatively name the 'I need a funky bias' heuristic. If we agree the understanding phase is an aid to thinking, whose value is weighed by the quality of ideas subsequently created, then there's a lot less room on the page for words like Semmelweis reflex,

reminiscence bump, Sapir-Whorf hypothesis and Idiosyncratic Fit heuristic. We can't deny that (as the penultimate phrase in that list suggests) we understand the world through language to such a degree that having catchy names for effects is useful, but watch-out for generalisations. The titles typically refer to a catch-all and context-blind effect (see Jason Collins at Evolving Economics for a deeper critique) and you have to ask yourself whether what you're writing can ever be understood (/translated) by your friends and colleagues on the ground. In this respect, we might be well advised to befriend our local used-car salesman to get a healthy dose of straight-talking intuition from the real world.

3. Creation Techniques

Dan Bennett

People are complicated and people together are even more complicated, equally, ideas come from unexpected places and ideas need refining in order to survive. Put all this together and it's clear that creating behaviour change intervention can be a messy affair. Here are my thoughts on how to stay clean and dry in the process.

Firstly, we've found co-creation to be key because people disproportionately value the things they build themselves, so coming up with ideas collectively is a sure fire way to ensure they happen afterwards. We've found if the people brainstorming in groups take real ownership over their ideas, they present them *themselves* and they get specific feedback then their sense of ownership is so much higher. In fact, the idea generation can be the easy bit, the harder yards are yet to come, but those yards are much easier when the teams really own their ideas.

Secondly, we've learnt that expertise comes in all shapes and sizes. Our workshops range from including world-wide renowned academics to call centre agents in the room. Everybody has a different expertise and value to bring to the table so we advise not to forget to bring the people at the coalface into your workshops. They are the ones with the knowledge, but there some two watch outs we have found to be aware of.

Firstly, not everyone has learnt the rules of brainstorms etiquette. Working in marketing we're quite used to with practised brainstormers, but if joining sessions like these isn't your everyday role, blue sky thinking can be throw up some problems in terms of how to treat fellow group members ideas. Setting up some simple 'rules of day' really help this and facilitation that adheres to those rules ensure it lasts throughout the day.

Secondly, we've found junior employees can go quiet when their seniors are in the room. In these open sessions where the answers aren't readily available, the confidence to say what you think even if it might be wrong is key to great ideas. It's really important to get the introductions right. Hierarchies can really shut people down so don't start the session by reaffirming them. Rather than the traditional round the table introductions of your name and position which reaffirm how senior or not somebody is, we've found having name and 'today I bring X expertise' can really help to keep everyone on a level playing field.

Lastly our third learning has been to mix the foundation of science with the power of creativity. It is really easy to use frameworks to get to basic executions of the idea, but there is a danger with

settling for the ordinary. 'Join x millions of people who do x behaviour' may be an execution of Social Norms that is effective now, but unless we innovate that execution of the principle there is a danger in them becoming less effective. It's always worth pushing your brains a bit further. Are there more oblique ways you can communicate popularity? Does it even need to be text? This is a hot topic for Rory Sutherland, who says emphatically that there are times in life when you *don't want* a creative bout of inspiration. You'd be rather unhappy if the man servicing your jumbo jet with a screwdriver all of a sudden thought 'ooh let's try anti-clockwise today'. But your ideation space is a safe one in which to get out all of the most indirect and oblique ways of achieving your behaviour change. You can cut down later, without a creative mindset you won't get there.

David Ogilvy, one of the leading advertising thinkers over the last century talked about 'Blazing New Trails'. It's a line we still aspire to use at Ogilvy today.

4. Testing

Vishal George

"The record of a month's roulette playing at Monte Carlo can afford us material for discussing the foundations of knowledge." Karl Pearson

A California-based company has been a roaring success for selling luxury ice cubes that are perfectly square for minimum dilution at $6.25 per cube. Without a doubt, marketing and sales personnel are phenomenally creative in their approaches to change behaviour, creating a demand for something that is seemingly unfathomable to sell. The only barrier impeding all sales personnel from turning into multi-millionaires – they don't count their wins.

Just like how a gambling man's roulette record for a month can shed light on probability theory, a record of nudges can inform us about the things that work and more interestingly, the things that don't work. As behavioural economists, we have elegant frameworks such as EAST to facilitate designing interventions, theoretical models such as Fogg's Behaviour Model to guide us and past experiments to inspire us – but the truth be told, we are clueless. We know what could work but we're arguably no better than dart-throwing monkeys at estimating what will work with certainty. In our world, context is king. It's not surprising that what works in a laboratory with 18 year-old university students does not always work with factory workers in Chile. However, what we do know is that every now and then, nudges work and when they do, it reaps tremendous gains.

Working in call centres from Birmingham to New Delhi, we have created testbeds for agents to pilot nudges. A call centre is a fertile testing ground, since a new caller dials in virtually every second and engagements tend to be short. On most occasions, these testing grounds allow us to test multiple script nudges with a randomised control trial (RCTs) to evaluate impact. RCTs, an idea which emerged from medicine two centuries ago (Hausmann, R., 2016), have more recently been embraced by evidence-based policy makers and behavioural economics. It addresses the key criticism of statistical studies which are limited by the infamous 'correlation does not imply causation'. The idea is simple – agents are randomly assigned into 'nudge' groups and a 'control' group. Observed differences in performance between the groups are recorded and impact of the intervention is measured.

Sounds simple? Here's why it can fall apart – all too often there is no proper control and results cannot be generalised. In a study, we sent three leaflets with nudges and a control leaflet i.e. the original, to households in a local council to nudge them to pay their council tax using direct debit. In order to overcome the lack of a proper control, we included a second control – a group of households which did not receive any leaflet. Results aggregating 40,000 households demonstrated no statistical difference in direct debit payments for households receiving the nudge leaflets and the control leaflets. In fact, we found that there was no difference between households receiving no leaflet and those receiving the nudge leaflets. While on the face of it, these results seemed catastrophic, the devil was in the detail. The council was recommended to stop printing leaflets as households simply do not engage with them. This would save printing costs, design time and without doubt, reduce the environmental impact. The council can now turn their attention and communication budgets towards alternative means to engage households.

While counting wins can seem like a mind-numbing exercise, as Karl Pearson said, these dull exercises steer our knowledge base. Counting gifts us the license to question the status-quo, encouraging us to adapt successful nudges in our constant quest to progress.

5. Scaling Up

Eleanor Heather

Changing behaviour is anything but straightforward, so it's no surprise that scaling-up projects beyond a small test/pilot is fraught with challenges. Over the last four years, we've found that all scale-related challenges can be chunked into two main types:

1. **Outward (consumer) facing** – those related to continuing to successfully change behaviour in new/bigger/different environments
2. **Inward (organisation) facing** – those related to actually making the project happen; to getting people within the organisation to implement the intervention.

With the former, you're dealing with end-user and typically individuals' behaviour and with the latter you are dealing with employees, teams and organisational behaviour - essentially it's the difference between (1) *get employees in factory Y to wash their hands* and (2) *get factory Y to implement what factory X piloted*.

Given that many of the findings underpinning behavioural science originated in WEIRD societies, the issues of translatability and generalisation have naturally been more widely covered by both promoters and detractors of behavioural science. That said, we've often found *inward-facing* challenges to be the most challenging to overcome.

Achieving behaviour change at scale requires buy-in from a myriad of people throughout an organisation most of whom will have little to no knowledge of (i) the project (ii) behavioural science. Furthermore, the project deliverables i.e. the behavioural change, are unlikely to satisfy their immediate targets yet will require effort on their behalf. In effect, before we can even consider achieving behaviour change *en-masse* we must first tackle some of the biggest behavioural biases known including: *Loss aversion; Effort heuristic; Commitment escalation; Present-bias.*

Driving behaviour change at scale requires solutions that address the distinct needs of both. Which is no small ask.

One holistic solution that we developed is our Behavioural Toolkits. Through our experiences of developing toolkits for brands including Kimberly Clark and Diageo, we've learned that success means getting the right mix of prescription and flexibility; provide enough detail on the underlying behavioural theory whilst allowing enough flexibility for users to adapt the final execution to a given context. Our approach is 'libertarian paternalism' personified!

The precise tools we include in a Toolkit vary according to the behaviour change and roll-out challenge in question. One Toolkit we developed needed to overcome the inward-facing challenges of Effort Heuristic and Present-Bias and outward-facing challenges of differing cultures and market sophistications. To address both challenges simultaneously we included behavioural techniques such as: step-by-step guides, part-completed templates and implementation checklists.

However, toolkits are but one means of successfully rolling-out projects more widely and as the field of applied behavioural science continues to grow, we'll all continue to find new and inventive ways to drive behaviour change at scale. In the meantime, like all good humans, we've established a few heuristics that help guide our approach to tackling the pernicious issue of scaling-up:

Changing behaviour at scale

1. **Outward-facing heuristics**

   Embrace satisficing: accept that scaling-up will reduce your ability to measure *causality* between your project and any observed outcomes. But *association* is better than no outcome measure at all.

   Include a degree of flexibility in the any roll-out plan: as healthcare shows, people don't like prescriptions! Flexibility to tailor the execution to an individual's context increases the chance they'll support the project, and the chance of the intervention succeeding.

2. **Inward-facing heuristics**

   Involve key-stakeholders as early as possible and make them feel like they've had input into the final outcome.

   Know when to step-back, and when to step-forward: appreciate you might not always be the best 'messenger' to translate the project objectives.

6. Concluding Comments / Wrapping Up

Richard Chataway

As you have seen, in the four years that Ogilvy Change has been in existence our approach has evolved in line with the knowledge and thinking of the industry. Both in our application of BE, and in how we use it to inform our engagement with clients and the wider communications industry.

To give a tangible example, when I was delivering BE workshops for clients in 2010 there might be one attendee who had read 'Predictably Irrational' or heard of Daniel Kahnemann. There might even be a hidden psychology graduate.

Nowadays, we tend to find half the room have read one or more of the key texts – most, especially recent graduates, will have at least completed an academic module on some aspect of behavioural science. So the base we are starting from is higher, and understanding of relevance greater. The industry future is bright.

The Ogilvy UK website proudly states that 'Everything we do is designed to change behaviour'. If this work has succeeded in moving the communications industry to a model where behaviour change is the primary goal, and the measure of success – well, then we have achieved a great deal.

But as we have shown, actually what we have done is bigger: achieving measurable changes through non-traditional means. With hand stamps, a jigsaw, painting babies faces on shop shutters. The beauty of an approach rooted in behavioural economics is that it forces us to creatively identify the most effective levers, whatever they may be, without the barriers of a brief restricted by a medium.

Or, to put it more simply: to design clever ways to transform human behaviour.

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Making the Best Choice the Easy Choice: Applying the 4Ps Framework for Behavior Change at Google

Zoë Chance and Ravi Dhar, Yale Center for Customer Insights

(Corresponding author: zoe.chance@yale.edu)

If you've ever made a New Year's resolution but failed to change your behavior, you're intimately familiar with the "intention-behavior gap" (Sheeran, 2002). And you're not alone—most intentions to change behavior end in failure (Sheeran, Webb, & Gollwitzer, 2005). To help people make desired behaviors easier for themselves and others, we've formed an academic-industry collaboration to develop and implement a new framework, the 4Ps Framework for Behavior Change. It offers strategies and tactics for helping close the intention-behavior gap, organizing a variety of "nudges" from marketing, psychology, and behavioral economics. Focusing on actionable, high-impact levers of change, it combines common sense with novel ways to make desirable behavior the path of least resistance. Here, we present the framework, along with supporting research findings, and describe how it is being applied in the field: encouraging healthy food choices at Google.

In 2015, Google celebrated its sixth year holding the number one spot on Fortune's list of 100 Best Companies to work for (Fortune, 2015). And in all those years, Googlers mentioned the free, homemade food as one of the keys to their satisfaction. The biggest challenge for the food team was figuring out how to help Googlers stay simultaneously healthy and satisfied: failing on either dimension would mean loss of productivity and morale, which could hurt business outcomes and employee retention. And inducing satisfaction meant not just providing a variety of foods (including some less healthy ones), but treating employees as adults in control of their own decisions about their bodies and their health. Therefore, gentle nudges that did not restrict choices like those suggested in the 4P's framework were appealing to the food team.

To start, we describe how the 4 Ps framework is being applied at Google, with results of some field experiments. Our hope is that describing how the framework can be applied to one challenge (serve food that keeps people healthy and satisfied) in one type of location (Google offices) will inspire ideas for applying the framework to other challenges and locations.

The 4 Ps Framework for Behavior Change

The 4 Ps Framework for Behavior Change leverages principles of behavioral economics, psychology, and marketing to restructure the environment in ways that maximize the benefits arising from sporadic efforts to achieve health goals and minimize the effort, time, and willpower needed to make good choices. Frequently, time pressure (Dhar & Nowlis, 1999), depletion of self-control (Pocheptsova , Amir, Dhar, & Baumeister, 2009), or distractions (Shiv & Nowlis, 2004) limit people's processing capacity, which impacts their decisions. Often, they browse without planning ahead, failing to consider possible alternatives. And in many cases, they succumb to temptation in

the clash between short-term and long-term goals (Khan & Dhar, 2006). For all these reasons, it is possible and helpful to nudge them in the right direction.

The intervention domains of the 4 Ps framework are: Process (how choices are made), Persuasion (how choices are communicated), Possibilities (what choices are offered), and Person (how intentions are reinforced). (See Figure 1 for a summary of the framework.) Each lever of change provides different paths to reduce resistance and nudge individuals toward healthy choices, offering ways to make intuitive choices healthier and rational choices easier. Together, the framework provides comprehensive suggestions for engineering the environment to make the healthy choice the easy choice.

Figure 1: The 4 Ps framework for behavior change

Process: How Are Choices Made?

Process interventions can influence behavior by understanding choice heuristics. These nudges reposition options in physical or psychological space, affecting their relative appeal or ease of selection. This can involve changing the physical location of the options (order and accessibility) or the structure of the choice (defaults).

Order

Sequence matters: order has a strong impact on preferences and choices between options. In a classic marketing study, consumers who had touched and evaluated four pairs of stockings showed a strong bias toward the rightmost stocking yet had no awareness of any order effects (Nisbett & Wilson, 1977). More meaningfully, a political candidate whose name is listed first gains 3.5 percentage points in an election (Koppell & Steen, 2004). And sometimes the middle option can have an advantage, too—"extremeness aversion" leads many consumers to avoid, for example, the largest or smallest drink sizes (Dhar and Simonson 2003). There are some conflicting findings, but in general, the privileged position in a visual set (like a buffet line or menu) is the first item in a pair or the middle item in a set of three. The privileged positions in an experiential or auditory set (like a set of stockings to touch or a list of daily specials to hear) are both the first and the last items. When options are ordered for example by price or size, people with weak preferences tend to compromise by choosing the middle option because it is easier to rationalize (Sharpe, Staelin, & Huber, 2008). These biases can serve health goals, if healthy options are offered in the advantaged positions in comparative choices.

Defaults

Due to a bias toward the status quo, and also the ease of not making a decision, defaults are extremely effective in guiding choices even in domains as weighty as organ donations (Johnson & Goldstein, 2003) and retirement savings (Thaler & Benartzi, 2004). Defaults are less effective when preferences are strong. When preschool children were offered apple slices as the default side but allowed to switch to French fries, their strong preference for fries led the vast majority to reject the apples (Just & Wansink, 2009).

Accessibility

Accessibility, or convenience, exerts a gentle but powerful influence on choices. People drink more water when it is easily accessible on their table, rather than twenty feet away (Engell, et al., 1996). And cafeteria visitors purchased fewer junk foods when the transaction required waiting in a separate line (Meiselman, et al., 1994) and were less likely to serve themselves ice cream when it was less accessible, in a closed rather than an open freezer (Levitz, 1976). Perceived accessibility affects behavior as well. For example, at Google, stocking water bottles in coolers at eye level while moving sugary beverages to lower shelves behind frosted glass increased water consumption by 47%, decreasing calories consumed from sugary beverages by 6% (Kang, 2013).

A small difference in accessibility can have a major impact on snacking. In one of Google's large and busy "microkitchen" breakrooms stocked with free drinks and snacks, observations of more than 1,000 people found that drinkers who used the beverage station near the snacks were 50% more likely to grab a snack with their drink. For men, the estimated "penalty" in increased annual snack calorie consumption for using the closer beverage station was calculated to yield about a pound of fat per year for each daily cup of coffee!

Persuasion: How Are Choices Communicated?

In addition to nudging behavior through the choice process, there are many opportunities for nudging through persuasive communication. Persuasion interventions are the least invasive and lowest cost way to nudge people toward better choices. Effective persuasion captures attention and increases intuitive appeal, through vividness, comparisons, and "moments of truth."

Vividness

Vivid messaging and imagery grabs the attention of the intuitive, emotional mind. Triggering emotions such as delight or disgust can help the gut instinct be the right one. Vividness can be achieved with words or with a visual or tactile experience.

Names play an important role in expectations and evaluations. Adding adjectives like "succulent" or "homemade" can make food not only more appealing but also tastier and more filling (Wansink, van Ittersum, & Painter, 2005). Even fruit consumption can be nudged—a sign reading "fresh Florida oranges" increased fruit consumption by 26% (Wansink, 2006). However, food names can spur overconsumption, too: dieters thought a "salad special" was healthier and thus ate more of it than an identical "pasta special" (Irmak, Vallen, & Robinson, 2011). And people eat more when portions are called "small" or "medium," while believing they have eaten less (Aydinoglu, Krishna, & Wansink, 2009).

Using pictures or objects is another vivid way to engage the emotions, which can encourage persistence in healthy behaviors. For example, looking at bacteria cultured from their own hands led doctors to wash more often. And seeing a vial of fat from a gallon of whole milk caused many milk drinkers to switch to skim (Heath & Heath, 2010). Visuals can also simplify the decision process. In one cafeteria intervention, implementing a simple green/yellow/red color-coding system improved sales of healthy items (green) and reduced sales of unhealthy items (red) (Thorndike, et al., 2012). Google has implemented stoplight labels as well, with many Googlers reporting that the colored labels helped them make healthy choices.

Comparisons

A persuasive message might quantify the effects of a behavior, apply standards, or frame the outcome as a loss or gain. A quantifying message could note, "Taking the stairs for 5 minutes a day 5 days a week burns off 2.5 pounds of fat in a year" or "1 Snickers bar = 20 minute run." Standards can increase goal compliance by making progress measurable. Using a pedometer with a stated goal (e.g., 10,000 steps) increases physical activity (Bravata et al., 2007); and 8 glasses of water or 5 fruits and vegetables per day provide helpful benchmarks for measuring desired health behaviors. Sometimes the comparison is implied, framed as loss or a gain. Although there are subtle

qualifications, people are generally more sensitive to losses than gains, and more motivated by fear than pleasure (Baumeister, Bratskavsky, Finkenauer, & Vohs, 2001; Kahneman& Tversky, 1979).

Moments of Truth

A "moment of truth" is the time and place when people will be most receptive to persuasive messaging (Dhar and Kim 2007). The evaluation of choice alternatives depends on which goals are active in any particular moment. For example, in an office building, signs reminding employees to take the stairs can be placed at the elevators, when people are thinking about their goal of getting upstairs. In the right locations, stair prompts with messages such as "Burn calories, not electricity" have been found to be highly effective, increasing stair use by as much as 40%, even 9 months later (Lee et al., 2012).

In one high-traffic café where Googlers eat free meals, we promoted a series of unpopular vegetables (beets, parsnips, squash, Brussels sprouts, and cauliflower) as the Vegetable of the Day with displays of colorful photos and trivia facts next to a dish containing that vegetable as its main ingredient. By placing the campaign posters at the moment of truth—right next to the dish—we increased the number of employees trying the featured dish by 74% and increased the average amount each person served themselves by 64%.

The key to Persuasion is communicating the right message, the right way, at the right time—when the individual will be most receptive to it.

Possibilities: What Choices Are Offered?

Possibilities refers to the composition of the choice set: before trying to steer choices, the planner might improve options. While it may in rare cases be effective to ban undesirable behavior (such as smoking in restaurants) or to legislate desirable behavior (such as wearing seatbelts), the negative reactions against paternalism can often outweigh its benefits. Therefore, we advocate maintaining freedom of choice while improving the options, through assortment, bundling, and quantity. Tempting but unhealthy options can be reduced or made less available without eliminating them altogether.

Assortment

The first decision a planner must make is what the assortment be? One study found people were more likely to choose a healthy option (fruit over a cookie) from a larger assortment than a smaller one (Sela, Berger, & Liu, 2009). Relative appeal can also be manipulated. In the Healthy Lunchrooms Initiative, Wansink found that placing fruit in a nice bowl or under a light increased fruit sales by more than 100% ("Nutrition advice…," 2014).

Variety in an assortment is a powerful stimulant of consumption. Generally, when consuming more than one thing is possible, more options means more consumption. This is true even when variation is purely perceptual. For example, people ate more M&Ms from a bowl containing more colors of M&Ms, even though the total quantity and flavors were identical to a bowl with fewer colors (Kahn & Wansink, 2004). One way to reduce consumption without restricting choice altogether is by rotating variety over time, with healthy or desirable options switching more

frequently, to encourage sampling or consumption, with unhealthy or undesirable options switching less frequently, to encourage satiation.

Bundling

To encourage healthier choices, healthy options can be strategically paired with other healthy options, or even with less-healthy options. Balancing, the combination of items that satisfy two goals has been shown to be desirable (Dhar and Simonson 1999). In many cases, healthy but less tasty and tasty but unhealthy options may be consumed simultaneously, and creative bundling can nudge people toward health—"lesser evils" might be paired with "greater goods." Bundling a healthy salad with a small portion of fries to create a "vice-virtue" bundle can persuade some people who would have ordered fries instead of salad to choose a bundle of one fourth fries and three fourths salad (Liu, et al., 2015). In another field experiment, Milkman, Minson, and Volpp (2014) bundled addictive audiobooks with gym workouts to encourage exercise.

Quantity

Although most choice research has focused on which option is chosen (Nowlis, Dhar and Simonson 2010), the quantity consumed is also influenced by nudges. People tend to believe the appropriate amount to consume is an entire portion (e.g., plate, bowl, or package). As a result, they serve themselves more food and eat more when dishes or utensils are large. In one experiment, nutrition academics at an ice cream social served themselves 31% more ice cream when given larger bowls and 57% more when given both larger bowls and larger serving spoons (Wansink, van Ittersum, & Painter, 2006). Ice cream in a small cone is perceived to be more ice cream, and more satisfying, than the same amount in a large cone (Hsee, 1998). At Google, the food team switched 22 ounce cups to 16 ounce cups to reduce consumption of caloric beverages, offered smaller to-go boxes to help with portion control, and served desserts either plated or cut in small quantities.

> In a field experiment in another Google microkitchen, we targeted the most popular snack item: M&Ms. These had been self-served from bulk bins into four-ounce cups; most employees filled the cup. After taking a baseline measure of consumption, we replaced loose M&Ms with small, individually-wrapped packages. This simple intervention reduced the average amount of M&Ms employees served themselves by 58%, from 308 calories to 130 calories.

With Process, Persuasion and Possibilities, behavior can be influenced in a specific context. It is only through the Person, however, that behavior can potentially be influenced across contexts over time and across multiple locations.

Person: How Are Intentions Reinforced?

Person is the most challenging lever of change. Most behavior change initiatives already focus on the individual person, and fail to change behavior even when they succeed in changing intentions. A key reason for the inconsistency between intentions and behavior is that resisting temptation requires resources such as attention and willpower, which are often in short supply. Fortunately, there are ways to support intentions that rely less on processing and willpower, and more on supportive tools. We can provide some suggestions for influencing a person through goal setting

and precommitment in order to reinforce healthy intentions. The object of these interventions is to maintain healthy behaviors over time, eventually making them habitual and automatic.

Goals

Setting explicit goals can increase healthy choices by reducing the thinking required for engaging in a behavior. Effective goals are personal, motivational and measurable—challenging, specific, and concrete (Locke & Latham, 1990). Goals also become more manageable when broken into smaller steps. Like paying for a new car in monthly payments, a goal of losing 4 pounds per month becomes easier than losing 50 pounds in a year. And another important benefit of setting intermediate goals is building momentum by tracking small wins along the way—perception of progress toward a goal can itself be motivating (Kivetz, Urmisky, & Zheng, 2006). Tracking goals, with tools for accomplishment and measurement, increases the chance of success.

Precommitment

Willpower is a depletable mental resource; when people are tired, hungry, stressed, or focused on something else, they are less likely to perform actions requiring willpower (Baumeister & Tierney, 2011). So, there will be times in which a desired behavior is particularly difficult or temptation is particularly strong. Knowing that their willpower may falter, individuals can preplan when possible or create their own "commitment devices." Researchers have found that when people make decisions for the distant future, they save more money (Thaler & Benartzi, 2004) and choose healthier food (Milkman, Rogers, & Bazerman, 2010; Read & van Leeuwen, 1998). Commitment devices increase the cost or difficulty of engaging in undesirable behaviors, thus reducing reliance on willpower. Many field experiments have asked participants to put their own money at risk as an incentive for following through on their intended behaviors, for example losing weight (John et al., 2011), or quitting smoking (Giné, Karlan, & Zinman, 2010). The key to the long-term success of goal setting and measurement of health behaviors lies in making those new behaviors habitual.

Habits

Although people experience their own behavior as conscious and intentional, the majority of all actions are automatic, bypassing the conscious decision-making process entirely (Bargh & Chartrand, 1999). Because habits are cued automatically and enacted effortlessly, turning healthy behaviors into habits is the ideal way to sustain them. Implementation intentions use cues to serve as reminders for triggering a desired behavior, and they can help to develop the behavior into a habit. Research has shown implementation intentions to be effective in developing healthy habits such as performing breast self-exams (Prestwich et al., 2005), exercising (Luszczynska, Sobczyk, & Abraham, 2007), and eating vegetables (Chapman, Armitage, & Norman, 2009)—simply by asking study participants to decide where, when, and how they plan to take action. Habits are more easily formed and broken in new environments, because they lack the contextual cues that triggered old habits (Wood, Tam, & Guerrero Witt, 2005). Therefore, behavior change efforts launched in coincidence with other changes such as moves, promotions, reorganizations, new relationships, new jobs, or even seasonal changes have a greater chance of success (Verplanken & Wood, 2006).

A field experiment at Google helped employees turn goals into healthy eating habits. Volunteers set personal diet and body goals and were randomly assigned to one of three groups. The first received information on the link between blood glucose and weight gain. The second also received tools for using that information: blood glucose monitoring devices, data sheets, and advice on measuring glucose, weight, BMI, and body composition. The third was the control group, receiving no information or tools. Weekly surveys showed those who had received tools in addition to information made the greatest progress on their goals. After three months, there was no difference between the information group and the control in achieving personal goals, while among those who had received the tools, 10% more had made progress on their body goals and 27% more had made progress on their diet goals. By the end of the study, those in the tools group reported healthy choices becoming more automatic, "After doing the first blood tests, I didn't need to prick myself much more." Information was not enough to facilitate change, but tools and measurement made the healthy choice the easy choice.

Conclusion

The 4Ps Framework for Behavior Change was designed to organize research findings to make them more easily applicable in the real world. We have described many levers the well-meaning planner can employ to support the healthy intentions of others, and we have shared some examples of how the 4 Ps Framework is being applied at Google. The examples here focused on nudging people toward healthy food choices, but similar strategies can be used to nudge people's behavior in any direction that supports their own intentions. The framework offers a toolbox of interventions leveraging a contextual approach aimed at influencing specific decisions via (1) the combination of choices people are exposed to, (2) the choice environment, and (3) communication about the choices. Additionally, we have offered advice on supporting the individual in the development of good habits, to make better choices in any time or place. There is great potential in the contextual spheres of influence outlined here that will enable planners to make good choices easy choices.

The Authors

Zoë Chance is Assistant Professor of Marketing at Yale School of Management. Her expertise is influence and persuasion and her mission is helping good people get what they want so they can do even more great things in the world. Her research has been published in leading academic journals like Proceedings of the National Academy of Science and Psychological Science, and has been covered media outlets like The Economist and The Wall Street Journal. Zoë received her bachelor's degree from Haverford College, MBA from the University of Southern California, and her doctorate from Harvard.

Ravi Dhar is the George Rogers Clark Professor of Management and Marketing at the Yale School of Management and director of the Center for Customer Insights. He is an expert in consumer behavior and branding, marketing management and marketing strategy and has consulted leading companies in a wide variety of industries, including financial services, high tech, and luxury goods. You may contact him by email at ravi.dhar@yale.edu.

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PART 3 – RESOURCES

Selected Behavioral Science Concepts

Alain Samson

(Co-editor: Roger Miles)

Affect heuristic

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

Anchoring (heuristic)

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

Asymmetrically dominated choice

See **Decoy effect**

Availability heuristic

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

Bias

See **Cognitive bias**

Bounded rationality

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

Certainty/possibility effects

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

Choice architecture

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

Choice overload

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

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

Cognitive bias

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

Cognitive dissonance

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

Commitment

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

Confirmation bias

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

Decision fatigue

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

Decision staging

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

Decoy effect

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

Default (option)

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

Delusion of competence (Dunning-Kruger effect)

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

Dictator game

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

Discounting

See **Time discounting**

Diversification bias

People seek more variety when they choose multiple items for future consumption simultaneously than when they make choices sequentially, i.e. on an 'in the moment' basis. Diversification is non-optimal when people overestimate their need for diversity (Read & Loewenstein, 1995). In other words, sequential choices lead to greater experienced **utility**. For example, before going on vacation I may upload classical, rock and pop music to my MP3 player, but on the actual trip I may mostly end up listening to my favorite rock music. (See also **projection bias**).

Dual-self model

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

form of an age-progressed avatar in virtual reality environments allocated twice as much money to a retirement account (Hershfield et al., 2011).

Dual-system theory

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

Ego depletion

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

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**.

Fast and frugal

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

Fear of missing out

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

Framing effect

Choices can be worded in a way that highlights the positive or negative aspects of the same decision, leading to changes in their relative attractiveness. This technique was part of Tversky and Kahneman's development of **prospect theory**, which framed gambles in terms of losses or gains (Kahneman & Tversky, 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

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

Habit

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

Halo effect

This concept has been developed in social psychology and refers to the finding that a global evaluation of a person sometimes influences people's perception of that person's other unrelated attributes. For example, a friendly person may be considered to have a nice physical appearance, whereas a cold person may be evaluated as less appealing (Nisbett & Wilson, 1977). Halo effects have also been applied in other domains of psychology. For example, a study on the 'health halo' found that consumers tend to choose drinks, side dishes and desserts with higher calorific content at fast-food restaurants that claim to be healthy (e.g. Subway) compared to others (e.g. McDonald's) (Chandon & Wansink, 2007).

Hedonic adaptation

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

Herd behavior

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

Heuristic

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

Hindsight bias

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

Homo economicus

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

Hot and cold states

See **Empathy gap**

Hyperbolic discounting

See **Time discounting**

IKEA effect

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

Inequity aversion

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

Inertia

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

Intertemporal choice

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

Less-is-better effect

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

Licensing effect

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

Loss aversion

Loss aversion is an important BE concept associated with **prospect theory** and is encapsulated in the expression "losses loom larger than gains" (Kahneman & Tversky, 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

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

A core idea behind mental accounting is that 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. An important term underlying the theory is *fungibility*, the fact that all money is the

same and has no labels. In mental accounting, 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, 1985). Another example from mental accounting is credit card payments, which are treated differently than cash. Mental accounting theory suggests that 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 (see also **1/N heuristic**). This can be referred to as 'naive allocation'. For example, consumers may invest equal amounts of money across different investment options regardless of their quality. Similarly, the **diversification bias** shows that consumers like to spread out consumption choices across a variety of goods. Research suggests that **choice architects** can work with these tendencies due to decision makers' partition dependence. For instance, by separating healthy food menu options into different menu categories (e.g. 'fruits', 'vegetables') and combining unhealthy options into one single menu category (e.g. 'candies and cookies'), one can steer consumers toward choosing more healthy options and fewer unhealthy options (Johnson et al., 2012).

Nudge

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

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

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

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

1/N (heuristic)

1/N is a trade-off heuristic, one that assigns equal weights to all cues or alternatives (Gigerenzer & Gaissmaier, 2011). Under the 1/N rule, resources are allocated equally to each of N alternatives. For example, in the (one-shot) **ultimatum game**, participants most frequently split their money equally. Similarly, people often hedge their money in investments by allocating equal amounts to different options. 1/N is a form of **naive allocation** of resources.

Optimism bias

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

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). Measurement of preferences may rely on **willingness-to-pay (WTP) and willingness-to-accept (WTA)**. Preferences are sometimes elicited in survey research, which may be associated with a range of problems, such as the hypothetical bias, when stated preferences are different from those expressed in actual choices, or response effects, when subjects return the answer that they perceive the researcher 'expects'. Armin Falk and colleagues have developed cross-culturally valid survey questions that are good predictors of preferences in behavioral experiments. These include questions about risk taking (see **prospect theory**), **social preferences** (e.g. about **reciprocity**) and **time discounting** (Falk, Becker, Dohmen, Huffman, & Sunde, 2012).

Preference reversal

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

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

Ratio bias

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

Reciprocity

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

Recognition heuristic

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

Reference dependence

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

Regret aversion

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

Regulatory focus theory

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

According to *regulatory fit* theory, messages and **frames** that are presented as gains are more influential under a promotion focus, whereas those presented as non-gains or **losses** carry more weight in a prevention focus. For example, research by Lee and Aaker (2004) found that 'gain frames' in advertising ("Get energized") lead to more favorable attitudes when the body of the advertising message is written in promotional terms (e.g. emphasizing the energy benefits of drinking grape juice), whilst 'loss frames' ("Don't miss out on getting energized!") have a more favorable effect when the main body of the ad focuses on prevention (e.g. stressing the cancer reduction benefits of drinking grape juice).

Representativeness heuristic

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

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

A. Bob plays trumpet for a major symphony orchestra

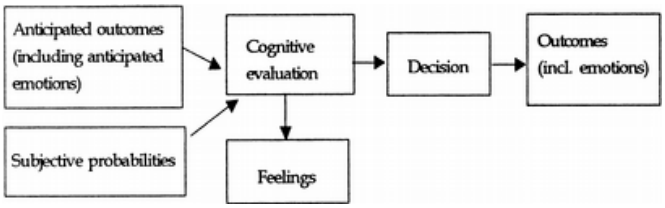
B. Bob is a farmer

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

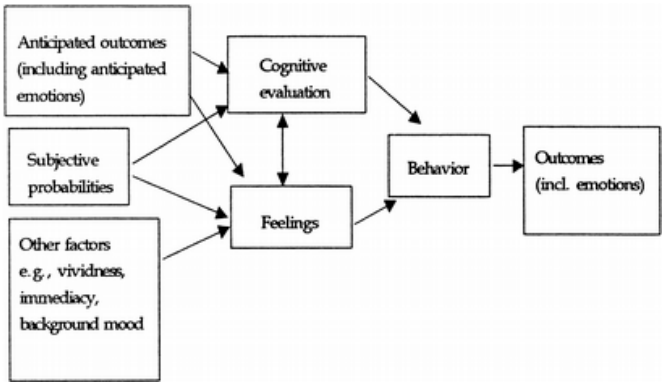
Similarity- or prototype-based evaluations more generally are a common cognitive shortcut across domains of life. For example, a consumer may infer a relatively high product quality from a store (generic) brand if its packaging is designed to resemble a national brand (Kardes, Posavac, & Cronley, 2004).

Risk-as-feelings

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



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



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

Satisficing

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

Scarcity (heuristic)

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

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

Scarcity (psychology of)

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

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

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

Self-control

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

Social norm

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

Social preferences

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

Social proof

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

Status quo bias

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

Sunk cost fallacy

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

System 1/2

See **Dual-system theory**

Take-the-best (heuristic)

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

Take-the-first (heuristic)

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

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

Time (temporal) discounting

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

Trust game

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

Ultimatum game

The ultimatum game is an early example of research that uncovered violations of standard assumptions of rationality (see ***homo economicus***). In the experiment, one player (the proposer/allocator) is endowed with a sum of money and asked to split it between him/herself and an anonymous player (the responder/recipient). The recipient may either accept the allocator's proposal or reject it, in which case neither of the players will receive anything. From a traditional game-theoretic perspective, the allocator should only offer a token amount and the

recipient should accept it. However, results showed that most allocators offered more than just a token payment, and many went as far as offering an equal split. Some offers were declined by recipients, suggesting that they were willing to make a sacrifice when they felt that the offer was unfair (see also **inequity aversion**) (Guth et al., 1982). (See also **dictator game** and **trust game**.)

Utility

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

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

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

In economics, willingness to accept (WTA) and willingness to pay (WTP) are measures of preference that do not rely on actual choices between alternative options. Instead, they ask individuals to specify monetary amounts. WTA is a measure of the minimum financial compensation that a person would need in order to part with a good or to put up with something undesirable (such as pollution or crime). Willingness to pay (WTP) is the opposite—the maximum amount of money someone is willing to pay for a good or to avoid something undesirable. According to standard economic intuition, WTP should be relatively stable across decision contexts and WTA should be very close to WTP for a given good. However, behavioral economics has shown that WTP and WTA may be context-dependent; for example, Thaler (1985) found evidence that people presented with a hypothetical scenario of lying on a beach and craving a beer would be willing to pay significantly more for a beer purchased at a resort hotel as opposed to a rundown grocery store (see also **transaction utility** and **mental accounting**). In addition, sometimes the average WTA for a good exceeds its WTP, which may be indicative of an **endowment effect**, i.e. people value something

more that they already own. Research has also shown that the farther a good is from being an ordinary private (market) good, the more likely it is that WTA exceeds WTP. The WTA-to-WTP ratio is particularly high for health/safety and public/non-market goods (Horowitz & McConnel, 2002).

Zero price effect

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

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The major aim of the Behavioural Economics programme is to provide you with a thorough grounding in the behavioural and economic sciences that underpin the field of behavioural economics. Understanding how real people make real decisions is of utmost importance to theoretical economic understanding (preferences and utility), the practical application of models of human behaviour (e.g., government polices), and individual economic welfare (e.g., health and financial) which, for example, can be diminished by overweighting the present and underweighting the future (i.e., hyperbolic temporal discounting). Consumer psychology is also dependent on the principles of behavioural economics (e.g., techniques of influence used in marketing and advertising), as are consultancies of various kinds (e.g., branding and public relations).

Course Structure

Term 1 Modules:

- Principles of Economics
- Cognitive and Economic Science of Rational Choice
- Psychological Processes: Individual and Social
- Behavioural Research Methods: Design and Analysis

Term 2 Modules:

- Experimental Economics and Game Theory
- Fundamentals of Cognitive Science
- Applied Econometric and Psychological Research Methods
- Professional Aspects of Behavioural Economics

Term 3:

- Research Dissertation

If you have a strong background in Economics, you may substitute for 'Principles of Economics' a microeconomics module from one of the MSc programmes offered by the Department of Economics. You may also substitute an appropriate elective from one of the MSc modules offered by the Department of Economics for 'Professional Aspects of Behavioural Economics' - this will allow a pathway through the programme that is focused on theoretical and research economic themes

Behavioural Economics Speakers Programme:

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Entry Requirements:

In order to be eligible for entry in to the MSc in Behavioural Economics you must have a first or upper second class degree in Psychology, Economics or a related discipline. An equivalent qualification from an overseas university will also be considered. Selection will be by application form, references and interview. It is not a prerequisite to have a background in Economics or Psychology.

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Our students come from a wide range of academic and professional backgrounds from all across the globe. This diversity will help you understand concepts of behavioural science from a perspective you might not have considered previously. You could expect to be among professionals from industries such as, but not limited to, finance, marketing, management, public policy, health, NGOs and development. Executive students are likely to choose this MSc for two reasons; because behavioural science is an area directly related to their current professional role, or because they wish to pursue it for their own personal/career development.

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Executive MSc Behavioural Science

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

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

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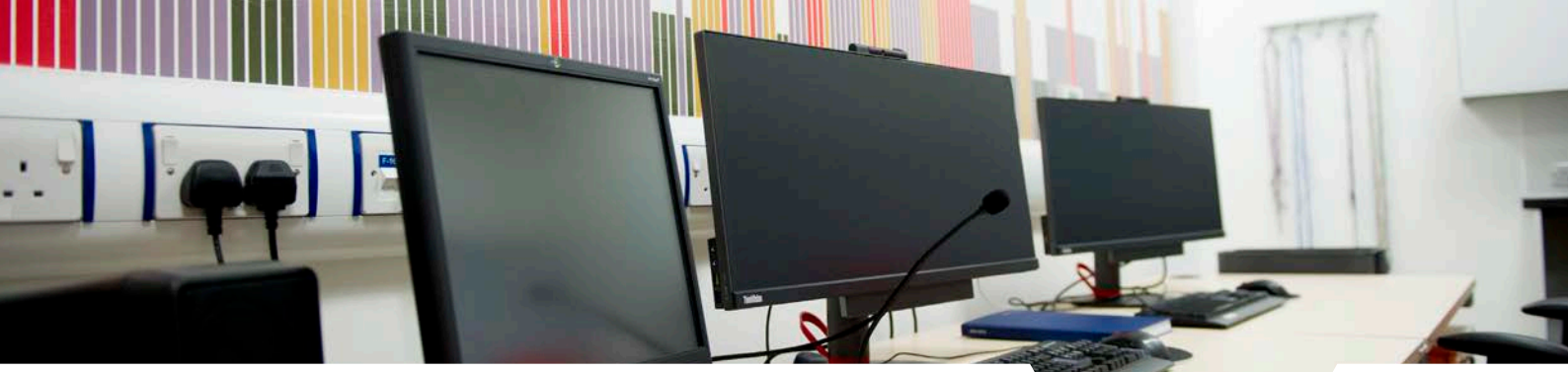
MSc in Behavioural and Economic Science

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

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

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

www.warwick.ac.uk/bes



WARWICK
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MSc in Behavioural and Economic Science

Why should I take this course?

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

Modules will include

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

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

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Why Warwick?

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

Three leading departments in this area of research.

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

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

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

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United States

Brown University	Master in Behavioral and Social Health Sciences 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 Sciences (see also Dynamic Decision Making Laboratory and Center for Behavioral and Decision Research)
Claremont Graduate University	PhD in Economics (concentration in Behavioral Economics and Neuroeconomics)
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
Georgetown University (McDonough School of Business)	MBA and Executive MBA (see also Behavioral Research Laboratory)
Georgia State University	MA, MS and PhD in Economics (see also Experimental Economics Center)
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	MAs and PhDs in Economics, Politics and Psychology (see also Center for Experimental Social Science and Institute for the Interdisciplinary Study of Decision Making)
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 Kansas	MA in Applied Behavioral Science PhD in Behavioral Psychology (see also KU Applied 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 Southern California	PhD in Economics (see also Los Angeles Behavioral Economics Laboratory)
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 pp. 133-135
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 pp. 136-138
Middlesex University	MSc in Behavioural Economics in Action
Queen Mary University of London	MSc in Behavioural Finance
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 Behavioural and 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 pp. 139-141

The Netherlands

Erasmus University Rotterdam	Master in Economics and Business (Behavioural Economics specialisation)
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

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

Other Countries

Australia

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

Austria

University of Vienna	MSc and PhD in Economics (see also Vienna Center for Experimental Economics)

Canada

University of Toronto	MBAs and PhDs in Marketing and Business Economics (see also Behavioural Economics in Action)
France	
Paris School of Economics	Masters and PhDs in Economics (see also Parisian Experimental Economics Laboratory)
University of Paris Panthéon-Sorbonne / University Paris Descrates	Master in Economics & Psychology
Israel	
Hebrew University of Jerusalem	PhDs at the Federman Center for the Study of Rationality (interdisciplinary)
Italy	
Catholic University of the Sacred Heart, Milan	PhD in Economics (see also Behavioral and Experimental Economics Research Group)
LUISS (Libera Università Internazionale degli Studi Sociali Guido Carli)	Master in Behavioral Science and Administration
University of Trento	PhD in Economics and Management (Behavioural Economics)
Norway	
Norwegian School of Economics	MSc and PhDs in Economics, Business and Marketing (see also the Choice Lab)
Singapore	
National University of Singapore	MBA and PhDs in Management, Decision Sciences and Economics (see also Centre for Behavioural Economics)
Sweden	
University of Gothenburg	PhD in Economics (Behavioral Economics concentration)
Switzerland	
University of Zurich (Zurich Graduate School of Economics)	PhD in Economics and Neuroeconomics (see also Laboratory for Experimental and Behavioral Economics)

Behavioral Science Events

An up-to-date listing of events can be found at behavioraleconomics.com/events/

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

Conferences/Meetings *

** Sorted by date; locations may vary year-to-year for international conferences*

Academic

Title	Dates (Location)	Frequency
Santa Barbara Conference on Experimental and Behavioral Economics	5 - 6 February, 2016 (Santa Barbara, CA)	Check website
Antigua Experimental Economics Conference	26 - 27 February, 2016 (Antigua, Guatemala)	Annual
International Meeting of the Academy of Behavioral Finance & Economics	14 - 16 March, 2016 (Venice, Italy)	Annual
The Asian Conference on Psychology and the Behavioral Sciences 2016	31 March - April 3, 2016 (Kobe, Japan)	Annual
Network for Integrated Behavioural Science (NIBS) Conference	4 - 6 April, 2016 (Norwich, UK)	Annual
International Meeting on Experimental and Behavioral Sciences (IMEBESS)	14 - 16 April, 2016 (Rome, Italy)	Annual
International Conference on Management, Behavioral Sciences and Economics	14 - 15 April, 2016 (Lisbon, Portugal)	Annual
Behavioral Decision Research Conference	9 - 11 June, 2016 (Toronto, Canada)	Check website
2nd Symposium on Quantitative Finance and Risk Analysis (QFRA 2016)	9 - 10 June, 2016 (Rhodes, Greece)	Annual
Behavioural Finance Working Group Conference	13 - 14 June, 2016 (London, UK)	Annual

Early-Career Behavioral Economist Conference	24 - 25 June, 2016 (Bonn, Germany)	Annual
Foundations of Utility and Risk Conference	27 - 30 June, 2016 (Coventry, UK)	Annual
The European Conference on Psychology and the Behavioral Sciences	4 - 6 July, 2016 (Brighton, UK)	Annual
ESA World Meeting	8 – 11 July, 2016 (Jerusalem, Israel)	Annual
IAREP - SABE Joint Conference	8 - 10 July, 2016 (Wageningen, Netherlands)	Annual
Annual Meeting of the Society for the Advancement of Judgment and Decision Making Studies (SEJyD)	12 - 13 July, 2016 (Palma de Mallorca, Spain)	Annual
Conference on Logic and the Foundations of Game and Decision Theory	20 - 22 July, 2016 (Maastricht, Netherlands)	Annual
Tiber Symposium on Psychology and Economics	26 August, 2016 (Tilburg, Netherlands)	Annual
Advances with Field Experiments Conference	15 - 16 September, 2016 (Chicago, IL)	Check website
International Conference on Business, Management and Behavioral Sciences	26 - 27 September, 2016 (Paris, France)	Annual
CESifo Area Conference on Behavioural Economics	21 -22 October, 2016 (Munich, Germany)	Annual
Society for Judgment and Decision Making – Annual Conference	18 - 21 November, 2016 (Boston, MA)	Annual
Annual Meeting of the Decision Sciences Institute	19 - 22 November, 2016 (Austin, TX)	Annual

Practitioner & Academic

Title	Dates (Location)	Frequency
A Weekend of Rethinking Economics	27 - 28 June, 2015 (Greenwich, UK)	Check website
Nudgeathon	14 - 15 September, 2015 (London, UK)	Check website
Behavioral Economics Summit	21 - 22 October, 2015 (New York, NY)	Check website
Design for Action	2 November, 2015 (Washington, DC)	Check website
Behavioral Marketing Forum	9 November, 2015 (New York, NY)	Check website
Behavioral Finance Symposium	14 November, 2015 (San Francisco, CA)	Annual
UCL Behaviour Change Conference	24 - 25 February, 2016 (London, UK)	Check website
Habit Summit	22 March, 2016 (Stanford, CA)	Annual
Behavioral Science & Policy Association Conference	28 - 29 April, 2016 (Washington, DC)	Annual
Boulder Summer Conference on Consumer Financial Decision Making	22 - 24 May, 2016 (Boulder, CO)	Check website
Measuring Behavior	25 - 27 May, 2016 (Dublin, Ireland)	Annual
III International Research-to-Practice Conference “Economic psychology: Past, Present, Future”	26 - 28 May, 2016 (Saratov, Russian Federation)	Annual
Behavioral Exchange	6 - 7 June, 2016 (Cambridge, MA)	Annual

Nudgestock	10 June, 2016 (Folkestone, UK)	Annual
Behavioral Economics and Global Health Conference	23 September, 2016 (Berkeley, CA)	Check website
Behavior, Energy & Climate Change (BECC) Conference	20 - 22 October, 2016 (Baltimore, MD)	Annual
3rd International Conference on Behavioral, Economic, and Socio-Cultural Computing	10 - 13 November, 2016 (Durham, NC)	Annual
Behavioral Economics 2.0 Summit	4 February, 2017 (Rotterdam, Netherlands)	Check website

Courses/Workshops/Seminars

Academic

Title	Dates (Location)	Frequency
Spring School in Behavioral Economics *	6 - 11 March, 2016 (San Diego, CA) *	Annual *
Workshop in 'Applied Behavioral Economics'	11 June, 2016 (Bucharest, Romania)	Check website
Behavioral Science Summer School *	12 - 17 June, 2016 (Kandersteg, Switzerland) *	Annual *
Russell Sage Foundation Summer Institute in Behavioral Economics *	27 June - 9 July, 2016 (Waterville Valley, NH) *	Annual *
International Rationality Summer Institute	4 - 16 September, 2016 (Aurich, Germany)	Check website
Berlin Behavioral Economics Workshops	Check website (Berlin, Germany)	Check website

** Enrollment restrictions apply*

Practitioner &Academic

Title	Dates (Location)	Frequency
Academy of Behavioral Economics	28 - 29 January, 2016 (Zurich, Switzerland)	Check website
Behavioural and Experimental Economics Workshop	13 - 14 February, 2016 (Mumbai, India)	Check website
Behavioral Economics Immersion	7 - 9 June, 2016 (New Haven, CT)	Check website
Behavioural Economics and the Modern Economy	13 - 17 June, 2016 (London, UK)	Annual
Summer School on Behavioral Economics and Psychology	2 - 9 July, 2016 (Prague, Czech Republic)	Annual
Crash Course in Experimental Economics	4 - 9 July, 2016 (Amsterdam/Rotterdam, Netherlands)	Annual
University of Bologna Summer School "Experimental Auctions: Theory and Applications in Food Marketing and Consumer Preferences Analysis"	5 - 12 July, 2016 (Catania, Italy)	Check website
Kiel Institute for the World Economy Behavioral Economics Seminar	Check website (Kiel, Germany)	Check website

Meet-ups

Title	Location	Frequency
North America		
NYC Behavioral Economics Meetup	New York, NY	Check website

Behavioral Economics Reading & Discussion Group @ NYC	New York, NY	Check website
Action Design DC	Washington, DC	Monthly
SF Behavioral Science Book Club	San Francisco, CA	Check website
Behavior MN	Minneapolis, MN	Check website
Toronto Behavioral Insights Community	Toronto, Canada	Check website
United Kingdom		
London Behavioural Economics Network	London, UK	Monthly
Behavior Design London	London, UK	Check website
Applied Behavioural Science Group	Bristol, UK	Check website
Continental Europe		
Zurich Behavioral Economics Network	Zurich, Switzerland	Monthly
Geneva Behavioral Economics Network	Geneva, Switzerland	Check website
Behavioral Science Berlin	Berlin, Germany	Check website
Copenhagen Behavioural Economics Network	Copenhagen, Denmark	Check website
Behavioral Psychology & Economics Meet-up en Barcelona	Barcelona, Spain	Check website
Australia		
Sydney Behavioural Economics & Behavioural Science Meetup	Sydney, Australia	Check website
iNudge WA - Perth Behavioural Insights Community of Practice	Perth, Australia	Check website

Scholarly Journals with Behavioral Economics Content

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

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

Economics Journals

Econometrica

2014 (2015) Impact Factor: 3.89

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

The Economic Journal

2014 (2015) Impact Factor: 2.34

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

Experimental Economics

2014 (2015) Impact Factor: 1.40

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)

2014 (2015) 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

2014 (2015) Impact Factor: 1.30

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

2014 (2015) Impact Factor: 4.98

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

2014 (2015) Impact Factor: 6.65

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

Finance Journals

Journal of Behavioral and Experimental Finance

2014 (2015) Impact Factor: N/A

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

Journal of Finance

2014 (2015) Impact Factor: 5.42

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

Health Psychology

2014 (2015) Impact Factor: 3.59

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

Journal of Behavioral Decision Making

2014 (2015) Impact Factor: 2.07

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

2014 (2015) Impact Factor: 2.24

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

2014 (2015) Impact Factor: 1.23

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

Journal of Health Psychology

2014 (2015) Impact Factor: 1.75

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

Journal of Personality and Social Psychology

2014 (2015) Impact Factor: 5.03

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

2014 (2015) Impact Factor: 1.52

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

2014 (2015) Impact Factor: 2.20

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

2014 (2015) Impact Factor: 4.94

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

2014 (2015) Impact Factor: 2.48

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

2014 (2015) Impact Factor: 1.86

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

2014 (2015) Impact Factor: 2.26

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

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

Multidisciplinary Journals

Behavioral Medicine

2014 (2015) Impact Factor: 1.00

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

Behavioral Science & Policy

2014 (2015) 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

2014 (2015) 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

2014 (2015) Impact Factor: 1.07

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

2014 (2015) Impact Factor: N/A

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

Journal of Behavioral Finance

2014 (2015) Impact Factor: 0.33

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

influences on investment market fluctuations. One of the benefits will be a new understanding of investment markets that can greatly improve investment decision making.

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

2014 (2015) 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

2014 (2015) Impact Factor: 3.13

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

Journal of Economics and Behavioral Studies

2014 (2015) Impact Factor: N/A

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

Journal of Marketing Behavior

2014 (2015) Impact Factor: N/A

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

Journal of Neuroscience, Psychology and Economics

2014 (2015) Impact Factor: N/A

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

Journal of Risk and Uncertainty

2014 (2015) Impact Factor: 1.13

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

Medical Decision Making

2014 (2015) Impact Factor: 3.24

Medical Decision Making offers rigorous and systematic approaches to decision making that are designed to improve the health and clinical care of individuals and to assist with health care policy development. Using the fundamentals of decision analysis and theory, economic evaluation, and

evidence based quality assessment, Medical Decision Making presents both theoretical and practical statistical and modeling techniques and methods from a variety of disciplines.

Mind & Society

2014 (2015) Impact Factor: N/A

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

Policy Insights from the Behavioral and Brain Sciences

2014 (2015) Impact Factor: N/A

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

Psychology & Marketing

2014 (2015) Impact Factor: 1.08

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

2014 (2015) Impact Factor: N/A

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

Other Resources

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

APPENDIX – AUTHOR AND CONTRIBUTING ORGANIZATION PROFILES

Author Profiles

Alain Samson (Editor)

Alain Samson is the editor of the Behavioral Economics Guide, 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, most recently with an LSE-led consortium conducting behavioral research for European public policy. His experience spans multiple sectors, including 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.

Gerd Gigerenzer (Introduction)

Gerd Gigerenzer is Director at the Max Planck Institute for Human Development and Director of the Harding Center for Risk Literacy in Berlin. He is former Professor of Psychology at the University of Chicago and John M. Olin Distinguished Visiting Professor, School of Law at the University of Virginia. He is also Member of the Berlin-Brandenburg Academy of Sciences and the German Academy of Sciences, and Batten Fellow at the Darden Business School, University of Virginia. He received honorary doctorates from the University of Basel and the Open University of the Netherlands. Awards for his work include the AAAS Prize for the best article in the behavioral sciences, the Association of American Publishers Prize for the best book in the social and behavioral sciences, the German Psychology Award and the Communicator Award of the German Research Foundation. His award-winning popular books *Calculated Risks, Gut Feelings: The Intelligence of the Unconscious,* and *Risk Savvy: How to Make Good Decisions* have been translated into 21 languages. His academic books include *Simple Heuristics That Make Us Smart, Rationality for Mortals, Simply Rational,* and *Bounded Rationality* (with Reinhard Selten, a Nobel Laureate in economics). In *Better Doctors, Better Patients, Better Decisions* (with Sir Muir Gray) he shows how better informed doctors and patients can improve healthcare while reducing costs. Together with the Bank of England, he works on the project "Simple heuristics for a safer world." Gigerenzer has trained U.S. Federal Judges, German physicians, and top managers in decision-making and understanding risks and uncertainties.

Contributing Organizations

The Behavioural Architects

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

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

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

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

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

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

Behavioral Science Lab, LLC

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 solve some of the toughest business problems — detecting new growth markets, enabling transformations in product development, organizational behavior and corporate strategy.

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

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.

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.

FehrAdvice & Partners

The mission of FehrAdvice & Partners is to initialize better and more accurate decisions in government, business and NGOs, in order to improve the performance and competitiveness of these institutions, especially in the field of corporate governance, policy making and behavioral change.

The advisory is based on the latest insights from behavioral economics. FehrAdvice & Partners AG meld these insights into a usable form for consulting and further develop them with empirical and theoretical studies. This results in an independent and unique advisory approach, the Behavioral

Economics Approach BEA™, developed with one of the world's leading behavioral economics researchers, Prof. Dr. Ernst Fehr of the University of Zurich.

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

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

Ogilvy Change

Ogilvy Change is the specialist behavioural economics practice; we combine a foundation of science with the power of creativity. This means our team of Choice Architects investigate and apply principles from cognitive psychology, social psychology and behavioural science to create measurable behaviour change in the real world.

Our work is sometimes as small and precise as changing the copy on emails or the shape of buttons on websites, but now we're four years old, our projects are often bigger and more pioneering. They range from psychologically optimising call centres, creating behavioural nutrition TV programmes in Mexico, to inventing solutions to improve hand washing hygiene in South American factories.

In recognition of the scientific method, we collaborate with leading academics and experts to review our projects and bridge the gap between theory and application. We know our approach and solutions are only as good as the way we communicate them, so both internally at Ogilvy and externally with clients we make sure the science is simple, inspiring and directly applicable.

In short, we believe that combining a scientific understanding of behaviour with the power of creativity is the best way to solve real world problems.

For more information, please visit: www.ogilvychange.com.

Yale Center for Customer Insights

Yale's Center for Customer Insights (YCCI) partners with global marketing leaders to develop, test and disseminate new insights that advance the frontiers of consumer understanding to drive growth. Working together, we bring the latest academic theories into the marketplace—and bring back the latest marketplace thinking to our research.

For more information, please visit: som.yale.edu/faculty-research/centers-initiatives/center-customer-insights.