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THE BEHAVIORAL ECONOMICS GUIDE 2018

Introduction by
Robert Cialdini

Edited by
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INTRODUCTION

Why the World Is Turning to Behavioral Science

Robert B. Cialdini

To every thing there is a season and a time to every purpose under heaven.

Ecclasiastes 3: 1

We are in a Golden Age of behavioral science. Like never before, governments, NGOs, business entities, medical and law practitioners, as well as everyday citizens are paying *appreciative* attention to the thinking and research of behavioral scientists (Sunstein, Reisch, & Rauber, 2018). Within the category of public policy alone, one observer was able to identify 196 presently functioning behavioral insights units/initiatives across the world (Naru, 2018). Why now?

I believe it has to do with the coordinated rise in standing of two academic fields: social psychology (my home discipline) and behavioral economics. The two domains share important commonalities (e.g. certain research methodologies and presumptions about human motivation as well as about the key role of context) such that both can be fairly placed within the province of behavioral science.[1]

Still, they are far from identical. For me, three major differences stand out.

Behavioral economists ask questions mostly about the way people make economic choices/judgments or the way particular financial systems (retirement plans, tax codes, etc.) affect those responses (Thaler, 2018). Social psychologists are willing to consider other, non-fiscal personal choices as well. For instance, my research teams have investigated why people are motivated to litter a public space, wear a home team sweatshirt, display charity organization posters, reuse hotel guest room towels, and volunteer to give a unit of blood.

Second, behavioral economists still have to fight the rationality-versus-irrationality-of human-behavior battle (Rosalsky, 2018). For example, to ensure that interpretations based in neoclassical economic theory are duly addressed, they are more likely than social psychologists to include in their research designs at least one condition involving a rational actor prediction. For their part, social psychologists have no such need, having long ago come to concur with Rabelais' six-century-old observation regarding the pervasiveness of human illogic: "If you wish to avoid seeing a fool, you must first break your mirror." As an aside, I once asked Richard

[1] Although staking out its own territory, it is true that behavioral economics has incorporated some features of traditional social psychology. I have colleagues who feel robbed of the credit by behavioral economists who have claimed various discoveries as their own without acknowledging existing, highly similar social psychological findings. I don't share their resentment. Although there's some overlap, it's not extensive. Moreover, if anything, behavioral economics has raised the public stature of social psychology by adopting some core features and legitimizing them in the minds of decision makers. There was a time, as recently as 10 years ago, when social psychologists wouldn't be invited to international conferences on government or economic policy. I was invited to one such conference a decade ago and, once there, found myself labeled a "behavioural economist" on the printed program. When I asked the conference organizer about it, he whispered, "I wouldn't have been able to get you invited as a social psychologist." Those days are gone.

An engaging question is why behavioral economics could play an accrediting role for social psychology among many decision makers. It has to do, I believe, with the high regard with which economics as a discipline has traditionally been held in business and government. When there are individuals labeled as behavioral economists who have won the discipline's Nobel (George Akerlof, Daniel Kahneman, Elinor Ostrom, Robert Shiller, Richard Thaler), and when it appears that behavioral economics and social psychology share some central elements, the reputation of the second field is raised by the first. As Alain Samson observed in an editorial comment on this piece, "behavioral economics may have acted a bit like a Trojan horse for social psychology."

Thaler's opinion of why proponents of neoclassical economic thinking have been so reluctant to admit to the frequent irrationality of our species. He thought it was partially due to the elevation within economics of mathematical modeling, which works best at incorporating rational rather than irrational elements—and remains the professional standard, conferring status on the modeler.

Finally, behavioral economists are more likely to test their hypotheses in large scale field studies of consequential behaviors observed in real world settings—versus in laboratory investigations of relatively inconsequential personal choices made on a keypad. Why social psychologists have tended to stay tenaciously in the laboratory has multiple answers. Convenience, quick and plentiful outcomes to be submitted for publication, and the ability to collect ancillary data for mediational analyses have all played a role. But, much like Thaler's view of what occurred within economics, a reputational factor may be involved. Academic social psychology evolved from a discipline that many considered insufficiently rigorous (until 1965, its flagship publication was the *Journal of Abnormal and Social Psychology*) into one that fought for stature as scientifically-based rather than clinically-based. If it is true that many economists have clung to financial rationality because of the prestigious mathematical trappings of econometric models, perhaps many social psychologists have clung to the laboratory because of its prestigious links to rigorous science.

The Flowering

Recently, a Korean journalist asked me, "Why is behavioral science so hot now?" Besides the broad answer I offered above, involving the conjoint ascendency of the fields of social psychology and behavioral economics, I suggested some more specific reasons that I will detail later in this piece. But, first, it seems important to acknowledge an insinuation of her question—that we weren't always so well received. Indeed, in 1946, W. H. Auden published a poem with a line of stern advice: "Thou shalt not sit with statisticians nor commit a social science."[2] For a long time even high ranking decision makers seemed to concur, preferring to base their choices on intuition, personal experience, and anecdote. Although a name change was required in each instance (statistics is now data analytics and social science is now behavioral science), those days are gone.

They've been replaced by an era of "evidence-based decision making" within the major institutions of society—business, government, medicine, law, education, defense, sports. It's an era that prizes information from big-data analysts and behavioral scientists. I have no direct knowledge of how the transformation occurred in the realm of statistical analysis; but I've been able to observe, firsthand, the rise in the status of behavioral science through my experiences as a social psychologist and the author of the book *Influence*.

When *Influence* first appeared in 1984, it had little impact. Sales were so disappointing that my publisher at the time withdrew allotted advertising and promotional funds, explaining that to do otherwise would be "throwing money down a pit." Few readers were interested in what a social psychologist had to say about the influence process. That ended 4-5 years later when sales of the book began rising, eventually to best-seller levels where they've remained ever since. I think I know what changed to cause the upswing: the times. By then,

[2] W. H. Auden's line appeared in "Under Which Lyre: A Reactionary Tract for the Times," which was presented as the *Phi Betta Kappa Poem* at Harvard university's commencement events of 1946.

the idea of evidence-based decision making was gaining widespread acceptance; and *Influence* offered a type of valuable evidence—from behavioral science research into successful persuasion—that hadn't been available before, at least not in one easily accessible place.

Three additional factors have played a role in the current popularity of such behavioral science approaches. One involves simple cost/benefit comparisons. Although not always successful, with notable frequency these approaches produce oversized outcomes for undersized outlays (Benartzi et al., 2017). Thus, when behavioral science-based procedures generate superior cost/benefit ratios for educational institutions seeking to enroll students in school (Bettinger et al., 2012), for organizations attempting to reduce household energy consumption (Allcott, 2011; Nolan et al., 2008), for medical offices looking for ways to reduce patient no-shows (Martin, Bassi, & Dunbar-Rees, 2012), and for employers hoping to enroll employees in retirement plans (Carroll et al, 2009) or to spur them to take preventive health actions (Milkman et al., 2011), other entities are likely to try to attain similar advantages via similar procedures. And they have (Makki, 2017; "Policymakers around the world").

Secondly, behavioral science approaches—especially in the form of "nudges" (Thaler & Sunstein, 2008)—are for the most part politically acceptable. That is, governmental "nudges" that tend to be favored by progressive lawmakers because they enhance the public good are often also favored by conservative lawmakers because they don't involve burdensome government interventions in the form of taxes, penalties, regulations or other constraints on personal liberties. In describing the growth and spread of government "nudge units," Halpern and Sanders (2016) point to this political consideration.

The other main contributor to the current popularity of behavioral science approaches is the one I'd like to consider in more detail, because it's the one we can most control. It is the newfound willingness of behavioral scientists to present their work and its relevance to the public. When I was writing *Influence*, most of my fellow social psychologist didn't feel safe, professionally, writing for a popular audience. Indeed, if social psychology had been a business, it would have been known for having great Research & Development units but no Shipping Department. We didn't ship, except to one another in academic journal articles that no general reader was likely to encounter. An observation by the legal scholar James Boyle captures the main reason, "You have never heard true condescension until you have heard academics pronounce the word 'popularizer'."[3] That is dramatically changed today. Myriad behavioral scientists are communicating at unprecedented levels with the broader community in blogs, podcasts, columns, videos, and (my personal favorite) general readership books. What's more, they are doing so with accessible language styles that make behavioral science-based effects easily interpretable, personally relevant, and thereby useful to audiences, from charity fund managers to hedge fund managers.

[3] It's worth trying to understand why, since the publication of *Influence*, I haven't had to confront any of the indignant condescension Boyle forecast, including from the most hawkish of my academic colleagues. I think there are two main reasons. First, unlike the popularization of social science seen in the "personal interest" articles of daily newspapers, I made a concerted effort to cite the individual publications (several hundred of them) on which I based my statements and conclusions. The display of the "cites' sites" gave scholarly purists the (accurate) impression—even if they didn't engage in a review of the evidence themselves—that I was willing to undergo such a review in defense of my contentions. Second, rather than seeking to elevate a particular set of findings or body of research, I had sought to elevate a particular *approach* to investigating human responding—the approach of behavioral science. I didn't intend it at the time, but the disarming effect on my fellow behavioral scientists may affirm a belief I've long held, "People don't sink the boats they are riding in."

Steps for Writing a Popular Press Book

Wherefore, I perceive there is nothing better than that a man should rejoice in his own works; for that is his portion.

Ecclasiastes 3: 22

As someone with experience in the category of general readership books, I can offer some personally acquired lessons and related tips to behavioral scientists who, through such a book, might want to bring their research and thinking to the attention of nonacademic audiences. I strongly believe behavioral scientists who wish to extend the reach of their field and of their own works are entitled to a chance at the fruits of the effort…for that is their portion. Consequently, I would recommend a few general steps and a few more specific ones to enhance the likelihood of success.

First, after determining that your ideas would be not just of intellectual interest but also of practical interest to the nonacademic community, begin by writing a detailed book prospectus and a couple of sample chapters to send off to potential agents. Always get an agent, who will possess inside knowledge of publishing houses likely to be interested in your material as well as about industry norms regarding deal-related issues. A good agent will also become a valuable editorial partner, offering important counsel on matters of style and content. There are two additional, psychologically-grounded benefits of having an agent. They appeared within a set of studies I know personally. First, having secured an agent confers legitimacy on you and your book, which results in more lucrative contract terms. Next, because a third party (your agent) is the one pushing and negotiating hard for your book, you appear less abrasive and self-promotional, which leads to greater rapport with the publisher. As a consequence, the publisher is more likely to favor you over other authors in granting requests for special help (Pfeffer, Fong, Cialdini, & Portnoy, 2006).

However, before sending your prospectus and sample chapters to potential agents, rewrite them several times to get out all the "academeze." Then, do it one more time and request feedback from a neighbor—because, as academics, we don't realize how much of what we consider everyday parlance is not fully understood by the average person. Take as an example the results of a survey done by the American Museum of Natural History, which asked a sample of US respondents how much interest they had in the scientific fields of botany, anthropology, and zoology. The reported declarations of moderate to strong interest were, respectively, 39%, 44%, and 59%. But, when a comparable sample was asked about their interest in the same scientific fields, this time labeled "plants and trees," "peoples of the world," and "animals," declarations of moderate to strong interest jumped to 77%, 81%, and 87%. Clearly, using the everyday phrasings of intended readers, rather than of academics, allows those readers to recognize desirable relevance to their interests. The same is true for the level of discourse you should employ. I'd recommend aiming for that typical of widely read news magazines like TIME—or better still of magazines that present behavioral science to the general public as their mission, such as Discover, Psychology Today, and Scientific American MIND.

Second, when writing for a nonacademic audience, don't try to do so in your university office, which is full of cues likely to prime a certain vocabulary, grammar, and way of conveying information that is appropriate only for an academic audience. When I began writing my first popular press book, I would write in two places—my university office and my home office, which had a window overlooking a pedestrian street. Writing in those separate places produced an effect I didn't anticipate and didn't even notice until about a month into the process when I gathered together all of the book project's preliminary pages and read them as a piece: The work I'd done at home was miles better than what I'd done at the university because it was decidedly more appropriate for the general audience I'd envisioned. Indeed, in style and structure the output from my campus desk was poorly suited to anyone but professional colleagues.

Surprised, I wondered how it could be that, despite a clear grasp of my desired market, I couldn't write for it properly while in my university office. Only in retrospect was the answer obvious. Anytime I lifted or turned my head, the sightlines from my on-campus desk brought me into contact with contextual cues linked to an academic approach and its specialized terminology, diction, and form of communication. It didn't matter what I knew (somewhere in my head) about the traits and preferences of my intended readers; there were no cues in that environment to spur me to think routinely and automatically of those individuals as I wrote. From my desk at home with its window to the outside world, though, the contextual cues were entirely different and entirely suited to the task. There, with prompted associations to the people I'd wanted to write for all along, I was able to harmonize with them much more successfully. When I made the called-for location change, the first sentence in *Influence* went from "My academic subdiscipline, experimental social psychology, has as a principal domain the study of the social influence process" to "I can admit it freely now, all my life I've been a patsy." I think the upgrade is evident.

Finally, in structuring your material for a popular audience, beware falling victim to one particularly troublesome form of the false consensus effect, in which people assume that their own beliefs are also held by those around them (Ross, Greene, & House, 1977). That is, we have to avoid the mistake of thinking that nonacademics will be as excited by questions, in general, as we are. The truth is, as a profession, we are virtually alone in this regard. Almost everyone else is primarily interested in answers. While unanswered questions fascinate, challenge, and motivate us, they just frustrate the rest of the world. I think it is telling that, while other professions honor those individuals who have wrapped up a problem area with a consummate solution (e.g., a cure for polio), we applaud thinkers/theorists who have launched a problem area with many questions waiting to be addressed (e.g., behavioral economics).

This is partially the case because we are a curious lot. But, let's be honest now, it is also the case because we are rewarded in our research efforts by the presence of open questions. Those yet-to-be-answered questions are instrumental to our professional success. Without them, where would our careers be? It is important that we not project this reverence for questions onto the nonacademic community, which prefers certainty to uncertainty in all things. Be assured that I'm not suggesting that, in writing for the general reader, we claim to have answers where we do not. However, we should not be so naïve as to expect that our audience will find a lack of closure attractive or stimulating. We are well advised, then, to focus on material that allows us to make relatively confident statements and to draw relatively confident practical implications from them.

This issue of practical implications for the reader strikes me as centrally important to a successful trade book. In another academics-versus-nonacademics distinction, our readers are much less likely to be concerned with the "hows," "whens," and "whys" in our material as by the "therefores" in it. Relatedly, as an outgrowth of having written trade books on the topic of social influence, I am frequently asked to speak to nonacademic groups—practitioners in business, law, medicine, education, and public service. I regularly accept these invitations in part because they provide an opportunity to demonstrate the worth of behavioral scientific approaches beyond the borders of our discipline. It has been plain to me from the outset that these groups expect numerous "therefores" within the presented material that are applicable to their circumstances.

Rather than feeling unduly constrained by this expectation, I've come to experience it as a welcome and proper expansion of my orientation to the issues at hand. It's made me consider the relevance of my data for settings outside of the one where they were obtained. This has affected not just the way I present my research after the fact but, also, how I plan it in the first place—so that the research settings, questions, and populations I employ make such relevance much easier for outside observers to see, which has proven an unanticipated bonus for all concerned.

Conclusion

In closing, it might be worth returning to the Korean journalist's question, "Why is behavioral science so hot now?" and asking whether the public and private sectors' current love affair with us will prove (as in the Cole Porter lyric) "too hot/Not to cool down." I'd answer no and also yes. As regards my negative response, it is evident that we are no temporary fling. A lasting affiliation with the nonacademic community seems ensured by the populations we study (especially in naturally occurring field contexts), the research questions we ask, the general utility of our findings, and the willingness to convey those useful findings to broad audiences.

On the other hand, as with many extended relationships, the white hot ardor is likely to cool. Fortunately, as with many extended relationships, it is likely to be replaced with a heartfelt, emotionally satisfying feeling of comfortable interdependence. That is where I think we are headed, provided we don't mess things up by failing to safeguard the interests of our relationship partners. In any meaningful sense, they have paid for our research and, as benefactors, are entitled to our protection from those who would use our work to exploit them (Hollingworth & Barker, 2017). Accordingly, it will be important to rail loudly and publicly against any attempts by other parties to exaggerate what we have to offer or to employ it unethically against our friends. If we do that and continue to deliver the benefits our work naturally provides, I foresee many happy anniversaries.

The Author

Robert B. Cialdini is Regents' Professor Emeritus of Psychology and Marketing at Arizona State University. He has been elected president of the Society of Personality and Social Psychology. He is the recipient of the Distinguished Scientific Achievement Award of the Society for Consumer Psychology, the Donald T. Campbell Award for Distinguished Contributions to Social Psychology, the (inaugural) Peitho Award for Distinguished Contributions to the Science of

Social Influence, the Lifetime Contributions Award of the Western Psychological Association, and the Distinguished Scientist Award of the Society of Experimental Social Psychology. He is also president of Influence At Work, a company that offers workshops on the science of ethical influence.

Professor Cialdini's book *Influence*, which was the result of a three-year program of study into the reasons that people comply with requests in everyday settings, has sold over three million copies while appearing in numerous editions and 32 languages. Dr. Cialdini attributes his interest in social influences to the fact that he was raised in an entirely Italian family, in a predominantly Polish neighborhood, in a historically German city (Milwaukee), in an otherwise rural state.

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EDITORIAL

Behavioral Economics: Under the Microscope

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Introduction

I am particularly excited about writing the editorial to the Behavioral Economics Guide this year, as public interest in behavioral economics and behavioral science is continuing to rise. The OECD has identified 196 teams within governments across the world, designed with the purpose of using behavioral insights to improve national administrations (OECD, 2017). Many large corporations around the world are starting to employ dedicated behavioral science teams, in order to change the behaviors of their customers and employees. Indeed, a number of recent write-ups focus on 'how to create and hire behavioral teams' (Johnson, 2017), and why there is a need for 'chief behavioral officers' (Blank & Whillans, 2018) and 'behavioral product managers' (Berman, 2018) within varied industries. The current stature of behavioral economics is highlighted by the awarding of the 2017 Nobel Prize in Economic Sciences to Richard Thaler.[1]

In this editorial, I shall focus on three particular topics that are becoming prominent in behavioral economics and which affect governments and companies: First, social image as an underlying predictor of human behavior; second, the effectiveness and welfare consequences of commitment contracts; and finally, the role of inattention in consumer choice. These three elements are also used actively by governments and companies to change behavior, so the theory will have direct consequences on the policies and products of today and tomorrow.

With the increasing interest in behavioral science comes more scrutiny about the efficiency, efficacy, and external validity of the research. Some of this scrutiny has focused on the welfare effects of nudges, which are defined as things that change the architecture of the choice without changing economic incentives. If nudges are to be used in policy, policymakers may wish to know their full welfare consequences on the population, since they might have an implicit price (Levitt & List, 2007). I therefore follow a discussion of recent research in relation to social image, commitment contracts, and attention alongside an evaluation of the welfare effects of behavioral interventions.

The expanding role of behavioral science in policymaking has triggered three new journals dedicated to its application in public policy, namely the *Journal of Behavioral Public Administration*, *Behavioral Science & Policy*, and *Behavioral Public Policy*. Beyond these dedicated journals, other general interest publications have featured behavioral economics in public and private organizations in their special issues.

Behavioral economics is definitely coming of age, and the academic field is flush with great research. A quick look at the website Research Papers in Economics suggests that there are currently around 1,000 economists around the world who have at least five academic working or published papers in the field, and every week there is a new paper released suggesting a new finding. As governments and social planners are demanding more rigorous behavioral

[1] Undoubtedly, as the father of modern behavioral economics, Thaler's influence in the field is immense (Barberis, 2018). Much of his work, including the summary of behavioral economics in Nudge (Thaler & Sunstein, 2008), has encouraged governments and companies to begin developing their own behavioral science teams. The Nobel committee praised Thaler for his contribution in encouraging governments to think more about evidence use in policymaking related to changing human behavior.

science (Halpern & Sanders, 2016; Benartzi et al., 2017), it seems that academics are responding to that demand by producing new applied insights into the subject.

However, there still some reservations by those in economics and in the private and public sectors about the value of behavioral insights teams. A significant issue is how big a difference is behavioral economics actually making on society? We can measure inputs very well (i.e., numbers of people or teams), but can we measure clear outputs? Also, we know very little about the substitutability or complementarity of nudges with traditional pricing and regulatory mechanisms.

There are still many untapped areas for research in behavioral economics, which makes it an exciting area for researchers. However, because it is a relatively young and growing field, assessing the welfare consequences of interventions emerging from nudges is not clear. Moreover, there is no formal 'behavioral economic' model (see the excellent summary of the field in DellaVigna, 2009), but with better data and experiments available to researchers from governments and companies, the topic area will develop and continue to flourish. Whether behavioral economics will stand alone as its own discipline, or be confined to a sub-discipline of economics, will be a fascinating development to watch over the next 10-20 years.

Increasing Interest in Social Image, Commitment Devices, and Inattention

Social Image

Humans present themselves to look good to others (e.g., a positive social image), in order to produce positive rewards. The work on positive social image goes back to William James (1890), and many psychologists have been interested in this behavioral mechanism for some time. Only recently has social image become a hotbed of academic research in behavioral economics, when Benabou and Tirole's (2006) paper suggested that it is ostensibly the reason why people put effort into pro-social endeavors, and why people might engage in certain behaviors when financial incentives are not so obvious.[2]

In the last year, social image has been used to understand a broader range of economic phenomena, for instance the voting paradox, i.e., why so many people vote when the expected returns for doing so are very low, and the costs can be seemingly greater. The common thread through many studies is that voting is a fulfillment of civic obligation, and so people may vote because they want a positive social image by having others seeing or knowing for whom they voted, and they will thus think of them as being civic-minded or public good-oriented, thereby doing their part to contribute to society (Rogers et al., 2016; 2017). Anecdotally, one might consider the number of images on social media in the U.S. that feature individuals' "I voted" stickers from the polls.

[2] Social image is different from social norms, in that the latter provides descriptive and/or injunctive information about mean/median behavior, albeit without revealing the behavior of the individual consumer. Please see Allcott (2011), Allcott and Rogers (2014), and Brandon et al. (2017) on the effects and persistence of social norm information on energy conservation, and List et al. (2017) on the interaction with social norms and financial incentives. Kessler (2017) shows that even simple statements of support—a kind of social norm intention—that are seen by a consumer can help increase public goods contributions.

Figure 1: "I Voted" (Copyright: Creative Commons)

DellaVigna et al. (2017) built on the idea that individuals can face a loss of utility if others know they have not voted (e.g., shame or stigma of being seen as civically uninvolved) and a gain if others know they have done so (e.g., pride, solidarity). The authors constructed a field experiment in Chicago to test this idea by leaving flyers on the doors of homes informing them that they would return the next day to conduct a survey. They randomly varied whether the flyer informed them that the survey taker would ask whether they had voted in a recent congressional election. The authors knew from separate data whether the individuals had in fact voted.

They found that those who had not voted were 20 percentage points less likely to answer the door to participate in the survey when the flyer mentioned they would be asked about voting, compared to when it did not do so. This indicates potential shame in revealing that they did not vote, despite the fact that the survey takers were likely strangers with whom the household would never interact again. A nice design feature of this experiment is that they varied the incentives offered to participate in the survey. They found that a reduction in taking the election survey for avoiding telling the surveyor about voting is equivalent to the order of the effect of reducing the survey incentive from $10 incentive to $0. Overall, they concluded that this $10 value accounted for observed levels of voter turnout, and so such values should be incorporated into the benefit-cost analysis of voting behavior.

Social image has also been used to understand what students invest time in when studying at school and college; for example, single women in the MBA pool might face tradeoffs created by different incentives in the labor and dating markets, since some actions that may help them in the labor market might hurt them in the dating market, because in a patriarchal society these actions could signal that they are “acting male.” Bursztyn et al. (2017a) found that in a survey used by students’ career advisers, single female MBA students under-reported their financial ambitions, their willingness to work longer hours and to travel for work, and some of their personality traits (such as ambition and leadership in day-to-day interactions) when they believe that their classmates will observe their choices. These effects are much weaker among married female students (who do not feel the need to signal to both markets), and they are not present among male students.

Such social image concerns might also affect other decisions, such as choosing a credit card. Bursztyn et al. (2017b) conducted a field experiment with a bank in Indonesia, offering customers a "platinum" credit card that would be restricted to the wealthiest individuals, thereby serving as a symbol of status and success. The authors showed that, even conditional on fixing instrumental benefits, there was a significant demand for the platinum card. The greatest demand came from those with lower incomes, who presumably had a greater need to signal high economic status than those who were wealthier (see Figure 2). Furthermore, consistent with the desire to shape the image they present to others, platinum cardholders were more likely to use the card in social situations, such as restaurants and bars, where the card would likely be visible to others (by contrast, there were no effects on non-visible uses of the card, such as online purchases). This example demonstrates that people may posture for their peers in the hope of creating a positive social image.

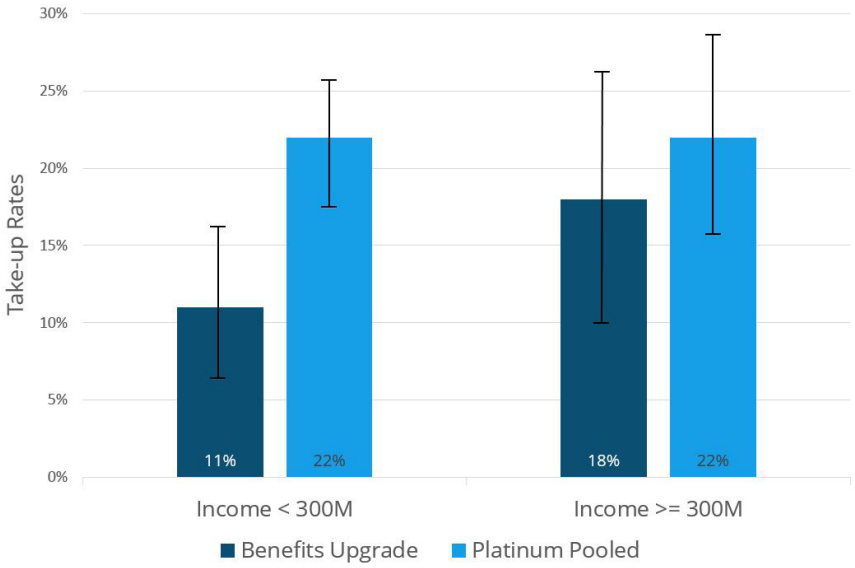

Figure 2: Demand for status: Income heterogeneity (adapted from Bursztyn et al., 2016b). *Note:* This figure presents the mean (and 95% confidence interval) of take-up rates for the benefits upgrade and platinum pooled groups separately for customers with income lower than Rp 300 million and customers with income greater or equal than Rp 300 million.

These studies show that social image can help predict what decisions people make in different circumstances, with some leveraging the social image actively to change human behavior. To leverage social image concerns, the social planner or experimenter has to change the observability of the behavior. The changing of private information on behavior to public information can be used as a policy tool to "shame" individuals who execute undesirable actions that are usually not observable by others while socially recognizing positive behaviors in the population.

For example, a number of countries publish lists of tax delinquents, either online or in newspapers and newsletters. Perez-Truglia and Troiano (2016) showed that varying the visibility of recipients' delinquency to their fellow citizens significantly increased the probability of paying taxes among individuals with small outstanding tax debts in the U.S. More generally, people adopt behaviors to signal traits that are considered desirable, based on the community's norms and values, especially in relation to giving to political parties and charities (Perez-Truglia & Cruces, 2017; Bracha & Vesterlund, 2017; Samek & Sheremeta, 2017).

Recently, social psychologists have also standardized social phenomena for social planners to change human behavior. Rogers et al. (2018), for instance, put forward a rich framework for thinking about why individuals contribute to public goods. The framework, called PANIC (personal, accountable, normative, identity, and connected), includes five principals that make interventions for collective action more effective. The identity principle is underpinned by the social image. Over time, more field experiments will allow us to determine how each mechanism is effective in certain circumstances, and allow for better prediction and optimization.

Commitment Contracts

Commitment contracts (CCs) involve the individual voluntarily losing lose money (or utility) if they do not engage in a future behavior to which they have committed. For example, I might like to work out five times a week, but I may procrastinate in the future and not visit the gym so often. Therefore, to bind my future behavior, I might engage in a commitment contract whereby I lose money if I do not go as many times as I would like to go. One organization that attempts to do this is stickk.com, through which lost money can be allocated to a cause (e.g., your rival football team) if you do not keep to your commitments.

This sounds sensible in theory, i.e., people should be demanding various forms of commitment if their future selves would like to be consistent but lack self-control. This is akin to Odysseus tying himself to the mast to avoid the tempting song of the sirens, a notion made popular by the infamous paper by Ashraf et al. (2006), who conducted a natural field experiment on CCs for personal savings in the Philippines.

Since Ashraf et al., there has been much academic and policy debate about the effectiveness and welfare consequences of such contracts in overcoming self-control issues. The reason why CCs may work is that the individual consumer has limited self-control, so she might procrastinate about engaging in desirable long-term behaviors, especially if she is naive or overconfident about her future levels of self-control (O'Donoghue & Rabin 1999). Consequently, it seems to be a good thing that people demand CCs, since they voluntarily increase the costs of potential future actions. An individual without self-control problems may not have a need to create such incentives for their future selves.

Researchers have documented the demand for commitment in a number of other contexts in the past, such as smoking and alcohol cessation (Gine et al. 2010; Schilbach, 2018), and fertilizer use (Duflo et al. 2011). However, theory provides an important warning about the effectiveness and welfare implications of commitment contracts, in that they are predicted to work well, albeit only when agents are sufficiently sophisticated (see DellaVigna & Malmendier, 2004; Heidhues & Koszegi, 2010). There are three types of agents in the model (see Table 1).

We have very little evidence about the distribution of these three types of agents across behaviors and markets, although what we do know it suggests a great degree of naivety in the population (Augenblick & Rabin, forthcoming; Laibson, 2015). If social planners want to nudge consumers to use CCs, then they would benefit from knowledge of the distribution of types in their population. It would also be useful to know if there are any common proportions of these three types of agents across certain kinds of populations.

Sophisticated agents	...have accurate beliefs about their future levels of self-control, and they will correctly predict how the incentives embedded in a particular CC will lead them to act in the future. They will choose CCs wisely to reach their optimal behavior from a long-run perspective. CCs also enhance welfare.
Fully naïve agents	...believe (incorrectly) that their future selves will have no self-control problems, and they will not benefit from CCs. Such naive agents will be neither helped nor harmed by being offered CCs.
Partially naïve agents	...realize that they will continue to have limited self-control, but they are overconfident about the level of their future self-control. Such agents might unwisely purchase CCs which provide "too little" commitment, due to underestimating the magnitude of their future self-control problem, with potentially adverse welfare consequences.

Table 1: Commitment contracts: 3 types of agents (Bai et al. 2017)

A recent paper by Bai et al. (2017) attempted to understand the distribution of types in a population and estimate full welfare consequences as a result of offering CCs. Their experimental intervention consisted of different types of CCs for attendance at village "Hypertension Day" health camps, conducted by a private-sector healthcare provider in Punjab, India. The CCs asked individuals to make an upfront payment, thereby reducing the marginal cost of health camp visits in the future. Some contracts required upfront payments greater than the visiting fee, such that participants received some money back each time they kept a recommended bi-monthly preventive appointment at a health camp. The control group instead paid for the preventive healthcare option in a typical fee-for-service manner.

The design of the experiment allowed the authors to understand the different types of agents comprising their sample population. From those who were offered a CC, 38% demanded one; however, only 13.7% of respondents made at least one visit to a health camp with the CC, a rate slightly lower than those who were offered a straight half-off price discount for the health visits but with no commitment (14.5%). Between 62 and 77% of those who paid for a CC failed to make even one visit to a health camp. Under reasonable assumptions, this suggests that a substantial fraction of the participant population experienced reduced welfare due to the CC offers. Moreover, they appeared to understand their own present bias problem enough to demand some form of commitment, but ultimately they purchased too little to actually overcome procrastination. Bai et al. found that a large share of individuals who took up the CC were in fact partially naive about their own time inconsistency problems, rationalizing the large gap between purchasing a contract and preventive healthcare usage. Given the degree of naivety regarding present bias that we estimate in this population, the simulations imply that providing (marginally) greater upfront commitment would lead to even greater consumer welfare losses.

This work shows that understanding the type of agent in the population of interest is important before social planners and organizations use commitment devices that may reduce welfare for a subgroup of consumers in the market. Nudging people onto a CC is the first step in any evaluation; the second step is figuring out whether people are better off using such CCs. This targeting ties in to previous editorial discussions (Samson, 2016, 2017) about the exact boundary conditions of various nudges, and because of differences in preferences and biases, the field is moving away from the one-size-fits-all approach, to more targeted behavioral change interventions.

Interestingly, pre-commitment is also tied to other behavioral phenomena. In an interesting paper, Imas et al. (2016), for instance, found that loss aversion contracts and pre-commitment actually interact. In their experiments, people worked harder under loss contracts (i.e., they would lose money via clawback on an endowed bonus) than under gain contracts and preferred the former over the latter. The underlying mechanisms for this desire for loss over gain is that people self-select into loss contracts as a commitment device to improve performance in the future. Understanding the welfare effects of these loss contracts with different types of agents (sophisticated, fully naïve, partially naïve) is an important area for future research.

Inattention

Among behavioral economists, the concept of inattention has received increased focus over the last twelve months. While the saliency of information and prices in relation to consumer decision-making has been established for some time (Chetty et al., 2009; Dolan et al., 2012), Gabaix's (2017) recent model of inattention complicates these notions, since it does not assume that people can process all the information available to them and instead posits that the majority of the biases found in behavioral economics reflect some form of inattention. On the flip side of this suggestion, much of the work in actively promoting behavioral change is to garner people's attention.

One of the main formal observations Gabaix (2017) makes is that consumer attention is greater when the incentives to pay attention are larger. These incentives can be financial or even self-serving, as illustrated by the "ostrich effect," e.g., the fact that I might pay more attention to things that favor me and avoid thinking about depressing thoughts. Recent work by Olafsson and Pagel (2017), Andries and Haddad (2017), and Bushong, Rabin, and Schwartzstein (2016) support Gabaix's position on such behaviors. Last year's editorial (Samson, 2017) highlighted all of the cutting-edge work being done on information avoidance, and such avoidance complements the literature on inattention very well.

Recent empirical research has explored whether and how companies respond to consumer inattention, and how they can leverage a lack of attention to their advantage. For example, Jin et al. (2017) found that consumers in the lab formed overly optimistic expectations of product quality when sellers chose not to disclose certain pieces of information, i.e., in cases where this information would detract from perceived quality. The authors argued that these people were behavioral rather than Bayesian, since a Bayesian consumer would be suspicious of any non-disclosed information, whereas the behavioral consumer would just ignore it. A neoclassical economist might argue that consumers exhibiting inattention will learn over time through the discipline of the market as they lose money. If they do not learn, however, then the mistakes are not worthy of the cost of paying attention (i.e., rational inattention). There is much more to learn about firms and governments' incentives to hide product attributes or

mandate information disclosure (Loewenstein et al., 2014; Heidhues & Koszegi, 2017; Bar-Gill et al., 2017), and additional work is underway on inattention and health-related decisions (Abaluck & Adams, 2017; Allcott et al., 2017).

Recently, Handel and Schwartzstein (2018) summarized the literature about whether or not people use available information to inform their decisions into two schools of thought: Friction (the rational inattention approach) or mental gaps (see health insurance examples in Table 2). The friction school focuses on the costs of acquiring and processing information. For example, in the US, a consumer shopping in a health insurance exchange incurs a cost to explore more of the available options in the choice set and to assess them accordingly. This rational inattention framework maintains the neoclassical assumption that people form accurate beliefs using information that is worth processing, though it also incorporates realistic assumptions on how paying attention to or processing information is costly.

There is an alternative school of thought that states the economy is made up of people who have mental gaps (or psychological distortions) in information-gathering, attention, and processing (i.e., not rational inattention) (Handel & Schwartzstein, 2018). Using this idea, a consumer in the health insurance exchange may neglect important information when selecting plans, even if this information is readily available, perhaps because they have used an incorrect decision-making model or overweighed salient plan features. This school of thought emphasizes that there is a gap between what people think and what they should rationally think. The friction and mental gaps categories are not mutually exclusive or exhaustive, but Handel and Schwartzstein (2018) propose them as broad classifications of approaches that researchers take to studying poorly informed choice. Thus far, much of the empirical literature does not draw a distinction between friction and mental gaps.

There are a few ways to separate out the true demand for a product and the demand curve with friction and/or mental gaps. A first empirical strategy estimates a demand curve for experts and a separate demand curve for non-experts, based on the assumption that the demand curve for the former cohort represents the demand curve in a rational, frictionless world for experts and non-experts alike, conditional on a range of observables (see Bronnenberg et al., 2015). A second approach to identifying this friction-mental gap wedge uses survey techniques to separate informed from uninformed consumers. The underlying assumption is that informed consumers (as measured by a survey) make rational, full-information choices in the context of a neoclassical expected utility model (see Handel & Kolstad, 2015).

Paper	Findings	Potential explanations for not using information
Handel and Kolstad (2015b)	"Uninformed" consumers leave substantial dollars on table when "over-choosing" generous insurance coverage, relative to "informed" consumers. Consumers who think (incorrectly) that more generous coverage gives them access to generous providers are willing to pay much more (~$2,300) for that coverage.	*Frictions:* Search costs lead to limited information; information processing costs lead to poor evaluations of plan characteristics. *Mental gaps:* Mistaken beliefs about important ways plans differ; neglect of key plan characteristics.
Bhargava, Loewenstein, and Sydnor (2017)	In active choices, consumers frequently choose dominated plans from menu of 48 insurance options at large employer, losing $300–$400 on average. Experiments show better choices in simplified choice environments and in environments with plan characteristics information.	*Frictions:* Search costs to find or explore plan options. *Mental gaps:* People have limited insurance competence, not understanding the mapping between plan characteristics (for example, deductibles) and payoff-relevant outcomes.
Handel (2013) Abaluck and Gruber (2011, 2016); Ho, Hogan, and Scott Morton (2017); Ketcham, Lucarelli, and Powers (2015)	Consumer inertia leads to thousands of $ in financial losses (~$2,000) in insurance plan choice. Consumers choose dominated health plans with high frequency when possible to do so. Consumers leave money on the table in initial Medicare Part D choices, on average ~$300 per consumer. Consumers exhibit substantial inertia, leading to additional monetary losses.	*Frictions*: Switching costs (from search, information processing, etc.); rational inattention to plan choice. *Mental gaps:* Consumers don't recognize potential benefits from switching, having wrong priors about plan changes over time (for example, not realizing that plans may become financially dominated); lack of competency in evaluating premiums relative to plan characteristics; neglect of certain key plan features.

Table 2: Examples of information people don't use in health insurance markets (from Handel & Schwartzstein, 2018)

A similar approach involves using a randomized trial to create a class of well-informed consumers, who can then be compared to others. Allcott and Taubinsky (2015) ran such a study by attempting to understand the energy efficiency gap with respect to the purchasing of energy-efficient light bulbs. In their study, they implemented an information treatment, which provided the energy costs of different residential light bulbs. This treatment was designed specifically to provide only hard information, to ensure comprehension, and to minimize demand effects and other potential confusing elements. They called it a "pure nudge," since it informed all previously-uninformed consumers and drew full attention to energy costs, with no other effects. Under this pure nudge assumption, they could estimate people's WTP for the light bulbs as if they were acting rationally. They went on to show that the demand for incandescents (inefficient bulbs) was high, even with full information and attention, suggesting that if incandescent light bulbs were banned by governments, then the costs would outweigh the benefits. Put differently, imperfect information and inattention alone do not justify a ban on traditional incandescent bulbs. These approaches were generated in an attempt to understand better the choices of the rational consumer.

We will undoubtedly see a great deal of empirical work attempting to disentangle friction and mental gaps in markets as well as the welfare consequences of each factor. Mechanism experiments (as outlined in Ludwig et al., 2011) can be used to understand why there are differences in friction or mental gaps. This approach is highlighted in the excellent work of Bhargava et al. (2017a), which explored why consumers in the US choose sub-optimal health plans. In their observed data, they found that a majority of employees choose health insurance plans that are financially dominated (e.g., an employee might pay $500 more in annual premiums to reduce deductibles from $1,000 to $750), in other words, sub-optimal health insurance plans. Through using Amazon Mechanical Turk experiments, they also determined that clarifying the relationship between various premium and deductible combinations and total health costs reduced the proportion of participants choosing sub-optimal plans from 48 to 18 percent. This work by Bhargava et al. closely follows previous works suggesting that inertia in health markets could be costly to individuals and that mistakes are hard to learn from (see Handel, 2013; Ericson, 2014).

The separation of the two inattention mechanisms (friction and mental gaps) is important for how governments and companies shape interventions designed to change behavior. In order for these bodies to provide more salient information or incentives to their patrons or citizens, we need to explore these mechanisms further, in order to understand the full effects of information on human welfare. In a nutshell, it is more likely that nudging consumers when the friction model dominates behavior will likely hurt welfare, but in the case of mental gaps, it will likely increase welfare.

There is no doubt that many behavioral economists believe that consumers have an ideal demand curve, and they would like to understand how friction or mental gaps impact on people's decision to buy a good at a given price. Demand curves are extremely useful for welfare analysis, since they allow one to estimate the consumer surplus of good and services. However, if we are to believe that a government or a company can easily manipulate choices through mental gaps, then it is difficult to estimate the welfare consequences of changing the behavior.

Figure 3: The battle for attention (Copyright: Bibblio)

The battle against inattention is also relevant for any person working in advertising and marketing. Attention is king, and sometimes understanding where customers are not attentive leads to areas for companies to reinvigorate their marketing strategy. A good example of this notion is a piece of in-store research done by a large grocery retailer in the UK, Sainsbury's, with the advertising agency AMV BBDO (Shotton, 2018). They placed a person in a gorilla suit, and the gorilla walked around the grocery store as people shopped. Then they asked customers whether they had noticed anything, and most said they had not done so (similar to the invisible gorilla video used for the selective attention task in Chabris and Simons, 2010). This in-store evidence birthed the term "sleep shopping" and led senior management to invest in a ten-year campaign called "Try something new today". This marketing strategy attempted to get customers to be more attentive as they shopped, by encouraging them to search for new goods and recipes. The celebrity chef Jamie Oliver led the campaign, and Sainsbury's believed this focus on attention brought in an extra £200 million in revenue in the first six months of the marketing strategy (comparing pre versus post, which has its own set of limitations).

Some companies are trying to understand how important advertising is to the demand for their products by using field experiments. Estimating the impacts of advertising in observational econometric models does not line up well with effects from randomized experiments, demonstrating the importance for why advertisers should be using field experiments (see Gordon et al., 2018).

A novel approach to understanding the impact of advertising involves exploring how it may affect demand on a platform where revenues come from advertising. Huang et al. (2018) ran an interesting experiment whereby they sampled customers from the free version of Pandora, randomizing 35 million customers into nine treatment groups, each of which received a different level of audio advertising interrupting their music listening, with the highest treatment group receiving more than twice as many ads as the lowest treatment group. They estimated a linear demand curve, i.e., the number of hours listened to, decreasing linearly in the number of ads per hour. They found that the total number of ads per hour matters, not how many interruptions. This demonstrates that people do not like ads and their attention wanes with increasing numbers thereof. Interestingly, though, they found that increased ad load caused

a significant increase in the number of paid ad-free subscriptions to Pandora, particularly among older listeners.

There is more to learn both academically and commercially about how to operationalize attention to improve consumer and citizen decision-making.

Welfare

Another recent focus in the field is how to measure the welfare effects of interventions inspired by behavioral economics. There have been developments on both the theoretical and empirical approaches on understanding the welfare effects of nudges, and a number of papers demonstrate how behavioral economics might help welfare in certain markets, in the demand and supply of healthcare (see Ezekiel et al., 2015; Bhargava et al., 2017b; Loewenstein et al., 2017), energy and water conservation (Allcott & Mullainathan, 2012; Hahn & Metcalfe, 2016; Hahn et al. 2018), education (Bergman & Rogers, 2017; List et al., 2018; Robinson et al., 2018), household financial decision-making (Madrian et al., 2017).[3]

Some popular papers demonstrate ways that nudges or non-price interventions can have perverse effects. A good example of a well-intended nudge that is being used increasingly to reduce discrimination is the ban the box (BTB) intervention. BTB policies reduce information about candidates for employers, so they are blind to information that may lead to bias in recruitment, such as job applicants' criminal histories. The BTB intervention is used as a nudge to restrict to human resource managers potentially harmful information in the hope of reducing unemployment among black men, who disproportionately have criminal records, and allow recruiters to focus solely on the quality of the candidate.

However, withholding information about criminal records could have unintended consequences, namely in encouraging racial discrimination, because employers may make assumptions about criminality based on an applicants' presumed race. Agan and Starr (2018) tested this idea in a large experiment with 15,000 online job applications on behalf of fictitious young, male applicants to employers in New Jersey and New York City, before and after the adoption of BTB policies. They randomly varied whether the applicant had a stereotypically black or a distinctly white name, as well as the felony conviction status of the applicant. They confirmed through this work that criminal records were a major barrier to employment, since employers that asked about criminal records were 63% more likely to call applicants with no record. However, they also found that BTB policies encouraged racial discrimination in other ways. The black-white gap in callbacks grew dramatically at companies that removed the box after the policy went into effect. Essentially, before BTB, white applicants whose criminal backgrounds were evident received 7% more callbacks than similar black applicants. Without knowledge of the criminal background, however, this gap rose to 43%. This study shows that human resource managers used the name and presumed race of the applicant to infer information about criminality, since the nudge reduced the information set.

Charitable giving is another area in which nudges have taken place historically. Walk down any busy shopping street in an urban city center and you will see canvassers persuading you to donate to a broad range of causes. In one such example, in the US, the Salvation Army places

[3] There is also a line of research looking at how nudges by a certain type of political party might be judged in a partisan manner by the electorate or by different regulatory cultures (Tannenbaum et al., 2017; Marks et al., 2018; Sunstein et al., 2018).

people (e.g., bell ringers) at shopping malls over the winter holidays, nudging customers to donate their spare change to charity. Andreoni et al. (2017) attempted to look at whether people avoided the Salvation Army nudge, i.e., the request to give to charity. They conducted a randomized field experiment by placing bell ringers at one or both entrances to a supermarket, making it easy or difficult to avoid the request. Additionally, bell ringers either remained silent or said, "Please give." They found that making avoidance difficult increased both the rate of giving and the amount of donations. Paradoxically, the verbal request increased giving dramatically but also led to dramatic avoidance. Here we see how people can be sophisticated about avoiding nudges in order to avoid altruism or empathy.[4]

These are examples of where a nudge might not work as planned, and where we may need to experiment further. However, in the language of Handel and Schwartzstein (2018), researchers need to figure out how to design the experiment to understand the mental gaps and/or friction that prevail in the data.

If we wish to integrate nudges properly into traditional project appraisal through benefit-cost analysis, we need to isolate the different types of costs and benefits arising from a nudge. When we have a policy that includes prices, it is easy to cost the intervention, since it is the price offered. However, a nudge doesn't have an explicit price, and some people might want the nudge and other people not want it. These desires cause a change in utility in the nudge itself, independent of the actual change in behavior.

When analyzing utility, economists usually talk about welfare inferred from revealed preferences. In this case, the more someone is willing to pay (WTP) for a good, the higher the change in utility from consuming that good.[5] There is the direct effect of the nudge itself on welfare and the indirect effect of the nudge on welfare through the change in behavior, whereby the former is very rarely estimated. However, as DellaVigna et al. (2017) found in the case of voting, the direct effect could itself be the major change in welfare. In their 2017 study, they found that the social image component of voting was valued at around $10, which may be the reason why people take the time and effort to vote, and why the pure economic rationale for voting is incomplete. There are now attempts to look at people's WTP for a nudge.

We see Allcott and Kessler's (2018) attempt to do this for the Opower Home Energy Reports (HERs), which provide normative comparisons of how well or poorly the consumer is doing on energy use relative to neighbors. The authors explored the welfare effects of the HER program by eliciting recipients' WTP (either positive or negative) for the program to continue into a second year. They found that without considering the full welfare effects of the program, its benefits might be severely overstated. Damgaard and Gravert (2018) conducted a similar exer-

[4] In another paper, Adena et al. (2017) found that the charitable behavior of at least 80% of individuals, on both the extensive and intensive margins, can be rationalized within a standard neoclassical choice model in which individuals have preferences, defined over own consumption and their contribution towards the charitable good, thereby satisfying the axioms of revealed preference.

[5] There are other normative metrics such as subjective wellbeing, but these measures are not currently well developed enough to be used for understanding welfare within and across many markets. In our recommendations to the UK's Office for National Statistics (Layard et al., 2010), we outlined that there are serious issues with respect to selection into surveys, how using one question (e.g. life satisfaction) does not capture happiness fully, and that these scales are bound and have adaptation inherently built into them, which makes the econometric models unsatisfactory (Bond & Lang, 2018). Other economists have worried about such concerns (Hurst, 2009; Nordhaus, 2009), and there may be cases where revealed preferences are not available for policymakers, such as in public healthcare systems, where using subjective wellbeing might be a helpful metric for allocating scarce resources (Dolan & Kahneman, 2008).

cise to elicit the WTP for email reminders sent out to donate to a charity. They found that there is a trade-off between annoyance costs and altruistic benefits from giving. The cost associated with receiving a reminder to a warm giving list of donors is around $1.95, but the altruistic benefit from donating is around $0.23, which suggests that a standard welfare evaluation would overstate the benefits of the reminder by a factor of ten.

Such welfare measurement approaches must continue to improve, in order to help social planners understand not only whether social nudges improve utility, but also how they compare to financial incentives in terms of efficiency.

Concluding Thoughts

Behavioral economics as a discipline in economics is healthy. Richard Thaler won the 2017 Nobel Prize for economic sciences, new and interesting behavioral economic papers are being released every week, and many of the top young scholars have an interest in behavioral economics. There is growing demand for this work in policy and commercial circles, and the supply of talent in the area is increasing.

Policymakers and regulators are also becoming more attuned to behavioral economics and data science, but there is still a lot to learn in terms of how to regulate monopolies or markets using behavioral economics (Hunt, 2017; Hahn et al., 2018).

The three areas identified in this editorial, namely social image, commitment devices, and attention, will affect the behavioral economics field moving forward. Researchers should be well aware of these areas and the impact they have on market and policy design.

Moreover, there is no consistent way at this time to judge whether or not someone is better off with a nudge or an intervention inspired by behavioral science (see the debates in Sunstein, 2018, and Sugden, 2017). Measures of welfare from the revealed preferences have been used, but the WTP estimates have to be free of any bias, which is not an easy task when estimating the value of a nudge. Right now, there need to be many different pieces of evidence that should be gathered when social planners make decisions on whether to implement the nudge in the first place.

Despite the growing market for behavioral science, there will continue to be debates about how far behavioral economics can go from a policy point of view. Prices and information matter, but how these are framed and implemented also matter. I am personally and professionally excited to see where behavioral economics will end up in ten to twenty years' time, in that it could be either fully integrated into economics or be its own discipline with its own theory. Only time will tell.

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ysis, and understanding the efficacy of financial and non-financial interventions on changing human behavior. He has partnered with many companies and national and local governments to conduct research. Rob's recent research has been featured in the *Harvard Business Review*, *The Wall Street Journal* and the *Financial Times*. He is also a co-founder of two companies, The Behavioralist and Signol. His website is www.rmetcalfe.net.

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APPLICATIONS

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The Nuts and Bolts of Behavioral Insights Units

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"Wouldn't economics make a lot more sense if it were based on how people actually behave, instead of how they should behave?"

Dan Ariely

Understanding human behavior is central to effective policies. Those that do not take the human aspect into account will not have the desired effect. But how can this be done at the state or organizational level? The answer is sometimes a behavioral insights unit. This article provides an overview of different behavioral insights unit operating models and a practical guideline to establishing your own.

Brief History

The year was 1980. Shootings, robberies, and attacks were rampant in the United States. There were over 23,000 homicides that year alone – more than double of the previous decade. What motivates one human being to take the life of another human? What is the modus operandi of criminals – how do they keep slipping away from all the authorities on the lookout for them? Questions we may have become stoic to as part of coping with modern living – but something had to be done to end this era of violent criminality.

Amidst this steep rise in crime, the Federal Bureau of Investigation (FBI) launched the Behavioral Science Investigative Support Unit to study criminals and understand why they committed heinous crimes (Depue, 1986).[1] They planned to use that understanding to prevent such felonies from recurring by addressing any unmet needs in the communities that fostered the lawbreakers. Another goal was to create strategies and train police officers to deal with such situations based on the unit's insights (Douglas & Burgess, 1986).

Since then, behavioral insights (BI) has evolved to encompass wider reaching applications - not only to deter negative behavior, but also to encourage positive behavior. The UK Behavioral Insights Team paved the way in 2010. It was set up with the aim of utilizing obtained insights to improve public services, by facilitating their usage for citizens, increasing cost effectiveness, and producing more favorable outcomes by using a better model of human behavior. This was the first behavioral insights policy unit worldwide. Since then, several countries have set up their own, including Australia, Singapore, Kuwait, Germany, and Canada. Today over 190 behavioral insights units are in operation worldwide (OECD, 2018). Singapore, for example, credits its fast track to development on its Nudge Units and the 'power of suggestion.' "In 50 years, its economy is one of the most innovative and business friendly in the world" (Keating, 2018).

Today, the integration of behavioral insights into organizational structure has expanded beyond government agencies. The World Bank has established its own Mind, Behavior, and Development Unit which aims to provide solutions to key social and economic issues and support

[1]The FBI's Behavioral Science Unit was launched in 1972. It later split into Behavioral Science Unit and Behavioral Science Investigative Support Unit . It is credited with pioneering work in criminal profiling in the 1970s.

the global effort to eradicate poverty and improve equality (Afif, 2017). Leading fortune 500 companies are employing the power of behavioral change. Google, Coca-Cola, and General Electric have behavioral units to help resolve multiple types of challenges both within and outside their organizations. Examples range from nudging employees to stop smoking at General Electric and sharing information between different departments at Google to product placement on shelves in retail outlets for CVS pharmacies and Coca Cola (Ebert & Freibichler, 2017).

Successful Case Studies

Household energy consumption was reduced in Singapore by leveraging the power of social norms and comparing usage to that of neighbors in utility bills (Keating, 2018). On-time bill-payment was achieved in Lebanon via instilling a sense of national pride and patriotism in the messaging and design of the payment reminder slip (Nudge Lebanon, n.d.-a). Healthcare workers' compliance with infection control practices was nudged in Saudi Arabia by using checklists and posters where infection control was required.

Behavioral insights can also be of great value to the third sector, especially considering the various challenges they face. Al-Nahda Philanthropic Society for Women in Saudi Arabia was recently successful in applying behavioral insights to one of their programs with impressive results. In Mustaqbali, an afterschool career education program for underprivileged high school girls, Al-Nahda was able to increase attendance by 6% through using an attendance tracker (goal gradient effect), visually communicating attendance as a norm, and having an alumnus as a trusted messenger to encourage attendance.

BI Unit Benefits

Behavioral units allow for a significantly improved outcome, using evidence to reach a data driven and behaviorally sound plan of action, which outperforms control plans. Establishing a unit is a commitment device for the organization. Setting up, dedicating resources, and announcing its mandate, is akin to publicly telling stakeholders that the entity intends to use a deep understanding of human behavior to enhancing its policies, products, and services. Organizations with in-house behavioral insights units are able to react faster to the need for interventions.

Internal behavioral insights teams possess a keen understanding of the local context – within the country and each entity. Familiarity with the organizational environment is a main pillar to understanding the behavioral context surrounding any employee behavioral change interventions. The staff has a deep appreciation for the local culture, thereby making context analysis easier and more relevant.

Choosing the Right Model[2]

BI units vary across two main axes; control and organizational engagement (Figure 1). There are three types of BI units: central steering, diffused, and diffused with central steering. Each is suitable for a particular culture, type of organization, and nascence of behavioral insights within an organization (OECD, 2017).

[2] Much gratitude to Mr. Faisal Naru and Professor Lori Foster for their in depth insights into BI units.

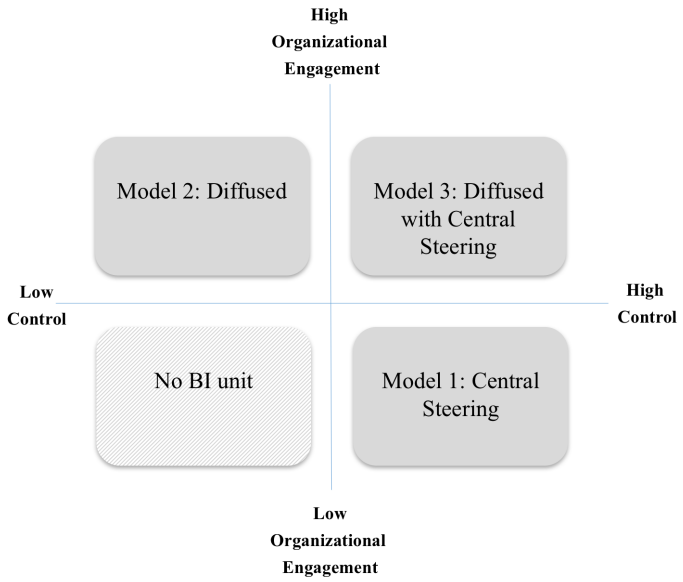

Figure 1: BI unit models

Borrowing from the iterative and adaptive nature of behavioral science, the unit structure can evolve over time. Start by determining which model is most appropriate for your organization's unique situation.

A. Central Steering

A specialized unit, usually housed within the Center of Government or a company, is tasked with steering the controlled application of BI. Its role centers around applying BI across the country or organization, coordinating, supporting, and advocating its use in a particular manner.

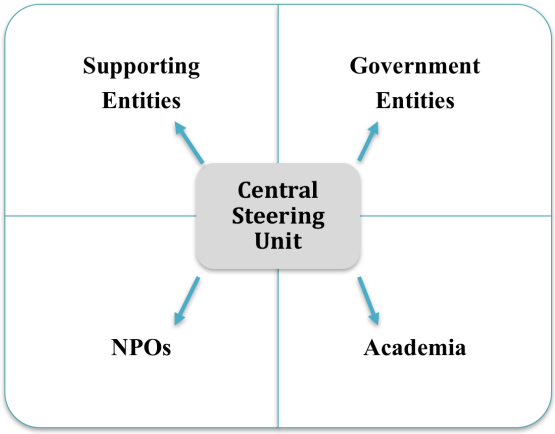

Figure 2: Central Steering model

This model enables entities to start running behavioral studies at a more accelerated pace than usual. Necessary approvals at the conceptual level are centralized, red tape is considerably decreased, and studies dispatched with more ease. Another advantage of this model is its

ability to build team capacity quickly, as individuals staffed in the central unit are dedicated to running trials and implementing BI.

That said, a centralized entity does not have control over the entire value chain. It depends on other agents to implement behavioral trials and potentially, policies. This is more prevalent within the public sector than the corporate sphere. Ultimately passing a policy for a particular government agency requires its involvement. Thus, it is important to lessen friction with, and resistance from, associated government agencies for whom the behavioral policy is being developed. It is expected that status quo bias (Samuelson & Zeckhauser,1988) will fuel a preference of not running behavioral experiments or readily adapting the required changes to set up a unit (Kahneman et al, 1991).

The Behavioral Insights Unit in the UK started as a central unit in 10 Downing Street. In recent years, it has evolved into a social purpose company that works with various government organizations (Halpern, 2016). The Ontario BIU and Nudge Lebanon are other examples of centralized entities collaborating with various government agencies to enhance public services through the application of behavioral research. Over the last couple of years, more Arab countries have shown increasing interest in utilizing behavioral insights in public policy, with Kuwait setting up the Kuwait Policy Appraisal Lab (KPAL) under the Supreme Council for Planning and Development.

B. Diffused

In lieu of a centralized command and control center, individuals engage BI at each local government agency or department of a private sector organization (Figure 3). They do not need to coordinate with one another on priorities or implementation of their various projects. Each is left to devise their own agendas for the use of behavioral insights in their respective entities as they see fit.

Figure 3: Diffused model

When compared with the centralized model, this one is more economical, due to reliance on existing staff. They are tasked with behavioral insights duties in addition to their current roles, although their backgrounds may be from other disciplines.

It is uncommon to find individuals with behavioral insights background outside of specialized units or academia. As such, the core team's practical knowledge will build over time, with a steep learning curve during the first few behavioral trial runs. In addition, lack of coordination between departments or agencies may lead to duplication of efforts. At the organizational level, it will lessen overall performance efficiencies and decrease opportunity for optimization.

In the GCC, a local think tank has several diffused efforts in areas such as unemployment, healthcare, and road traffic safety. These efforts continue without central coordination today. In contrast, Singapore started to utilize the diffused model to apply behavioral insights across several areas such as health and taxation in 2015. Later, it evolved to include a central steering unit at Civil Service, further amplified by agents at specific government entities.

C. Diffused with Central Steering

Characteristics of the aforementioned Central Steering and Diffused models are combined to yield this one. In it, there is a central unit which coordinates with individual behavioral insights teams across the organization and other agencies. Engagement occurs across the organization, while allowing for centralized control.

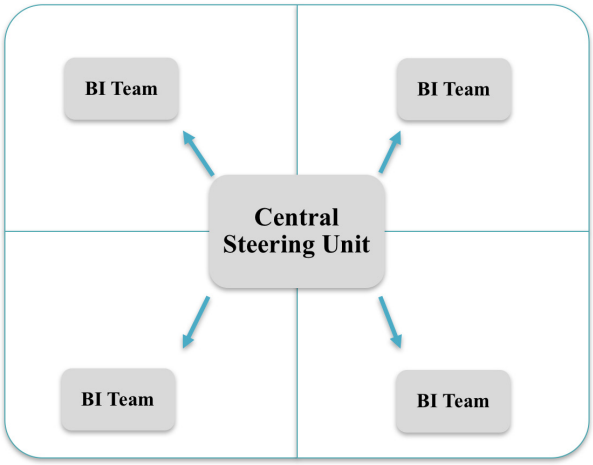

Figure 4: Diffused with Central Steering model

By combining both Central Steering and Diffused, many of the limitations have been tackled. For example, synchronization between departments occurs, while the teams applying BI remain agile. Existing resources can be staffed in BI, while they receive training from the centralized steering unit. More frequent on-the-job guidance coupled with exchange of knowledge between BI individuals across the organization helps build up knowledge and expertise.

There is a glaring drawback, though. A considerably larger team is required to apply this from the start. On average there are 4-7 individuals at the steering level, while the department/agency level will differ depending on each organization's goals and complexity. Smooth coordination between central unit and peripheral teams requires clear governance and procedures.

In 2014, when the US Social and Behavioral Science Team (SBST) was formed, it followed this model. A multidisciplinary group was dispersed across government entities to create improvements in federal policies and programs via applying behavioral insights. SBST was officially "frozen in time" in 2017, and it transformed to a diffused model, where a number of individuals across government entities continue to use behavioral insights without the presence of a central steering body.

Model	Advantages	Disadvantages
Central Steering	• Develops expertise and capacity quickly • Ability to run studies faster	• Relies on traction from other agents to achieve goals • Faces some resistance to centralized control
Diffused	• Uses existing expertise • More economical	• Steep learning curve • Duplication of efforts
Diffused with Central Steering	• Synchronization between departments • Teams remain agile • Can use existing resources • Develops expertise	• Larger team • Stricter governance

Table 1: Summary of BI unit models' advantages and disadvantages.

Starting a Behavioral Insights Unit

Once the decision has been made to start a BI unit, there are six key elements required to take the practice from inception to implementation successfully. They are stakeholder buy-in, vision and goals, initial structure, governance, systems and tools, and policies and procedures. (Figure 5).

1. Stakeholder Buy-In

Utilize practical examples to demonstrate applications of behavioral insights.

Be prepared to make the business case for behavioral insights by substantiating the power of behavioral insights with case studies that are relevant to your field. We recommend conducting a few trials before committing time and resources into formalizing any of the aforementioned structures. Establish an internal track record of running behavioral experiments. Positive experiment results are beneficial, but they are not a must to start the unit. It is the experience of iterative testing within your context and your organization that will yield proof of concept.

Ensure iterative testing- a process where initiatives are prototyped, tested, and improved - is accepted by the culture. This is a mindset which is often misunderstood as "we will waste money trying to figure out what works." Spend some time clarifying what iterative testing is and how behavioral insights will be refined over time to suit your context.

Lastly, form a "guiding coalition" to direct the change and signal it is important to the organization (Kotter, 1995). Identify your key stakeholders, those with high interest and high influence, and select carefully. Select one individual, usually within top management who is influential and passionate about this change, to be a behavioral insights advocate at the highest level. Rally support through continuous education on the benefits of behavioral change. The more believers, the easier it is to drive change.

2. Vision and Goals

Take the time to articulate the why behind the behavioral insight unit's inception at your organization. Determine its purpose, focus areas, and goals. Once articulated, this document will serve as your roadmap which you will refer back to during the course of your first year.

a. Purpose: Why has this entity come into being? Consider carefully the substantial reason application of behavioral insights is important for your entity and where it can add the most value. Be prepared to discuss why this is the right time to use BI and start an in-house unit. Previous behavioral insights experiences in similar industries and their effects on KPIs are always useful case studies.

b. Focus Areas: Map out what the unit will and will not do during the first 1-3 years. Start with brainstorming a list of policy challenges or issues faced by other departments. Then, rank according to propensity to win, ease of testing, speed of impact (long or short term), stakeholder amiability, prior experience, costs, etc. Lastly, prioritize 2-3 challenges to focus your efforts.

Delineating your strategic priorities at the start will help the team to focus its efforts and hedge against a flood of requests that will compete for resource bandwidth.

c. Goals: Set 2-3 specific short and medium term goals, starting with your first 12 months, to help guide efforts and resources. For example, a specific number of trials per year (we would recommend a maximum of 2-4 for the first year). Many nudge units have a target similar to this. Other KPIs take the form of expenditure saved, such as the UK Behavioral Insight Unit's almost herculean goal of recouping their budget in 3 years (Halpern, 2016).

3. Initial Structure

Consider the various organizational structure options presented earlier and evaluate their suitability to your organization's culture, stage of behavioral insights usage, budget, resource availability, etc. Remember, this is the nucleus of your BIU. It is important to start off correctly. Then, fine tune as the practice progresses. As we have seen from previous examples, evolution of the structure is likely over time.

At the start, the unit's nucleus will be rather small. 2-4 individuals are a good starting point if you have never embarked on behavioral experiments before. A behavioral insights team is comprised of multiple disciplines: policy making behavioral insights, experiment design, data analytics, psychology, economics, and project management. It is best practice to including a behavioral scientist, junior researcher, data analyst, and overall project manager. While these may not all be available in the unit, leveraging external support is common in the early phases to complement existing resource capabilities until the capacity is fully built up.

Selecting a home for the function is slightly more complex. Within some companies, behavioral interventions reside in the HR department. This lends itself to organizations who are applying behavioral insights across different aspects of the entity. The team could also be within the strategy management office, which has an overview of all projects across an organization. If optimization is a key goal, then the performance excellence department is a good fit. At its core, BI aims to increase efficiencies. BI can also be housed within the transformation office, as was done recently by a leading industrial company in Saudi Arabia. As behavioral insights mature within the organization, a separate vertical with its own C-suite officer can be created (Martin & Ferrer, 2017).

4. Governance

There are three layers of governance: core team, advisory board, and ethics committee.

a. Core Team: To ensure efficient and streamlined operations, governance starts with clear job descriptions and checklists for each resource. Both fully dedicated and part time resources will benefit from this. It is common for some roles to bleed into others during the first phase of set up. Create an authority matrix early on. It is important to determine jurisdictions and approval levels.

b. Advisory Board: With a small core team, expanding your knowledge of the continuously evolving behavioral insights may seem like an arduous task. An advisory board supplements your core team with the experience of others who have been through the trenches themselves, providing strategic direction to the BIU and meeting with them on a regularly scheduled basis. It is usually comprised of academics with relevant research interests, seasoned behavioral scientists, and policy makers with expertise in your chosen priority areas. International subject matter experts will also be able to provide valuable perspective.

c. Ethics Committee: "The cost of Nudge may be that we forego the chance to gain the virtue of self-command" (Boven, 2009). Hence, an ethics committee is required to ensure the responsible use of BI at your organization. We recommend a balanced mix of expertise including an academic, a lawyer, stakeholder representative, and behavioral scientist. Together, this committee will evaluate the experiments and subsequent recommendations from three angles: resulting effect on people's well-being, change in individuals' autonomy - whether fully or partially, and variations in target audience's integrity. They will also review proposed experiment designs and evaluate the possibility they will result in practical recommendations before giving the final nod to implement (Schubert, 2016).

5. Systems and Tools

Fill your behavioral insights unit toolbox with two main tools: a behavioral intervention design framework and data analysis software.

a. Behavioral Intervention Design Framework: These are essentially step by step approaches that take the team from selecting a strategic direction through to implementation of large scale policy or recommendation. There are a variety of tools out there such as BASIC (Hansen & Schmidt, 2017), DRIVE (Emmerling, 2018), and others. Peruse these and determine what is the right fit for your first year of official behavioral insights trials. After selecting the tool, conduct in-house trainings to familiarize the team with the approach and case studies.

b. Data Analysis Software: The market is full of software that can mine big data. It may be tempting to go for the latest version of the selected program. Before doing so, determine what your team's capabilities are. Have they run data analysis before and which software did they use. If they are used to SPSS, we would recommend keeping that software for year one. Then, evaluate its suitability after utilizing it on trials. Remember, at the start it is about getting the wheels turning. The purpose of data analysis software is to aid you in developing strong recommendations based on data.

6. Policies and Procedures

At an existing organization, policies and procedures are already in place. Therefore, there are two choices: embedding behavioral insights into an existing project approval process or creating new policies which only pertain to behavioral insights interventions. We recommend a fusion of both. Embed the use of behavioral insights in the strategic focus areas. In parallel, create new policies for behavioral experiment design. This is specific to application of behavioral insights, which you can build on the first few runs you had.

Figure 5: Key elements to starting a BI unit.

We believe that a behavioral insights unit in a valuable addition to any organization seeking human centered policy design. Its creation and implementation takes careful consideration and a resilient nature. Whether it's the Central Steering, Diffused, or Hybrid model, if you ensure stakeholder buy-in; set the vision, structure, and governance; and have the systems and procedures in place, it will be well worth it.

From limiting crime to eating healthier, the nation can be 'nudged' onto a path of rapid development. Imagine the latent powers that today's further refined units can unleash in modern organizations! Dedicated behavioral scientists can also expect the unit's insights to 'nudge' their organizations onto a highway of their choice.

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D.R.I.V.E.: A Practical Framework for Applying Behavioural Science in Strategy

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Introduction

Over the past ten years, behavioural science has become a global phenomenon with broad impact on public policy. Various "nudge units" have emerged, bringing relevant behavioural insights into governments and public organisations around the globe (OECD, 2017). In addition, an increasing number of private organisations are using behavioural science, attracted by the encouraging results of behavioural interventions in the public domain and not least the attention brought to the field with the 2017 Nobel Prize in Economic Sciences for Richard H. Thaler (Gino, 2017). Encouraged by its powerful insights for customer, employee and citizen engagement, more and more organisations are looking ways to utilise behavioural science in strategy (Martin & Ferrere, 2017).

At the core of this behavioural trend in strategy lies the insight that humans, in reality, do not behave in line with the assumptions of rationality (e.g., complete and transitive preferences) postulated by standard economic theory (DellaVigna, 2009; D. Kahneman, 2003; Kahneman & Tversky, 1979). In contrast, humans display "bounded rationality" (Daniel Kahneman, 2003; Simon, 1955), enabling the situational context of an individual or group to influence their behaviour. (Ariely & Jones, 2008; P. Dolan et al., 2012). When making decisions, humans rely to a great extent on automatic, effortless, affective, subconscious, associative side of human judgement and decision making, which Kahneman et al. (2011; 2002, 2005) summarises as "System 1 processes", rather than on controlled, effortful, deductive, conscious and rule-based "System 2 processes". As a result, human behaviour is often triggered associatively and affectively by contextual drivers such as specific defaults, salient messages, social norms, etc. (P. Dolan et al., 2012; Morewedge & Kahneman, 2010). Acknowledging and embracing precisely this insight, behavioural science is about systematically researching and influencing behaviour by addressing the human side of decision making through intentional contextual design or choice architecture (Richard H. Thaler & Sunstein, 2008). By paying attention to the *affective* side of human behaviour in strategy and decision making, organisations can expect more *effective* solutions for both their internal and external target groups.

While behavioural science has produced highly regarded insights about how humans make decisions and how public and private organisations might nudge people towards certain behaviours, the discussion has to a large extent stayed within the academic and policy making community. As a result, the majority of applications have to this date primarily focused on public policy interventions (OECD, 2017). Moreover, with the exception of BASIC® (Hansen, 2018) the few models available to practitioners today, while serving as memorable mnemonics and intervention toolboxes, do not represent a holistic framework for the research, design and effective implementation of behavioural interventions in practice. With D.R.I.V.E.® we propose a practical integrative framework for applying behavioural science in strategy. The tool serves as a comprehensive yet intuitive five-step guideline for applying behavioural science in the private and public sector. Its structure and corresponding analytic tools are the result of a perennial development process, merging behavioural research with practical experience from applying behavioural insights in public and private organisations in Europe and the Middle-East. D.R.I.V.E.® can be universally applied by researchers and practitioners to both internally and externally oriented challenges, targeting strategic behaviour change on customer, employee or citizen level. However, profound behavioural science knowledge and experience as well an

unbiased outside view on an organisation's strategy can facilitate a thorough application of the framework in practice.

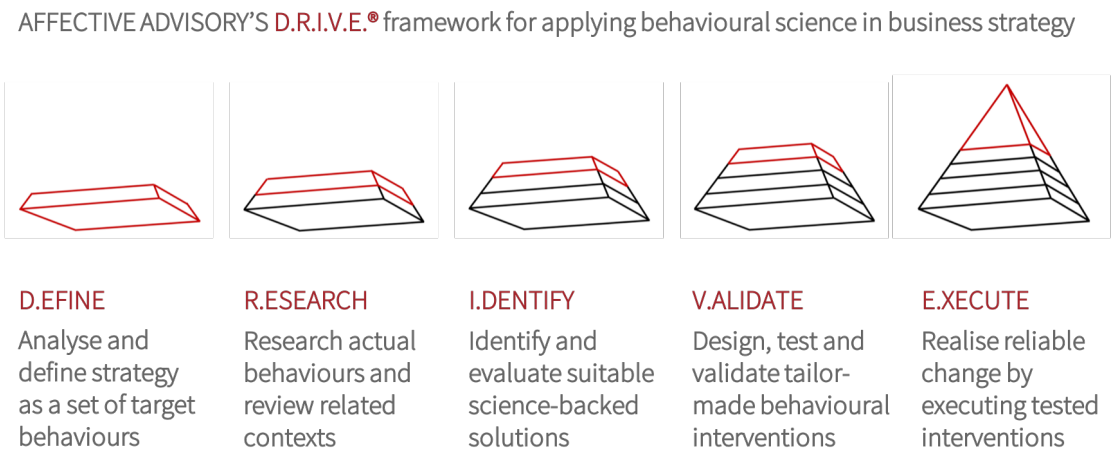

Figure 1: The five steps of the D.R.I.V.E.® framework

The framework's five steps follow a logical problem solving process similar to creative design thinking from target definition, observation, ideation and prototyping to implementation (Brown & Wyatt, 2010; Buchanan, 1992). Taking a behavioural perspective, D.R.I.V.E® guides organisations to first define strategy as a set of intended target behaviours, secondly research current behaviours and contexts relevant to their strategic challenge, thirdly identify suitable and academically tested solutions from behavioural science, fourthly validate and adjust the selected interventions across a representative sample, and finally execute behavioural interventions at scale. In the following, the integrative five steps will be discussed in more detail.

D.EFINE

In the first step, organisations should understand and define their strategic challenge as a behavioural challenge. Successful strategy realisation is the result of intentional target-oriented behaviour on an individual level or group level. As a result, organisations need to define their strategic target as a set of desired actions of a specific group in focus (see Figure 2). The desired actions can be different from person to person, be mutually dependent on each other and take place in parallel or in succession. In this process, organisations have to respect the individual's and group's contextual basis in which the target behaviour should reflect itself in.

If, for example, an organisation wants to motivate its customers to consume an alternative service or product (e.g., a new healthy drink) as a target behaviour, it must define the related chain of constituent desired actions that would need to occur in order for the overall aim to take place with respect to the customer's context. E.g. from first picking up the product, to evaluating the product, to considering the purchase of the product, to buying the product, to finally consuming the product.

The definition of strategy as target behaviour of a specific audience in scope (e.g., customers, employees, supervisory boards, etc.) serves as a guideline for the following four steps of the framework and forms the basis for the subsequent analysis of the current behaviours and contextual conditions.

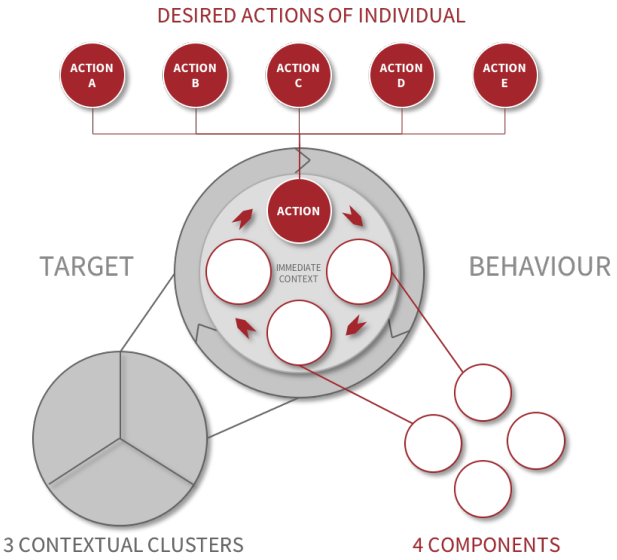

Figure 2: The definition of strategy as target

R.ESEARCH

In the second step, organisations must research the actual behaviours and contexts of each type of audience member with the aim of pointing out strategic gaps between the previously defined and effectively observable behaviour. Since behaviour is largely influenced by contextual factors, it is critical to also research and map the contextual framework in which the actual behaviour occurs in. The thorough analysis of the gaps between target and actual behaviour marks the starting point for the subsequent identification of suitable behavioural interventions.

In essence, human behaviour can be described as the result of a consecutive and repetitive interaction of four key components: attention, processing, decision and action (see Figure 3). These components are inextricably linked with the individual or group's immediate context, both shaping behaviour and being shaped by behaviour (Paul Dolan & Galizzi, 2015). The immediate context is itself composed by a person's general contextual basis which may be divided into three clusters: the individual context, the social context and the environmental context (see Figure 3). It is important to note that all elements are inter-related: the four components define human behaviour, which impacts and is impacted by the immediate context which alters the general context of a person, which in turn has an effect on the four components in future contexts.

Looking at the framework's elements in more detail, the individual context cluster firstly comprises all influence factors solely attributable to the individual at the point of a decision, such as the current mental and physical state of a person (fatigue, hunger, etc.) as well as general factors like an individual's educational background (Englich & Soder, 2009; Kahneman & Klein, 2009; Mussweiler & Strack, 2000). The social context cluster secondly comprises all influence factors that originate from a person's integration and interaction in a society, for instance predominant social norms, in-group/out-group effects, or social commitments (Cialdini & Trost, 1998; Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). The environmental context cluster lastly includes all influence factors that stem from the immediate physical environment a decision is taken in, such as temperature, light, noise, etc., as well as the surrounding infra-

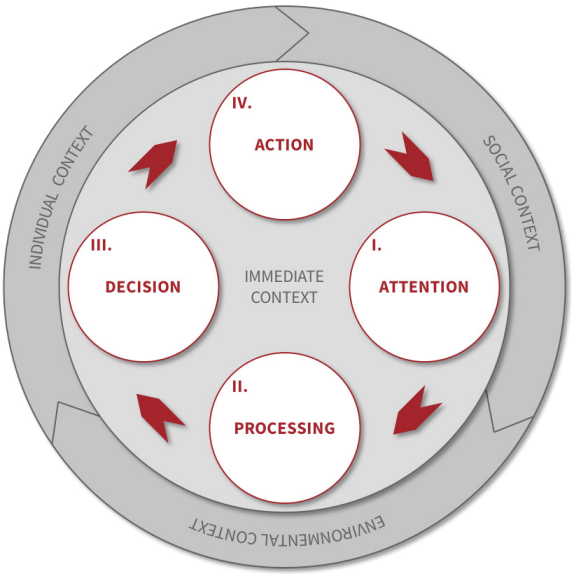

Figure 3: The research of actual behaviours and contexts

structure, technology and so on (Dolan et al., 2012; North, Hargreaves, & McKendrick, 1999). Common to all three clusters is the challenge that contextual factors can significantly influence human decision making on both a controlled and conscious basis, as well as an automatic, subconscious basis (Milkman, Chugh, & Bazerman, 2009; Newell & Shanks, 2014). When performing a holistic context analysis, it is therefore key to pay close attention not only to obvious contextual effects, but to influences that might at first glance only be perceived on a subliminal level.

Researching actual behaviour, we recommend considering four successive and inter-dependent components of human behaviour—attention, processing, decision and action —as well as the critical links between them.

1. Attention

Behaviour starts with attention. Attention defines what information is taken in and later processed. It is a scarce and sensitive resource that can be consciously or unconsciously, directed or undirected, proactive or reactive, full or limited (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Hansen, 2018; Mullainathan & Shafir, 2013). Only information that has been attended to can then be evaluated and processed for later decisions.

2. Processing

As discussed, processing may take place on a controlled and reflective System 2 as well as an automatic and intuitive System 1 level (J. S. Evans, 2008; J. S. B. T. Evans & Stanovich, 2013; Kahneman, 2011). Moreover, the two systems can interact by passing information between them or actively takeover from each other (Croskerry, 2009; J. S. B. T. Evans, 2006). For the purpose of researching actual behaviour, it is more important to verify whether information is processed rather than where precisely information is tended to (which is also almost impossible to verify in practice).

3. Decision

Next, the perceived and processed information is evaluated, aggregated and summarised in the form of an individual's decision. Importantly, choosing not to act on the basis of the processed and aggregated information (e.g., not to buy a product) is, just like choosing to act, a specific decision. The link between the processing and decision component is highly sensitive to contextual influences and may easily be distorted by cognitive or emotional interferences, such as mental accounting (R. Thaler, 1985) cognitive load (Paas, Tuovinen, Tabbers, & Van Gerven, 2003; Sweller, 1988) or hot cold effects (Ariely & Jones, 2008; Metcalfe & Mischel, 1999).

4. Action

The fourth and final component is the performance of an action taken as a result of a decision. The link between component three and four is similarly sensitive to contextual intertemporal self-control issues. Although people may plan to act on a decision in one moment, they may fail to do so in a following moment, resulting in a breakdown of the overall four component process (Richard H Thaler & Shefrin, 1981). If in reality a customer, who has attended to a healthy product, processed the product's specifications, actively considered and then purchased the product, finally fails to consume the healthy product instead of an unhealthier one (i.e., no action despite a decision to act), the likelihood of future consumption is decreased. Independent of the final result of a decision, the ultimately performed action triggers a narrative feedback loop, informing, calibrating and altering the successive process in a kind of behavioural spillover (Paul Dolan & Galizzi, 2015).

Employing the example of a new healthy drink again, organisational researchers must observe the actual behaviour of customers in the actual immediate contextual setting at the point of sale to identify potential for behavioural interventions. Taken together, behavioural and contextual research is a vastly complex endeavour with opaque relationships, which is best approached via the described three contextual layers and four behavioural components. The result of this comprehensive research forms the basis for the following identification and design of potential behavioural interventions.

I.DENTIFY

In the third step, organisations should identify and evaluate suitable evidence-based interventions addressing the defined target behaviours in step one and the identified behavioural gaps in step two. This step focuses to a great extent on the immediate contextual basis of the scoped individual or group, whose behaviour should be intentionally and predictably changed by a specific design or choice architecture. It is critical to only use interventions that have been thoroughly researched in sound academic studies, and allow an adjustment to an organisation's setup. Over the past years, various toolboxes and mnemonics have been published, summarising well-researched behavioural interventions for "nudging" people to change behaviour (see for example "MINDSPACE" by Dolan et al., 2012; "EAST" by Service et al., 2012, "A practitioner's guide to nudging" by Ly, Mazar, Zhao, & Soman, 2013; or "BASIC" by Hansen, 2018). From a vast array of potential interventions, we have compiled a shortlist of frequently and easily applicable interventions summarised in THE INTERVENTION WHEEL (see Figure 4), serving as a practical and easy starting point for behavioural interventions in organisations (Bragdon, 2017).

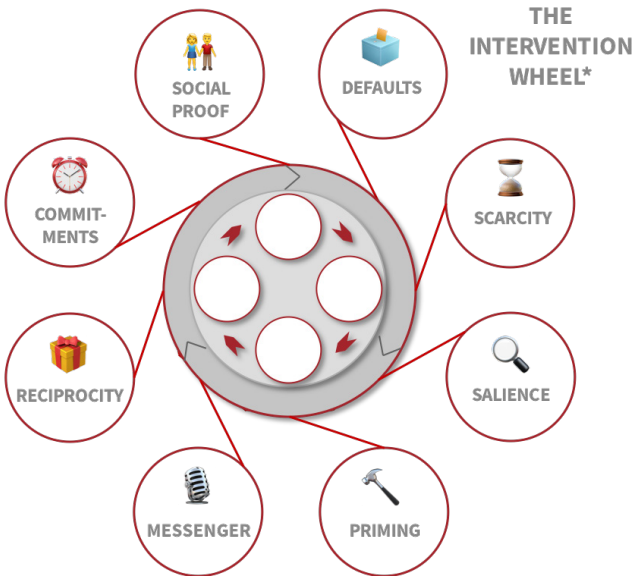

Figure 4: The identification of behavioural interventions *adapted from Bragdon (2017)

There are four basic principles that should be fulfilled by behavioural interventions (Hansen, 2016):

1. Interventions must be contextual, i.e. targeting the immediate contextual environment of the target person or group.

2. Interventions have to be intuitive, i.e. be taken up naturally, leveraging the bounded and contextual rationality of human beings.

3. Interventions must be unconstraining, i.e. not removing or adding any choice options.

4. Interventions have to be measurable, i.e. leading to intentional testable results (Hansen, 2016).

It is recommended to first compose a selection of potential interventions. Then, evaluate how each may be combined in practice. It is important to keep in mind that while some interventions reinforce each other, others may offset one another. For example, in order to motivate customers to consume the new healthy drink, organisations may, on the basis of the previously conducted behavioural and contextual research, experiment with particularly salient packaging evoking associations with a healthy lifestyle (Wryobeck & Chen, 2003) or a similar likeable messenger endorsing the product's qualities to the target group (Cialdini, 2007). Since every behaviour and context is unique to an individual organisation, the effect of identified interventions should always be validated and adjusted with a representative sample prior to being rolled out on scale.

V.ALIDATE

In the fourth step, organisations should evaluate the effectiveness of each behavioural intervention. It is in this prototyping phase, where applying behavioural science provides a true competitive advantage. Organisations must test, refine and combine contextual designs in order to simplify the interventions and maximise their causal effect on the target group.

Identified interventions will therefore be tailored to the individual organisational needs and, moreover, have a real impact on the behaviour of the selected target group, equipping the organisation and managers with competitive edge that is difficult to reproduce.

Figure 5: The validation of behavioural interventions

Behavioural interventions should be validated by asking five key questions (see Figure 5):

1. What is the intended result of the experiment?

Firstly, the organisation should specify how the target behaviour should differ from the actually observed behaviour after the implementation of the intervention(s). The answer to this question stems from analysing the critical gap between the target behaviour defined in step one (D.EFINE) and the results of the actual behavioural and contextual analysis in step two of the framework (R.ESEARCH).

2. Which intervention designs are tested?

Secondly, the organisation must specify in detail which intervention designs from step three of the framework (I.DENTIFY) should be tested in the experiment. It is critical in this step to define whether interventions should be tested in isolation or combination. In case various interventions are tested together, one has to carefully define the amount and order of the interventions to be able to track potential interaction effects.

3. What data is needed and how is it captured?

Thirdly, organisations have to be clear about what data (primary vs. secondary) should be collected and how this data is captured (observation vs. survey) to substantiate a causal effect between intervention and behaviour.

4. What is the required sample for robust and representative findings?

Fourthly, organisations must define, what experimental group is needed to derive significant findings that are statistically robust and representative for a broader group. In order to ensure representativeness, the researching team should, aside from the size of the sample, also pay attention to the diversity and selection criteria of the sample to prevent statistical distortions.

5. What is the right experimental design enabling generalisation?

Fifthly, organisations have to choose a suitable and workable experimental design enabling the generalisation of the identified results from a selected sample to a wider group in the following execution on scale. Whenever possible one should hereby rely on experiments that allow for the verification of an intervention's effect on a randomly selected treatment group in contrast to a non-treated control group (see schematic illustration in Figure 6; for further reading we recommend Robson & McCartain, 2016, or Gerber and Green, 2012).

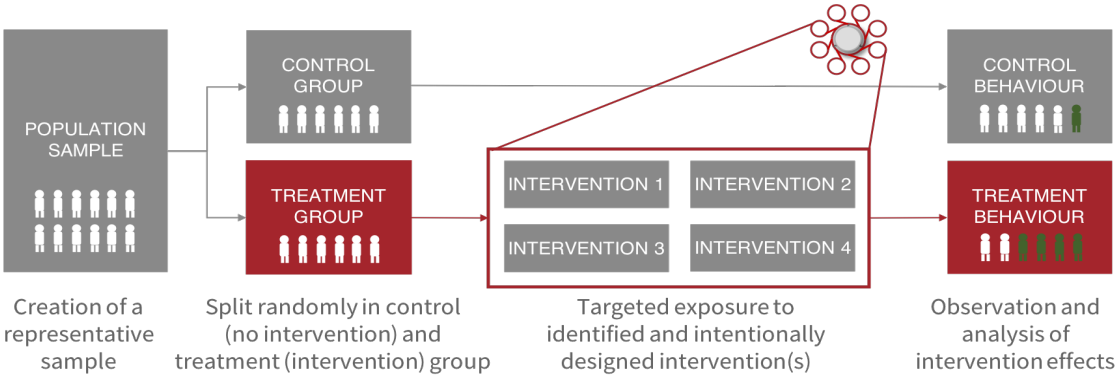

Figure 6: Schematic illustration of experimental design with randomised allocation to treatment and control

Coming back to the previous example, the organisation should ideally conduct a block-randomised trial of the selected interventions across different points of sale of comparable standard. The impact of different salience effect may for example be tested in the relevant environment of different supermarkets. Although technically more complex, testing interventions in the real world rather than in artificial lab experiments provides unparalleled insights and much greater predictive power how interventions will ultimately perform in practice. As a result of this process an organisation should have clarity if and how the selected interventions have an effect on the behaviour of its respective target group and feel comfortable to tackle the final fifth step of the framework; the execution of behavioural interventions on scale.

E.XECUTE

In the fifth step, organisations should roll out the previously identified, tailored and validated interventions, realising real behavioural change across its target group. This final implementation phase concludes the five-step framework and closes the loop by intentionally aligning the new behaviour with the defined target behaviour (see Figure 7).

Figure 7: The execution of behavioural interventions in practice

With the transfer from sample to population, the organisation will successfully bring the behavioural intervention to life. At the same time, it is putting the design to its final test: no matter how detailed a validation has been performed, or how realistic the controlled sample has been compiled, only a full execution on scale can determine if an intervention proves effective in reality. Since human behaviour is highly complex and difficult to predict, even with the most sophisticated frameworks, imperfections have to be anticipated and proactively addressed. Already small changes in the population or context can impact the effect of an intervention in practice. It is therefore recommended to monitor the rollout of the previously tested and proven intervention as closely as possible to be able to adjust and further leverage the intervention design if necessary. Once fully implemented, the organisation should continue collecting data to ensure the quality of the intervention over the long-run, and support the dissemination of the acquired knowledge for following interventions in academia and practice.

In our healthy drink example, the organisation should therefore not only continue to monitor sales and consumption rates on the basis of traditional KPIs but also continue conducting occasional consumer observations as well as the experimentation with alternative intervention designs at points of sale. Taken together, this final execution step brings an intervention to practice on scale. It marks successful completion of the D.R.I.V.E.® framework and the application of the powerful insights of behavioural science for strategy.

Summary

Behavioural science brings a human perspective to public policy and corporate strategy by merging insights from experimental economics, social psychology and cognitive science. We support a wider dissemination and application of the field's powerful insights in private and public organisations with D.R.I.V.E.®, a comprehensive yet intuitive five-step framework for applying behavioural science in strategy. By firstly, defining strategy as a set of target behaviours (D.EFINE), secondly, researching actual behaviours and contexts (R.ESEARCH), thirdly, identifying and evaluating science-backed interventions (I.DENTIFY), fourthly, testing and validating the designed solutions (V.ALIDATE), and finally, implementing and executing behavioural interventions on scale (E.XECUTE), organisations can be ensured not only to design interventions solving their strategic challenge in theory, but also to changing behaviour in practice.

The Author

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Consumers' Decision Process and Their Utility Expectation: How Can You Measure It?

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This paper is the synopsis of the material delivered to the Marketing Accountability Standards Board (MASB)[1] in its intensive Marketing Metric Audit Protocol review of BrandEmbrace® Expected Utility.[2] The MASB review of BrandEmbrace® began in July 2017 and was completed in December.

Definition of BrandEmbrace®

BrandEmbrace® is an unbiased, valid, reliable, easily deployed and used assessment of the level of expected utility (attractiveness) driving brand preference based on the buyer's own decision language and decision processes (Gohmann, 2015; Gohmann, Mundy & Goy, 2016). It reflects the degree to which a product or service satisfies a buyer's purchase decision requirements (expectations) as defined by that individual's unique decision process for the category. The metric is expressed as a number between -100 and +100 (Gohmann, 2015; Gohmann et al., 2016).

The aggregation of BrandEmbrace® across individuals produces a measure of market attractiveness (or utility) for each brand competing in the category (Gohmann, 2015).

Qualitative and quantitative data are collected using structured and monitored custom research protocols, administered by those who have completed 3-day qualitative and 3-day quantitative training sessions.

Source Data

The qualitative data consists of "snippets" of recollections and mental material coincident with the respondent's prior purchase decision. This can be collected either in person or online. Example "raw" data developed in the qualitative sessions have been published (Gohmann, 2015; Gohmann et al., 2016).

The quantitative data consists of organizing the qualitative data into "bins" of similar concepts and then ranking/ordering these concepts. Brand choice options are then scored on these bins and stated behavioral brand preference is also recorded in the quantitative stage. This quantitative stage is conducted either in person, online, or by phone interview.

Sample sizes for the qualitative stage are typically conducted among 12 to 28 respondents. Sample sizes for the quantitative stage are typically 400 to 2000 respondents. In both the qualitative and quantitative stages respondents are recruited who have purchase experience within the category.

[1] MASB is the only organization with the mission to "Establish marketing measurement and accountability standards across industry and domain for continuous improvement in financial performance and for the guidance and education of business decision-makers and users of performance and financial information." The Marketing Metric Audit Protocol which BrandEmbrace® underwent, places it in the MMAP Metric Catalog, the only independent, objective resource for assessing the validity of marketing metrics. The reader is encouraged to visit the website the MASB.org, learn of its goals and the many activities underway to reach them.

[2] Normally such reviews are not made public; however, it is presented here to demonstrate the value and performance of the metric accruing from its use and reflected in the specific criteria of the evaluation.

Derivation

The qualitative process consists of a structured psychological regression to the point of decision (e.g. last time purchased) and the recalling of material coincident with the decision. This material is then operated on by participants in a set of proprietary procedures which produces the Decision Environment (DE) consisting of decision elements, decision gates and an element system.

Since the entire MINDGUIDE® set of protocols focus the respondent on material which has a non-conscious or "pre-conscious" basis, this material is only developed by respondents and this is the only material allowed in the model, there is a high degree of certainty that the basis of validated predictions based on the model are, in fact, causal. This logic chain is discussed in detail in published articles (Gohmann, 2015; Gohmann et al., 2016).

The DE is then translated into a quantitative survey instrument which is fielded to a different group of respondents. A proprietary model is applied to each respondent's data. This is normalized to produce BrandEmbrace® for each respondent which is then tabulated as any ratio scaled variable in a survey.

BrandEmbrace® and MINDGUIDE® consist of fixed protocols independent of the investigators, clients or the product and service categories on which they are used. No 'black boxes' are employed on aggregate data, rather all modeling is done at the individual level and therefore is subject to review (Gohmann et al., 2016). QA checks are contained in each of the steps required to produce both BrandEmbrace® and MINDGUIDE (Behavioral Science Lab, 2017c).

Sample sizes employed for BrandEmbrace® typically detect statistically significant (95% confidence) differences between subgroups of 1% to 5%.

Application

The end benefit to the marketer who uses MINDGUIDE® is a clear map of how customers make purchase decisions within the categories in which they compete. When viewed across the entire category, BrandEmbrace® provides the average degree to which the decision systems of category active purchasers are being satisfied by each competing brand in the category.

Using this approach, BrandEmbrace® has been used to:

- Develop new products and services
- Optimize selling propositions, brand positioning and service environments
- Forecast purchase likelihood and loyalty/brand switching.

Its application to the selection of retail food, bank, luxury auto and charity brands has been published (Behavioral Science Lab, 2013, 2014a, 2014b, 2015).

BrandEmbrace®

- Has been demonstrated to predict preference/choice (Gohmann et al., 2016).

- Is not biased by word or scale choices. The methodology uses only the words and language the buyer uses to describe the basis of the purchase decision thereby avoiding unintentional priming that can occur with common stated metrics such as purchase intent. Also, individual-level models are fit to the responses eliminating scale issues (Gohmann et al., 2016).

- Is based on a set of fixed protocols, it requires no prior specialized knowledge, is easily scalable and applicable across product categories, geographies and cultures using online, telephone or in-person methodologies (Gohmann, 2015).

Relationship to Financial Metrics and Validity

BrandEmbrace® is in its third year of commercialization following three years of development. Published case studies demonstrating ties directly to firm financials are not yet available. However, as noted above, validation tests have demonstrated a link to MSW•ARS Brand Preference (APM Facts), a metric which itself has been MMAP assessed and shows a direct relationship to market share (Gohmann et al., 2016; Gohmann, Goy & Mundy, 2017).

Figure 1 links BrandEmbrace® to brand preference (APM Facts) and, thereby, to share and unit volume. APM Facts is a MASB-reviewed measure of brand preference to which BrandEmbrace® is also predictive.

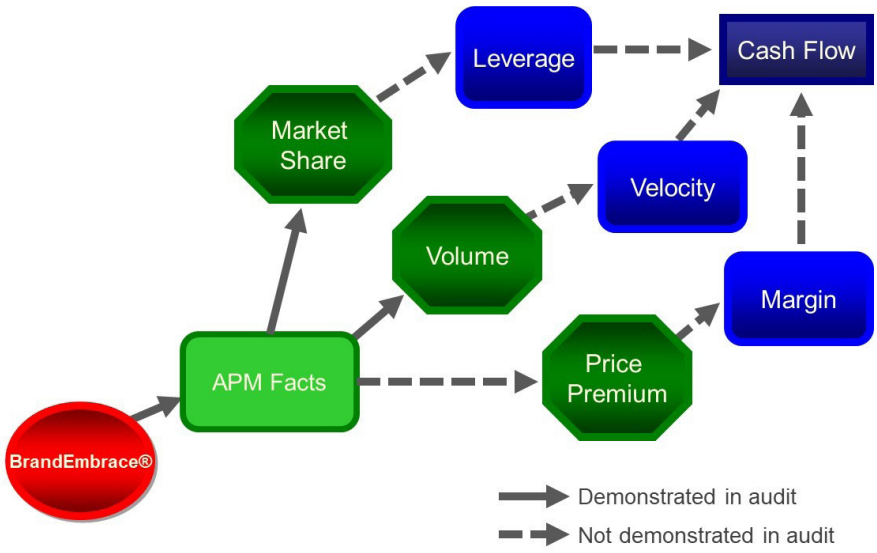

Figure 1: Role of BrandEmbrace® in brand cash flow estimation

In several studies, BrandEmbrace® has been predictive of various choice alternatives. Across three re-contact experiments, all between 6 and 8 months after the original study, 80% of 75 predicted outcomes were obtained. This includes discriminating retail food stores, ads for charitable giving, and an appliance (Gohmann et al., 2016).

Choice Task	Predicted vs Actual Study Results*		
	Food Store Shopping	Charitable Giving	Hair Dryer
Pick Your New "Usual" Grocery	18 of 24 (75%*)		
Pick Most Compelling Ad		23/30 (77%*)	
Pick Most Appealing Product			19/21 (90%*)

Table 1: BrandEmbrace® predictive validity experiment results

BrandEmbrace® has also been shown to relate to MSW•ARS Brand Preference choices in a study comparing banking options. A direct relationship was demonstrated between gains/loss in BrandEmbrace® levels and the percent choosing their current primary banking brand or a different banking brand in the behavioral brand preference exercise (Gohmann et al., 2016).

Within Respondent Mean Total Gain (+) or Loss (-) in EU (BrandEmbrace) vs. Current Primary Bank	Percent Preferring (MSW•ARS) as -	
	Current Primary Bank	New "Switched to" Primary Bank
+35	0	100
+12	33	67
-18	77	23
-40	83	17

Table 2: BrandEmbrace® relationship to MSW•ARS APM facts

In another study, BrandEmbrace® predicted switching between the respondents previous most often used brand and the brand chosen in an MSW•ARS Brand Preference exercise (Behavioral Science Lab, 2017b).

In another non-marketing experiment, conducted using the same methodology as that used by MINDGUIDE® and BrandEmbrace®, 8 out of 9 (89%) of jurors' voting for the plaintiff or defendant in a simulated trial were accurately predicted (SentienTech, 2017).

Calibration

A ±30 points of difference in BrandEmbrace® appears to trigger either loyalty or brand switching (Gohmann et al., 2016; Gohmann et al., 2017).

In a proprietary study, a difference of ~30 points were found to predict switching from one organization to another, regardless of which part of the organization was switched from as shown in the table below. Those who did not switch organizations showed a mean difference in BrandEmbrace® of only one point (N=1739).

Subset of Organization Switched from	BRANDEMBRACE®		
	Organization Switched from	Organization Switched to	Difference
A	65	92	27
B	64	94	30
TOTAL (N=610)	65	94	29

Table 3: Relationship of BrandEmbrace® to group membership

Reliability, Sensitivity and Diagnostics

An ANOVA analysis of 50 BrandEmbrace® cases from three categories over the past three years showed the measure as reliable as the laws of random sampling allows with non-significant p-values overall and the number for individual cases equal to that expected by chance (Behavioral Science Lab, 2017a).

Selection of the preferred choice alternative is easily obtained by computing the within respondent differences in BrandEmbrace®. Diagnostics regarding the "why" of preference is easily obtainable by evaluating the BrandEmbrace® model component scores.

The Author

Tim Gohmann, Ph.D., is Co-founder and Chief Science Officer at Behavioral Science Lab, LLC. He 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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Having the Energy to Make Better Consumer Decisions

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Introduction

Energy policy is a hot topic in Australia. Like many countries around the world, Australia is grappling with balancing energy affordability, reliability and lower emissions. Energy affordability has become a big issue in Australia, with electricity prices rising more than twice as fast as wages and three times as fast as the Consumer Price Index (CPI) in the past decade (Australian Competition and Consumer Commission, 2017).

Energy policy has long been of interest to the field of behavioural economics (Allcott & Mullainathan, 2010). Making energy consumption decisions is hard – the energy market can be confusing, and the amount and complexity of energy information can be daunting for consumers. This can have the effect of reducing consumer engagement in the energy market, leaving consumers more vulnerable to biases in their decision-making.

BETA has been using behavioural economics to test ways to improve energy affordability for Australians, running trials to 1) help consumers better understand their energy plans and 2) encourage consumers to buy more energy efficient appliances. This article provides a summary of the lessons learned from our recent work.

Playing Inside the Bounds of Rationality

It makes things simpler for economists to assume consumers go about their lives constantly maximising their utility. However, our evolving understanding of consumer decision-making suggests this is not a very realistic way of analysing how people make their decisions. To illustrate, consider the example of Janine, the energy consumer.

> Janine just received a surprisingly high winter electricity bill. Tired after a long day at work, she finds the energy to crunch the numbers and see whether she could get a better deal with another plan/provider. Six hours and two energy drinks later, Janine has found the optimal solution – if she switches providers, she could save $50 this year.

Box 1: Janine's conundrum

If we suppose, as economists do, that Janine's leisure time has a monetary value (say $10/hour) then was it really worth the six hours of her time to figure it out? Janine's conundrum highlights the need to think about cognitive limits, time constraints and other barriers to good consumer decision making. It comes from Herb Simon's theory of bounded rationality – the idea that making consumer decisions takes *time* and *cognitive effort*, both scarce resources (Simon, 1997).

In this particular case, it makes a seemingly simple decision – whether it is worth thinking about switching energy providers – hard enough to result in a conundrum. If Janine is not sure how much money she will save from switching, how much time and effort should she devote to making the decision?

We know that people use a number of fast and frugal heuristics to deal with difficult consumer decisions (Gigerenzer & Todd, 1999). For instance:

- Satisficing – searching for information about alternatives until an option is found that is 'good enough' (Simon, 1997).
- Elimination by aspects – deciding on some of the key features that matter and ignoring options that do not meet a baseline threshold for that feature (Tversky, 1972).

This means that providing more information to consumers won't necessarily improve their decisions, because the strategies consumers actually use often involve ignoring some information.

For energy consumers, deciding on an electricity or gas provider means trying to compare a number of different pricing structures from multiple providers, often with unfamiliar and confusing terminology. We know overloading people with information and options can be overwhelming and leads many consumers to disengage from decision-making (Iyengar & Lepper, 2000).

People tend to stick with what they know even when a better alternative is available to them (Samuelson & Zeckhauser, 1988). This makes it hard to motivate switching behaviour – status quo bias suggests consumers have a built-in aversion to change and feel regret if they make an active choice and it goes badly (Kahneman & Tversky, 1982).

The cost of energy is also largely 'invisible' – in Australia, the gap between energy use and billing tends to lag by around three months. This makes it hard for energy consumers to figure out the right energy plan for their usage habits and the kind of appliances to buy. We know consumers respond according to the stimulus they receive (Thaler, 1981). However, Australian energy consumers do not typically receive stimulus from a high winter electricity bill until springtime when the climate is warmer and it is too late to respond and take action. Likewise, when consumers buy household appliances, the up-front cost of efficient appliances is very salient, while the running cost savings may feel less tangible and also, due to present bias, less valuable (Hausman, 1979).

What BETA is Doing to Help Energy Consumers

For BETA, understanding how energy consumers make decisions and the biases that get in their way informs how we design tools to help them. These case studies outline the work we've been doing with Australian energy consumers.

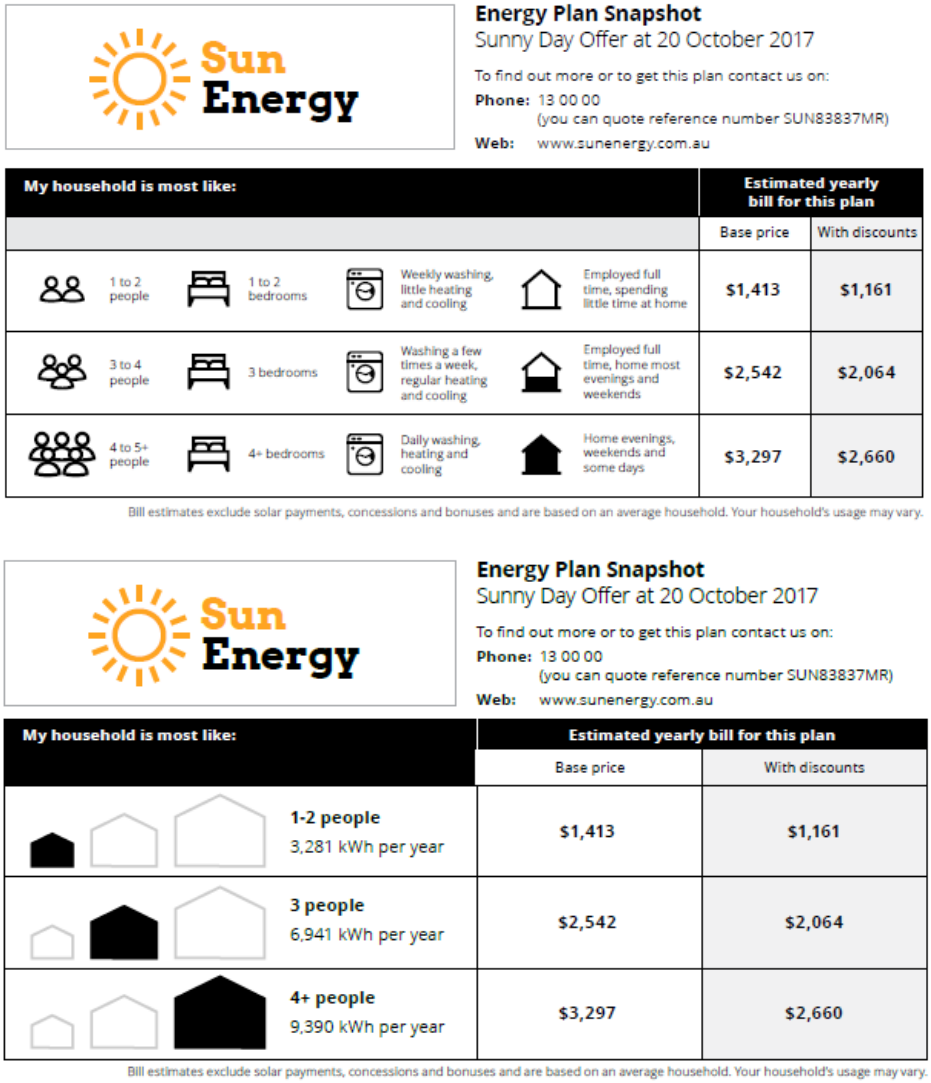
Case Study 1: Energy Price Fact Sheets

Despite higher energy price inflation in recent times, many consumers still do not shop around for a better deal. In 2017, the 'representative consumer' in different Australian states could have saved between $107 and $507 a year by moving to a better deal, yet 47 per cent of Australian residential consumers had not changed their electricity retailer or plan in the last five years (Australian Energy Market Commission, 2017).

There are a couple of ways to approach this problem – motivating consumers to consider switching, or helping them make better choices when they do have to make a decision about an energy provider. BETA's trial with the Australian Energy Regulator (AER) experimented with the latter approach.

To help consumers compare plans, the AER requires energy retailers to have a fact sheet for every plan available to residential and small business consumers in certain states and territories. Existing AER fact sheets are often two pages long and include a lot of complex and detailed information in small print. Fact sheets do not currently include any benchmarking information.

In partnership with the AER and other key energy stakeholders, we drew on behavioural insights to design five alternative energy fact sheets for the same electricity plan. We designed the fact sheets to be shorter, simpler and more attractive – putting the key information on a single page, combining text and diagrams, and providing benchmarking linked to costs.



Sun Energy

Energy Plan Snapshot
Sunny Day Offer at 20 October 2017

To find out more or to get this plan contact us on:
Phone: 13 00 00
(you can quote reference number SUN83837MR)
Web: www.sunenergy.com.au

My household is most like:				Estimated yearly bill for this plan	
				Base price	With discounts
1 to 2 people	1 to 2 bedrooms	Weekly washing, little heating and cooling	Employed full time, spending little time at home	$1,413	$1,161
3 to 4 people	3 bedrooms	Washing a few times a week, regular heating and cooling	Employed full time, home most evenings and weekends	$2,542	$2,064
4 to 5+ people	4+ bedrooms	Daily washing, heating and cooling	Home evenings, weekends and some days	$3,297	$2,660

Bill estimates exclude solar payments, concessions and bonuses and are based on an average household. Your household's usage may vary.

Sun Energy

Energy Plan Snapshot
Sunny Day Offer at 20 October 2017

To find out more or to get this plan contact us on:
Phone: 13 00 00
(you can quote reference number SUN83837MR)
Web: www.sunenergy.com.au

My household is most like:	Estimated yearly bill for this plan	
	Base price	With discounts
1-2 people 3,281 kWh per year	$1,413	$1,161
3 people 6,941 kWh per year	$2,542	$2,064
4+ people 9,390 kWh per year	$3,297	$2,660

Bill estimates exclude solar payments, concessions and bonuses and are based on an average household. Your household's usage may vary.

Figure 1: The top sections of two new energy fact sheets

Overall, we found all five alternative fact sheets were clearly preferred to the existing AER fact sheet. Our survey participants found the alternative fact sheets easy to understand and helpful in comparing electricity plans and making household budget decisions.

Average participant confidence increased 6 per cent after viewing a BETA energy fact sheet, compared to an average decrease in confidence of 3 per cent for participants who viewed the existing AER fact sheet. We did not find strong evidence that any one alternative fact sheet was superior to the others.

This trial helped inform the AER's guidelines for energy retailers on the pricing information they are required to give energy consumers. Our results provided evidence on ways to design energy fact sheets to help Australians get a better deal for their energy.

Case Study 2: Energy-Rating Labels

Buying a new energy appliance involves weighing the upfront purchase price against ongoing running costs – this is particularly important because cheaper products are generally less energy efficient. Ideally, consumers will have the necessary information to choose the best value-for-money product based on total lifetime cost.

To help consumers understand energy efficiency and expected running costs, the Australian Government requires an Energy Rating Label on appliances sold in stores. The Energy Rating Label aims to help consumers compare the energy efficiency of similar appliances by providing information on average annual energy use in kilowatt-hours (kWh) and assigning a star rating to each appliance.

In partnership with the Department of the Environment and Energy and online retailer Appliances Online, we tested whether energy-rating labels affect consumer purchase decisions online. This is because an energy efficiency label is not currently required for online purchases.

We tested two types of rating labels:

- The existing label with a star rating and average annual energy use in kWh.
- A label with star rating and benchmark for expected running cost, expressed in dollar terms.

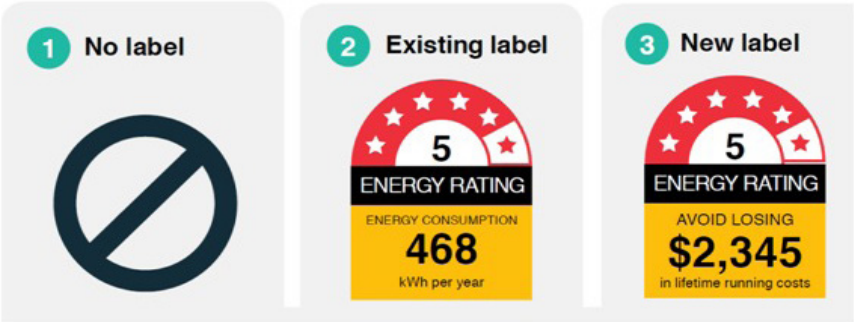


Figure 2: The interventions – baseline, the existing label and a new label. The new label highlighted the avoided *financial loss* of purchasing an appliance compared to the least efficient appliance.

The new label was intended to invoke loss aversion and help consumers weigh immediate costs against future benefits that accrue slowly over time. However, we did not find the behaviourally informed label to be any more effective than the existing Energy Rating Label. It is possible the framing of the dollar values as 'avoided losses' may have been more confusing than the more familiar 'potential savings'.

Overall, consumers who viewed the labels were 11 per cent more likely to add higher efficiency appliances to their online cart and 20 per cent more likely to purchase higher efficiency appli-

ances than consumers who did not see a label. However, we only have moderate statistical confidence in that result. Although the results were not statistically significant according to conventional tests, the effect size is large enough to warrant consideration by policy makers.

Where to Next?

BETA's energy trials are helping consumers make better choices and we intend to do more research to help consumers engage in the energy market. This starts by educating consumers, but also involves motivating and activating them to make better energy decisions.

The move towards giving individuals ownership of their consumer data promises to help with these efforts. Consumers miss plenty of opportunities to save money because they don't have the time and energy to constantly search for the best deal on all of their bills. As we move toward consumers owning their data in Australia and around the world, it should open up the potential for comparison services to help consumers find more affordable energy (and banking, phone/internet and other services). By doing the work on behalf of consumers, these comparison services could substantially reduce the amount of energy required for consumers to get better deals. However, the challenge still remains to motivate consumers to take the first step.

The Author

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Super Behaviour: Designing Australia's Superannuation System

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Introduction

Retirement income decisions are infrequent, high stakes and complex.

Do I need to save for retirement? How much more should I save? Which superannuation product is best? Should I stick with the default? Should I switch funds? How should I use my savings in retirement?

Think about these questions and it is no wonder behavioural biases can lead people to sub-optimal outcomes. Australia's Productivity Commission (2016) discussed how policy makers need to consider behavioural biases in designing our superannuation system. *Present bias* is key, where people's preferences for present consumption over future consumption result in low voluntary savings. *Status quo bias* means people display procrastination and inertia in saving for retirement, particularly when there is excessive choice and information. *Loss aversion* means people can be reluctant to accept short-term risks despite the potential for long-term gains, causing people to hold too much savings in low return options, compromising the growth of their savings.

It also follows that policy makers can harness behavioural insights to help citizens manage tricky, high-stakes decisions. Behavioural insights have helped Australian policy makers design our retirement income system. Australia's superannuation system is the core component of our retirement savings plan. The Government ensures people save for retirement through a mandatory requirement on employers to contribute money into what we call an employee's 'superannuation account', which employees can normally only access in retirement. Many private providers offer different superannuation products, so the Government helps consumers by requiring employers to default employees into low fee, diversified products designed to cater for consumers who are disengaged. But challenges still remain, and as behavioural insights becomes more embedded in the Australian Government, it will continue to play a role in addressing these challenges.

Australia's Mandatory Superannuation Guarantee Approach to Increasing Retirement Savings Preceded Save More Tomorrow.

The groundbreaking Save More Tomorrow research brought behavioural insights into the consciousness of policy makers around the world in 2004. Richard Thaler and Shlomo Benartzi (2004) made the case for addressing the barriers to retirement saving that arise from consumer preferences for current consumption over future consumption. Save More Tomorrow committed employees to allocate a portion of their future salary increases toward retirement savings. They helped avoid present bias by asking people to commit now to save in the future. They minimised loss aversion by ensuring take home pay does not decrease. And they harnessed inertia because once enrolled, people remain in the scheme unless they opt out. Save More Tomorrow has been scaled up after its initial success, with employers now adopting a variety of versions, assisted by the 2006 Pension Protection Act encouraging firms to adopt its principles (Benartzi & Thaler, 2014).

Australia introduced the mandatory Superannuation Guarantee in 1992, well before Save More Tomorrow helped bring behavioural insights into the spotlight as a powerful policy

tool. Australia mandates employers to contribute a minimum amount of superannuation for employees. Policy debate at the time of introduction was not *explicitly* based on behavioural insights, but Australian policy reviews, in a more ad hoc fashion to today's behavioural insights literature, identified the same psychological barriers preventing people from saving enough for retirement. The Final Report of the Commonwealth Task Force on Occupational Superannuation (1983) stated younger employees do not rate provision for retirement highly in their priorities. The Fitzgerald Report on National Saving (1993) provided to the Treasurer highlighted consumer short sightedness, living for today and disregarding future consequences. And George Akerlof's (1991) research, drawn on by the Fitzgerald Report, identified the heightened salience of present costs and benefits compared to future costs and benefits as a reason why people do not save enough.

The Superannuation Guarantee and Save More Tomorrow have both increased retirement savings by addressing behavioural biases, despite the different methods of implementation. The Superannuation Guarantee is a mandatory measure from the traditional policy handbook, while Save More Tomorrow is a classic behaviourally-informed nudge.

Employees Are Defaulted into Low Fee, Diversified Superannuation Products

Underpinned by neoclassical economics (Gruen, 2010), the 1997 Financial System Inquiry (Wallis Inquiry) argued superannuation members could be treated as rational and informed investors able to make their own superannuation decisions. Wallis recommended employees have choice of superannuation fund, which the Australian Government enacted in 2005.

Policy makers then drew heavily on behavioural insights to identify problems and design solutions in response to choice of fund. The Super System Review (Cooper Review) commissioned in 2009 recognised direct engagement in the superannuation system is not a priority for most people who do not have the interest, information or expertise to make informed choices. Economic thinking had clearly evolved about how individuals make decisions which have long-term but uncertain consequences in a complex and unfamiliar environment (Gruen, 2010). To quote Richard Thaler and Cass Sunstein (2008), Australian policy makers have realised we cannot treat people as able to "...think like Albert Einstein, store as much memory as IBM's Big Blue and exercise the willpower of Mahatma Gandhi".

A key element in response to the Cooper Review was the introduction of MySuper in 2012. MySuper is clearly inspired by behavioural insights, harnessing simplicity and the power of the default. Employers are required to default employees into low fee superannuation products with diversified investment strategies. These products are designed to work well for members who do not actively choose a superannuation fund. For a superannuation fund to offer a MySuper product, the regulator must assess it as meeting certain standards for returns and fees such that members will not be paying for unnecessary 'bells and whistles'. The simple set of features makes MySuper products easier for consumers to compare. Freedom of choice is preserved, with consumers still able to actively opt out of the default by selecting another product.

BETA Trialled Different Ways to Display and Compare Retirement Income Products

The Behavioural Economics Team of the Australian Government (BETA) works collaboratively across government to design and deliver behavioural insights interventions. BETA conducted a

framed field experiment in collaboration with the Australian Treasury and five superannuation funds. The trial examined how best to present information about retirement income products to superannuation members in order to maximise comprehension, assist informed decision making and alleviate cognitive load.

Over 3,600 people responded to a series of hypothetical retirement income plans. Members only reviewed one presentation. Presentations included minimal text descriptions, graphs showing estimates of income and assets over time, number tables showing numerical estimates of income and assets, and a variety of text tables including star ratings or highlighting income comparisons.

We found simple presentation of information helped people understand the available options and make decisions which aligned with their preferences. If we were to declare an overall "winner", there was only one approach, a text table (with income highlighted), that led to significantly improved outcomes across the board – with improvements in comprehension, perceived clarity, decision making ease, decision-making confidence and willingness to take up the product.

The results of the study may feed into superannuation fund disclosure requirements. This will help ensure Australian legislation and regulation reflects the preferences of consumers. This is one example of how the application of behavioural insights has and will continue to help policy makers further improve Australia's superannuation system.

Behavioural Insights Are Poised to Address Ongoing Superannuation Challenges

The Australian Treasurer embedded behavioural insights into a system-wide review of superannuation when he requested the Productivity Commission consider the extent to which the system encourages optimal consumer behaviour, including learnings from behavioural finance. The Productivity Commission provides independent advice to the Government. It has found that despite the Superannuation Guarantee and MySuper, consumers still exhibit behavioural biases and are largely disengaged. Indeed the Superannuation Guarantee and MySuper may exacerbate the disengagement by reducing the penalty for disengagement and by consumers incorrectly perceiving the Government as endorsing it.

Many Australians opt for the default superannuation product rather than switching products, which limits demand-driven competition. The Commission's 2018 draft report found member outcomes in default funds are variable and there are some underperforming funds. To address this problem, it has proposed a solution inspired and informed by behavioural insights. It has recommended assisted employee choice where members would be provided a 'best in show' shortlist, empowering them to choose their own product. The shortlist would include no more than 10 of the top performing products, accompanied by simple and comparable metrics on each product's features that captures members' attention. The aim would be to 'nudge' members towards good products while allowing them to choose other options.

Conclusion

Through key reforms to Australia's superannuation system, Australian policy makers have already taken important steps to addressing behavioural biases. But there will always be challenges in designing a system where decisions are infrequent, high stakes and complex. As

behavioural insights is embedded in the Australian Government, policy makers will continue to address behavioural biases and harness behaviourally-inspired solutions to address ongoing challenges.

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Battling for Buyers: How Banks Can Combat the Threat of Fintechs

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Executive Summary

Amazon, Netflix, Airbnb, Deliveroo. These technology start-ups have become household names and fundamentally revolutionised the way the entertainment, transport and hospitality sectors operate. The financial services industry has long anticipated that a similar step-change could be coming, but despite the array of start-ups that have taken root over the last decade, high barriers to entry and reliance on consumer trust mean that fintechs have failed to topple the established names.

So far. While the big six banks continue to dominate – holding three quarters of the cash savings market, two thirds of the personal loan market and three quarters of the mortgage market – the fintech threat is rising. Our new research shows that while overall consumer awareness of fintech banking brands is low compared to established bank brands, some are starting to cut through: quarter of people (26%) are aware of Nutmeg; one in six (14%) is aware of Atom Bank and one in 10 (11%) is aware of Moneybox.

This increased brand awareness is leading consumers to consider new entrants when choosing financial services products. Our research shows that, while people still largely favour established brands, and often choose their existing provider for multiple products, there is significant potential appetite from consumers for fintech's offer. More than a third of consumers would consider a fintech for a stocks and shares ISA (35%) or a mortgage (39%), while over two in five people would consider one for a personal loan (43%). And even in the savings market, where choice typically relies more heavily on brand trust than price, one in four (26%) would consider a fintech.

It is clear that fintechs represent an unambiguous and substantial threat to established banks. If these technology-driven companies can continue to build brand awareness and maintain competitive prices, then the industry will soon experience a shift in demand with almost half of consumers (49%) considering a fintech.

Some banks are responding to this threat by investing in technology and supporting start-ups themselves. But too many incumbents are relying on the low churn of customers to protect them. Our research shows that consumers switch their financial service providers infrequently – changing mortgage provider every 14 years and current account provider every 12 – but banks cannot afford to be so complacent. Fintechs are becoming more competitive and are undercutting banks across a variety of product areas, aiming to bleed the banks dry.

But it's not all doom and gloom. There are steps established banks can take to defend themselves against the fintech threat:

- *Defence is your best offence:* Focus on retaining customers by determining the factors that cause customers to switch to competitors and organising to mitigate them.
- *Pick your battles:* Focus attention on the personal loans, savings accounts, and credit card markets.
- *Recruit the enemy:* Acquire promising fintechs and bring them in-house under the main brand to improve tech capabilities.

- *Watch your language:* Emphasise how well established and trustworthy you are in markets where consumers care about brand, and on product benefits and low pricing when brand is less important.

- *Don't drop the ball on pricing*: Stay competitive by trimming fees wherever possible.

Uprising: How is Fintech Disrupting the Financial Services Market?

Technology start-ups have taken many industries by storm, and revolutionised the way businesses operate. Entertainment, hospitality, and food delivery have been fundamentally changed by the likes of Netflix, Airbnb, and Deliveroo.

Financial services are also in the line of fire of tech firms, and for good reason: with London the world's largest financial centre (Yeandle, 2017), the industry comprises 10.7% of the UK economy, contributing £176bn to GVA in 2015 (TheCityUK, 2017).

Although the big six banks dominate – holding three quarters of the cash savings market, two thirds of the personal loan market and three quarters of the mortgage market (Financial Conduct Authority, 2017) – these established brands have long anticipated a technological step-change to occur in their industry. Former CEO of Barclays Antony Jenkins is so convinced that finance will be radically transformed by technology that he has launched his own start-up, 10x, to help banks adapt to the changing environment (Williams-Grut, 2017a).

Others predict an even darker future for banks. Research conducted by Mastercard shows that nearly 33% of millennials think banks will not be needed at all in the future (Neale, 2017). Developments in decentralised banking via blockchain technology may well prove them right (Due.com, 2017).

However, critics argue that fintech is nothing more than a mirage (Tluszcz, 2016), has been hyped up (Walker, 2017), and is based on business models that simply won't work (Davies, 2015). These criticisms have some merit: financial services is a complex, heavily regulated industry and requires large amounts of capital. These barriers to entry hamper the growth of new competitors. As a result, we have yet to see a comparable tech revolution in finance as has been observed in other industries.

But while fintech may have been over-hyped, it should not be ignored. Although there has not yet been a dramatic revolution, the financial services industry is experiencing a significant evolution, driven by fintechs that are not encumbered by swollen overheads and legacy IT systems.

Rather than trying to overhaul the entire industry in one go, fintech firms are currently focusing on areas where banks are not competitive, building brand awareness and capturing market share. TransferWise, for example, launched in 2011 offering international money transfers that are eight to ten times cheaper than established banks and now has over a million customers (BBC Radio 4, 2017). Other fintechs, such as Revolut and Monzo, recently launched current accounts to their 795,500 and 240,000 customers respectively (Revolut, 2017; Williams-Grut, 2017b). Fintechs are also banding together to provide comprehensive offerings to customers – Revolut has partnered with fellow fintechs Trussle and Lending Works to offer better value via smart mortgages and peer-to-peer lending (O'Leary, 2017).

This demonstrates the danger that fintechs pose to established companies. Every element of financial services is under scrutiny, and established players are being undercut by agile tech firms. This increase in competition may be less like Airbnb's hospitality revolution than the steady growth in e-commerce led by Amazon in the early 2000s, but the internet retailer is now one of the most valuable companies in the world (Kiesnoski, 2017).

The Threat: Where Does Fintech Represent the Most Risk to Banks?

To understand where fintechs represent the greatest threat to established banks, we asked a representative sample of over 1,200 UK consumers about their awareness of financial services brands, their use of financial services products, and how often they switched provider. We then used a simulated price comparison website to gauge consumers' preference for established and fintech banking brands in a more realistic way.

Preference

We presented consumers with a set of financial products from various brands for each of the six products they had experience of (Figure 1 shows an example for personal loans).

Brand	Interest Rate	Early Repayment Fee	Late Repayment Fee
LLOYDS BANK	7.0%	£100	£25
Nationwide	7.5%	£100	£15
Royal Bank of Scotland	9.6%	£200	£15
HSBC	10.4%	£50	£15
Santander	12.7%	£100	£15
BARCLAYS	14.3%	£50	£15
RateSetter	15.5%	£50	£25
lendable	16.5%	£50	£10

Figure 1: Simulated price comparison site setting for personal loans

For each product, participants were shown a set of ten providers, six of which were established brands, four of which were fintech. Brands were shown in a randomised order: sometimes fintechs offered the best products, sometimes it was the established banks, and sometimes it was a mix. This means we can assess participants' differences in choice as a consequence of brand preference, rather than the product features.

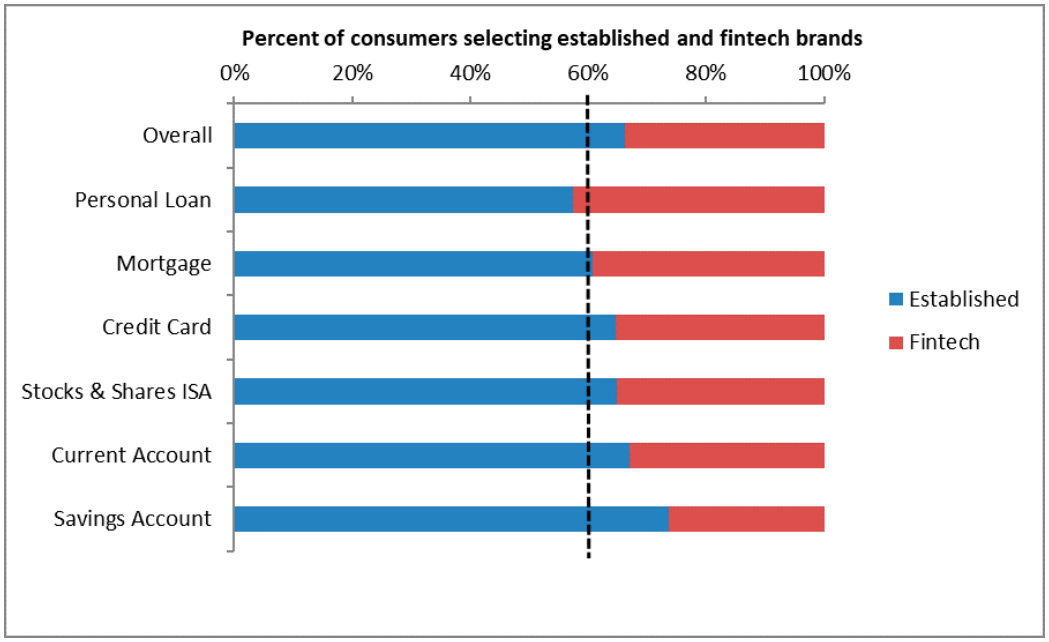

Figure 2: Consumer choice of established and fintech brands in simulated comparison task

If consumers had no brand preference, or an equal preference for established and fintech brands, we would expect 60% to select established brands and 40% to select fintech (since we listed six established brands and only four fintechs – the dotted line in Figure 2). However, we found that consumers currently prefer established brands: on average 66% of consumers selected established banks, while only 34% chose fintechs. Given the dominant market position of many of the brands we tested, this is not particularly surprising.

However, we also found that preference for fintechs varies by product, indicating that established banks should be more concerned with the threat to personal loans, mortgages, and credit cards than other financial products.

But what causes these differences in preference? With 43% of consumers choosing a fintech for personal loans, but only 26% for savings accounts, consumers appear to approach saving and borrowing differently.

This makes sense from a psychological perspective: consumers need to balance trust and risk, so are happy to borrow money from anyone – including little-known fintechs – but are unwilling to save their own money without the security of an established bank. Additionally, there is a tendency to take greater risks when taking out a loan, and to be more risk averse when managing one's own money.

But what of stocks & shares ISAs, where 35% of consumers selected fintechs despite these being savings products? It is likely that consumers use a form of 'mental accounting' and are therefore less risk averse than they would usually be when investing. Mental accounting may also be at work with savings accounts, which consumers typically see as places to keep their money safe.

Awareness

Another reason for differences in fintech preference across products is the relative prevalence of the fintech brands, which we have assessed by measuring levels of brand awareness.

We found that, despite their small market share, some fintechs have relatively strong brand awareness. Of the 1,200 UK consumers we sampled, 41% had heard of a fintech. Nutmeg lead the charge, with more than one in four consumers (26%) having heard of the online investment platform. Atom Bank and Moneybox follow close behind, with one in six (14%) and one in ten (11%) having heard of these challenger brands (see Figure 3).

Awareness of each individual fintech may not seem particularly high, and they are overshadowed by the established brands – which have over 17 times the awareness of the average fintech. However, if fintech firms can bridge this gap in awareness, incumbents may find themselves forced to cut their revenues or else be steadily overcome by fintechs offering better deals.

These awareness figures also demonstrate that fintech is not a niche interest. There is clearly an appetite for technology in financial services, where customers have come to expect quick and easy service through digital channels: 25 million consumers use online or mobile channels to access and manage their bank accounts, nearly twice the number using high street branches (FCA, 2017). Fintechs are well positioned to quickly take advantage of this consumer trend as it develops in the coming years.

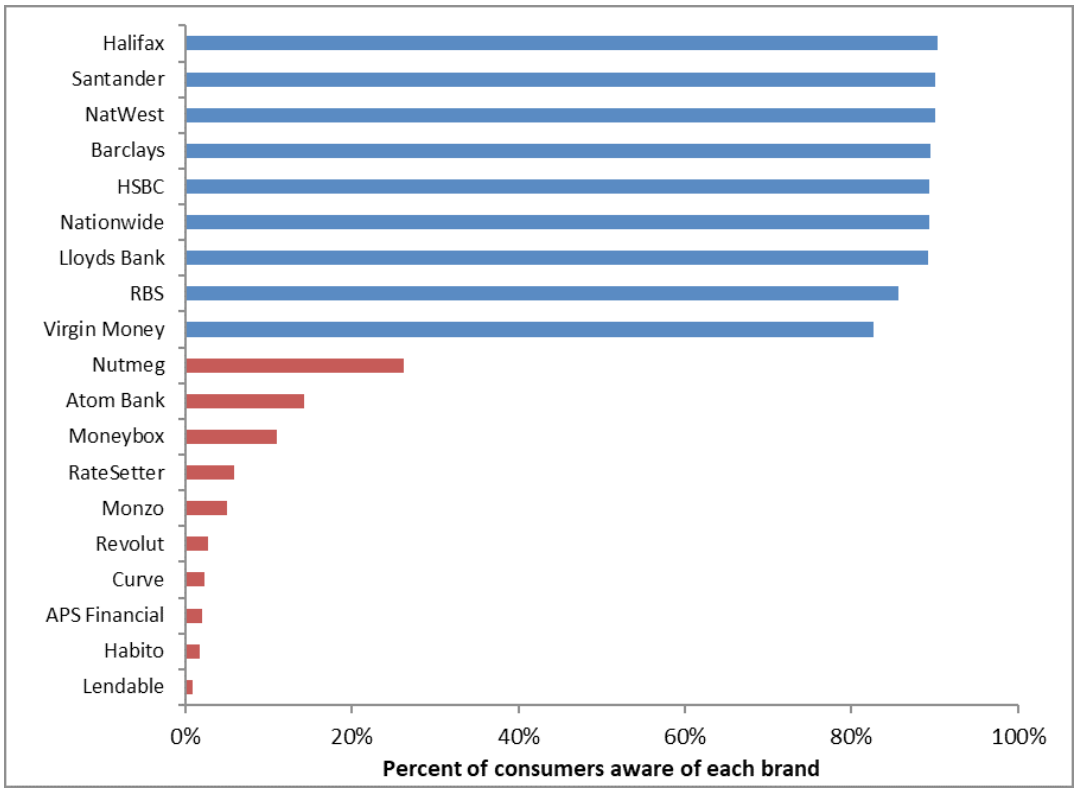

Figure 3: Consumer awareness of established and fintech brands

In addition, with consistent investment in marketing it does not take long for new entrants to find their way onto customers' radars: in just five years the online-only mobile network giffgaff

more than tripled its awareness from 20% to 75% (Decision Technology, 2012-17), and is now a prominent thorn in the side of traditional mobile firms.

Under current conditions we found that, on average, 66% of consumers will choose an established brand – 6% more than we would expect (see Figure 4a). From this one would conclude that consumers prefer the large banks over fintechs.

But what if a similar trend emerges for fintechs as we saw for giffgaff? Our analysis indicates there would be a substantial shift in consumer choice. After brand awareness and incumbency effects have been accounted for, we see a 15% swing in preference towards fintech brands from 34% of choice to 49% (see Figure 4b).

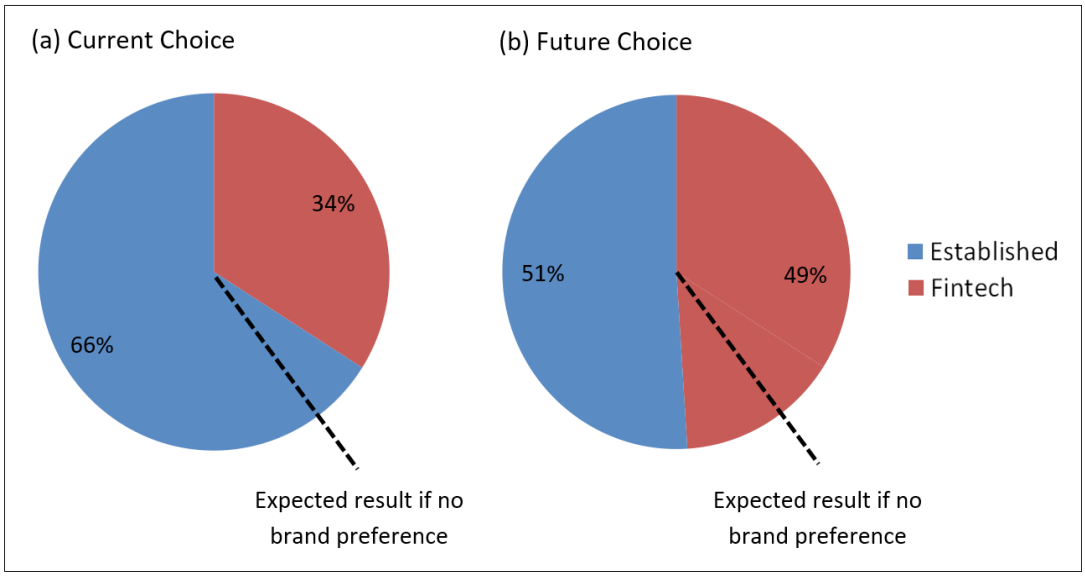

Figure 4: Consumer choice of established and fintech brands (a) currently and (b) after fintech brand awareness grows

This suggests current consumer preference for established brands is due to awareness and incumbency, rather than brand affinity. Established banks, therefore, should keep a wary eye on fintech marketing, and monitor growth in brand awareness.

Churn

Besides awareness and preference, the pace of customer churn also impacts the scale of the fintech threat. Switching in financial services is notoriously low. We found that, on average, people switch financial services provider no more than once every three years, and often far less frequently (see Table 1).

Consumers switch once every...	
Personal Loan	3.5 years
Savings Account	7.2 years
Credit Card	8.1 years
Stocks & Shares ISA	9.8 years
Current Account	12.3 years
Mortgage	13.7 years

Table 1: Consumer switching in different markets

This is good news for established banks, and helps explain why a fintech revolution has not yet occurred in finance services – customers simply do not think about who they want providing their financial services very often.

In other industries, noteworthy tech firms, such as such as Netflix, Airbnb, and Deliveroo, offer relatively simple and tangible products and services. The customer understands what's on offer, recognises a good deal, and has no difficulty engaging with these markets. As a result, new services are quickly adopted when they offer something better than what is already available.

In contrast, financial products are difficult to understand, and the impact of financial decisions is often only realised after a long delay. This has a psychological impact where both psychological inertia (Madrian & Shea, 2001) and future discounting (Frederick, Loewenstein & O'Donoghue, 2002) dissuades consumers from switching. For many people, finance is boring, confusing, and a chore. Given this lack of engagement, it is difficult for new entrants to capture the attention of customers in order to gain market share.

However, fintech firms are working to address the lack of consumer engagement. Indeed, some fintech firms are demystifying finance and making simplicity a selling point: Nutmeg offers clear investment options, whilst Monzo makes budgeting far easier. Other finance start-ups, such as Finimize, seek to inform customers by making financial news clear, accessible and relevant to the less financially engaged.

In addition, established banks must remember that low levels of switching also mean that any customers lost to fintech will be difficult to regain. Incumbents cannot rest on their laurels in the face of the fintech threat, but must use the time they have to mitigate it.

Threat

It's clear that fintechs pose a threat to incumbent banks. But consumer preference for established versus fintech brands vary across product areas, and different markets experience various rates of customer churn, so where are established brands at greatest risk?

After reviewing the speed of switching, and current customer brand preferences in different markets, we found that personal loans are under the greatest threat from fintechs (see Figure 5). The typical personal loan is only held for 3.5 years, and there is already a tendency for customers to consider fintech brands, such as Ratesetter and Lendable.

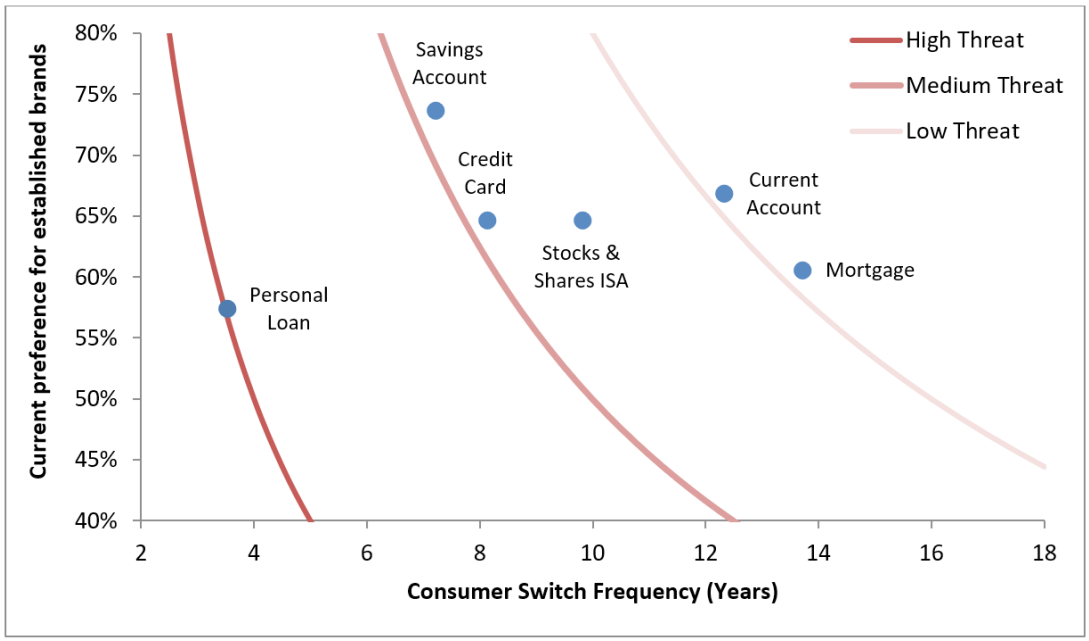

Figure 5: Threat level by product, based on consumer switch frequency by preference for established brands. Lines indicate points of equal threat to incumbents

Credit cards and savings accounts are under similar levels of threat from fintechs, but for different reasons. Although consumers are somewhat reluctant to trust fintechs with their hard-earned savings, the slight difference in switch frequency means that both these markets are rated medium threat level.

Stocks & Shares ISAs are not far behind. Brands like Nutmeg have already gained traction in this market, and will continue to do so as their brand awareness and customer base grows. However, since customers switch ISA providers so infrequently, established brands have some breathing space to plan their response.

Despite the intent of fintechs such as Monzo and Habito to compete on current accounts and mortgages, our research suggests that they present relatively less threat to these markets, mainly because of a very low rate of customer switching. However, established brands should remain wary, as initiatives like the current account switch guarantee may yet nudge the market to change provider more frequently.

Fighting Back: How Should Incumbents Defend Themselves Against the Fintech Threat?

We've seen that the traditional banks dominate financial services markets. Customers appear to prefer these established brands over the fintech challengers. But this preference is driven by brand awareness and incumbency, rather than real loyalty, and as brand awareness improves more and more consumers will choose fintechs for their financial products.

Awareness of fintechs is growing, with some brands spearheading the assault for consumers' attention, and making ground. As fintechs gain traction, there is a real risk they will steal increasingly large cuts of market share, particularly in personal loans. And while consumers are not engaged with finance, and do not switch provider often, any customers who are lost to a fintech are highly unlikely to return.

Established banks, therefore, should seek to mitigate the fintech threat while they have time to do so. We recommend the following steps:

- *Defence is your best offence:* Focus on retaining customers

  The biggest brands have a strong hold across financial services, and our research shows that consumers tend to remain with their incumbent provider, with whom they are familiar. Therefore, it is vital that established banks focus their efforts on retaining customers. They should determine the factors that cause customers to switch to competitors, track their occurrence, and organise to mitigate them.

- *Pick your battles:* Focus on the markets that count

  Our research shows that the greatest threat to incumbents is in personal loans, savings accounts, and credit cards. Established banks should focus their attention on understanding what really matters to customers in each of these markets, and compete with fintech where it counts.

- *Recruit the enemy:* Bring fintechs in-house

  Since established banks have a strong advantage in terms of awareness and trust, they should seek to acquire promising fintechs with a view to bringing them in-house under the main brand. This is the fastest way of improving tech capabilities.

- *Watch your language:* Talk about what matters

  Banks need to identify the markets where consumers care more about brand – for instance savings – and emphasise how well established and trustworthy they are in regular customer communications. In markets where consumers are less concerned about brand – such as borrowing – banks should adapt their messaging to focus on product benefits and low pricing.

- *Don't drop the ball on pricing:* Stay competitive

  As fintechs enter the market with cheap offerings based on a low-overheard business model, it is crucial established banks stay competitive. A strong brand will provide some protection, but will not trounce price so it's important for incumbents to trim their fees wherever possible to ensure they remain in contention.

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How to Double Savings Rates: A Case Study in Nudging for Good

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Introduction

Richard Thaler, the 2017 Nobel Prize winner in economics, and Shlomo Benartzi are famous for creating a pension programme that dramatically increased the number of people who saved towards their retirement. Since then, their Save More Tomorrow programme has been adopted by more than 60% of large companies in the United States and has informed policy on a global level, but in the words of Benartzi, "there is still a lot more to do" (Benartzi, 2011).

While many studies, such as those by Thaler and Benartzi, have focused on encouraging more people to save, one of the most fundamental behavioural challenges around saving money is that people do not save for long enough to reach their goals. Many people start, and very few finish. In this case study we retell the story of one of our private sector clients whose customers were withdrawing their savings prematurely, and how we used behavioural insights to nudge customers towards saving more.

The partnership between London Economics and Genesis Analytics has seen several successful projects being completed in Africa, Europe and the United Kingdom to nudge consumers towards making good financial decisions. In the last ten years we have worked closely with regulators such as the European Commission and the Financial Conduct Authority (see box 1), as well as large and small financial service providers. For us as a team, the challenge of encouraging savings is an interesting one because it allows us to deliver exceptional value to our commercial clients in terms of increased product profitability (19 times their investment), while at the same time solving a core financial problem experienced by millions of people in almost every geographical market.

It is well known that savings rates are generally low, with most countries reporting an average savings value of less than 10% of household income, and some countries – in the developing world and in the developed world – reporting negative savings rates (OECD, 2018).

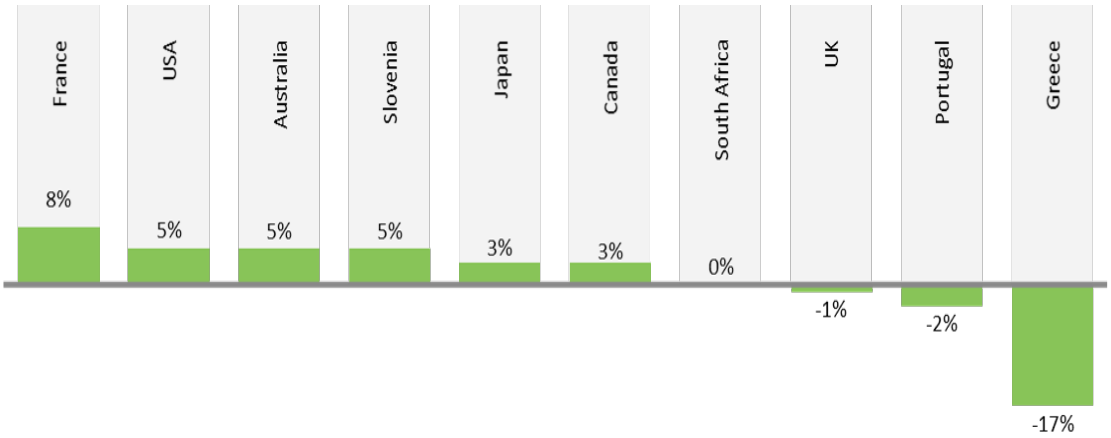

Figure 1: Savings as a percentage of household income

While many practitioners have focused on helping people to start saving money (Fiorillo et al., 2014), we have focused on the other end of the journey: helping people to continue saving or increase their savings contributions. Data provided to us by our clients show that most cus-

tomers with long-term savings products, such as education plans or pensions, will never see their product reach full term. Somewhere along the path they cancel or disinvest.

As the second largest in the world, the UK asset management industry manages £8.1 trillion in assets of which over £1 trillion is retail investment products (HM Treasury, 2017). In 2017, the Financial Conduct Authority (FCA) found that there was weak competition in the market. In terms of this, charges were not always visible and investors would not always pay sufficient attention to, or understand the impact of charges on, their returns (FCA, 2017).

European regulatory requirements introduced in early 2018 now require asset managers to provide more information to investors. However, as behavioural insights tell us, information provision does not always increase consumer understanding. This is especially true when dealing with large volumes of information (such as in terms and conditions of service) or asymmetric information (such as in insurance contracts).

The FCA commissioned our team to design and implement an online behavioural experiment to test a series of possible treatments to inform the FCA's future policy interventions in the market. These behavioural treatments included prominently placed warning messages about the impact charges can have on investor returns, combined with graphical presentation of the impact of charges over time.

Following the experiment outcomes, the FCA stated that firms should consider the results when thinking about how their disclosures are working, and the FCA will consider changing rules and guidance to mandate certain forms of disclosure following the outcomes of the Investment Platforms Market Study which is currently underway (FCA, 2017).

Box 1: Now you see it: drawing attention to charges in the asset management industry (2018)

The negative implications of this are twofold. First, the consumer is no longer saving for the future, be it for retirement or another long-term financial goal. For instance, in South Africa one of the most common reasons for taking out a long-term savings product is to save for a child's education. Therefore, with one in two people cancelling such policies within the first two years, this behavioural challenge is driving a much larger social issue faced by most developing countries – a lack of access to education.

Second, financial service providers are losing customers and the revenue they derive from them. With average annual persistency rates lower than 60% in most environments, this means that companies are losing hundreds of millions of dollars every year due to early cancellations or disinvestments.[1]

Our work on this behavioural challenge has spanned various geographies and consumer segments, and yet the key behavioural barriers associated with encouraging larger savings pools remain very similar:

1. Customers sometimes need short-term access to cash and don't consider the benefits of long-term saving, which is essentially a *present bias* challenge

2. The process for cancelling a savings product is typically quite quick and easy, making it an unconscious, automatic *system 1-based decision*

[1] Figures provided confidentially by our clients.

3. Consumers choose how much of their savings to withdraw based on the amount they have available rather than on how much they need; the decision is *anchored poorly*

To address these behavioural barriers in each context, the team has designed a series of impactful nudges, often testing them at scale.

Overcoming Present Bias

To overcome the present bias barrier associated with early savings withdrawals and product cancellations, the team designed nudges that would help the customer connect their current self to their future self. As shown by Goldstein *et al.* (2008), helping people to understand how the investments and savings that they undertake today determine their wellbeing in the future, motivates people to improve their current saving behaviours.

When tackling this behavioural barrier in a contact centre environment, the team was tasked with embedding this nudge in the conversation by making inexpensive changes to the contact centre scripting. To help customers connect their current selves to their future selves, the contact centre agents were trained to encourage customers to reflect on why they would need these savings in the future; speaking through goals such as building a new home or achieving a comfortable retirement.

We have also worked with cancellation documents to achieve a similar aim. When customers begin to fill out a cancellation form, the first three questions were designed to encourage them to think about the long term: "What was your goal for this savings account?", "Does this goal still exist?", etc. We have found that these kinds of exercises change behaviour dramatically.

System 1 and 2 as Tools for Change

One can design the architecture in a way that reduces decision inertia and automatic thinking. This is achieved by carefully including additional decision points throughout the decision-making journey, subtly encouraging customers to reconsider their decisions.

In a branch environment, this inclusion of additional decision points has been achieved by introducing in-branch collateral which customers need to complete as part of the cancellation process. These presented all the options available, and were designed in a way that enabled customers to select alternative means of accessing money. The customer's decision-making process became more deliberate and calculated, and they saw that cancellation was not the only option available.

Using Anchoring Effectively

To ensure that the customer's decision to withdraw from a savings product was made based on the funds needed rather than the funds available, the withdrawal choice was designed to avoid anchoring. This is because, based on the nature of anchoring, once the customer has been exposed to the total value available to them, it becomes difficult to encourage them to withdraw only what is necessary.

In branch environments we have seen how commitment devices can be hugely impactful in encouraging customers to withdraw only the amount needed. For example, in one case, cus-

tomers were required to agree to a withdrawal amount upfront, before finding out how much was available in the product.

The graphic below summarises the three key behavioural barriers discussed, and examples of how we have addressed them through the design of behaviourally informed materials:

	BEHAVIOURAL BARRIER	UNDERLYING NUDGE	TACTIC 1	TACTIC 2
1	**Present bias:** People need short-term access to cash and don't consider the benefits of long-term saving	Help connect the current self to the future self	**Visualisation in a contact centre script:** Encourage customers to reflect on why they'll need the savings in the future	**Anchoring in a form:** Ask customers to calculate how much they'll need to reach their financial goals before they cancel
2	**Insufficient decision points:** The process for cancelling a savings policy is too quick and easy	Include additional decision points to encourage reconsideration, and the activation of System 2	**Self-generation in a branch:** In-branch collateral that allows customers to self-select into an alternative option	**Consistency bias in a contact centre script:** Encourage customers to reflect on the original reason for the policy
3	**Mis-anchoring:** As people don't consider how much they need, they are anchored on how much savings they have	Influence perception of how much is needed as early as possible	**Commitment devices in a branch:** Get customers to think first about how much they need, and then about how much they have	**Anchoring in a statement:** Remind customers how much they'll have at maturity if they continue saving

Figure 2: Summary of behavioural barriers, nudges and applications

To measure the impact of these nudges, the team ran a number of randomised controlled trials across various environments.

As an example, the team recently completed a project that involved optimising the full value-chain associated with a savings product cancellation process. Trials such as this have proved that these nudges were able to increase savings values by more than 155%, on a consistent and sustainable basis, delivering 19 times their investment for our client.

For our client, this delivered exceptional value in terms of increased product profitability, but by far the most important impact was on the customers themselves. Our work showed that by using behavioural insights in cancellation processes we could help people save more towards retirement, educate their children, and ultimately reach their personal financial goals.

Shlomo Benartzi was quite right that "there is still a lot more to do". We hope that the work we continue to do for financial regulators and financial service providers makes important strides towards delivering on the promise of behavioural economics.

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Risk Seeker or Risk Averse? Cross-Country Differences in Risk Attitudes Towards Financial Investment

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Introduction

Conventional theories of financial decision-making often assume rational and fully-informed individuals, who objectively evaluate financial risks by the volatility of yields. Such models predict that people will always invest a positive fraction of their wealth in the stock market and will hold a large, diversified investment portfolio. Empirical evidence shows, however, that real financial behaviour is difficult to explain with this fully rational view. People are generally not all comfortable about risk, 'losses loom larger than gains', and individuals tend to be loss averse (Kahneman & Tversky 1979).

The classic paper of Shiller (1981), often cited as the beginning of behavioural finance, demonstrated that rational valuation theories are insufficient to explain stock price fluctuations. Since then, a growing body of research on the influence of psychological factors on individuals' financial behaviour has developed (Hirshleifer 2015; Campbell 2016). As investment choices involve risk and uncertainty, there tends to be a dependence on both norms and intuition. The latter refers to personal risk perceptions, beliefs, judgments and attitudes that play a crucial role in explaining financial decisions (Kahneman & Riepe 1998; Shiv et al. 2005; Shum & Faig 2006; Simonsohn 2009; Nosic & Weber 2010; Weber et al. 2013; Hoffman et al. 2015).

Using data from the ING International Survey (IIS), this paper shares some insights on individuals' financial risk attitudes across 15 countries, and identifies relevant factors that affect the willingness to take risky investment behaviours. The results reveal an attitude of risk-aversion across the entire sample of 12,500 (approx.) and suggest that standard portfolio-investment theory (i.e. willingness to increase savings to products with higher potential rewards relative to the risk they hold) does not always hold. For instance, people in Germany, Poland and Austria appear to associate riskier investments with lower expected benefits. Significant differences in risk aversion arise between the 15 countries studied, even after accounting for characteristics such as gender, educational level, income, etc. Germany, Austria and the Netherlands are most risk averse while the US, Turkey, Australia and the UK are more accepting of risk.

This has important implications. It is possible that individuals take too little risk, do not find in the market investment options that match their risk preferences, or structure portfolios that will make it difficult to meet their own long-term goals. Since risk aversion is so high, behavioural factors (e.g. loss aversion, inertia in saving/investment and poor knowledge of financial planning) need to be considered more carefully when designing and offering consumer investment products.

Data and Framework

The insights shared in this paper draw from the ING International Survey on Savings conducted in 2016.[1] Based on the Domain-Specific Risk-Taking – DOSPERT – scale (Weber et al. 2002), the survey included a set of questions on personal risk attitudes towards eight saving/investment options: (a) shares, (b) mutual funds, (c) bonds, (d) fixed-term deposits, (e) savings accounts,

[1] The IIS has been conducted annually since 2012. This survey is based on a representative sample of the population of 13 European countries, the United States and Australia. The report on the survey, published in 2017, can be obtained at www.ezonomics.com/ing_international_surveys/savings-2017/

(f) precious metals, (g) real estate, and (h) alternative investments such as crowdfunding or community investments. Specifically, survey participants were asked the following questions related to each of the (a) to (h) financial products:

1. RISK PROPENSITY	2. PERCEIVED RISK*	3. EXPECTED BENEFIT*
Please indicate the likelihood that you would *put 10% of your total savings in … [product (a) to (h)]* if you were to find yourself in a situation where you could do this. 1 Extremely unlikely 2 Unlikely 3 Not sure 4 Likely 5 Extremely likely 99 I don't know what this is	Using the following scale, please indicate *your opinion of the financial risk involved with each form of investment …* *[product (a) to (h)]* 1 No financial risk at all 2 3 Moderate financial risk 4 5 Great financial risk No opinion *Asked only to those who did not reply *99* in question 1.	Using the following scale, please indicate *the financial benefits you think you would obtain from …* *[product (a) to (h)]* 1 No financial benefits at all 2 3 Moderate financial benefits 4 5 Great financial benefits No opinion *Asked only to those who did not reply *99* in question 1.

Figure 1: Risk-attitude questions, IIS 2016

For simplicity, this paper focuses on individuals' risk attitude related to three investment options: shares, mutual funds, and bonds.[2] We analyse how individuals differ in their personal and subjective beliefs about the financial risks and benefits of these investment choices, and how this correlates with the probabilities of engaging in such investment behaviours.

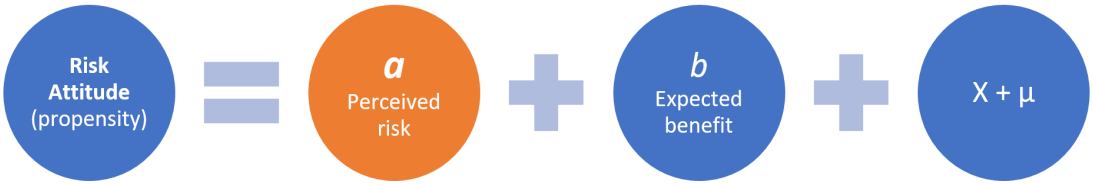

Figure 2: Simplified risk-return framework of risky choice

For this analysis, we follow the psychological risk-return framework of risky choice (Weber et al. 2002) in which risk attitude (individual's like or dislike towards financial risk) reflects a trade-off between (a) the personal perceived risks and (b) perceived benefits of the investment alternative (see Figure 2). These personal beliefs can differ between individuals as a function of content and context. Other observable[3] (X) and unobservable (μ) characteristics also play a role in explaining risk attitudes.

[2] The focus on these options is consistent with a factor analysis of the 8 items in the questionnaire. A principal component analysis suggests that three underlying factors can explain most of the variance in the financial risk attitude answers. The first of these factors includes shares, mutual funds, and bonds; likely to relate to more risky investment portfolio choices.

[3] We control for age, gender, educational level, work status, net income, marital status, having children, housing ownership, and country-fixed effects.

Applying this framework to the IIS data, in a standard regression setup, allows us to measure the continuum of attitudes towards financial risk: a positive coefficient **a** will imply a risk-seeking attitude, while a negative indicates risk aversion. We perform this analysis on a sample of 12,236 individuals, evenly distributed across 15 countries.

Perceived Risks and Expected Benefits

Many widely accepted financial models are built around the premise that investors should expect higher returns if they are willing to accept more risk. This rationale, however, does not seem to be the rule for individuals to construct their own perceptions of the risk and benefits associated with financial assets. As Figure 3 shows, the normative positive risk-benefit correlation does not fit people's beliefs well. The estimated linear coefficient is not statistically significant (0.069; s.e. 0.043), whereas the quadratic estimates suggest that these perceptions only correlate positively at the highest end of both distributions.

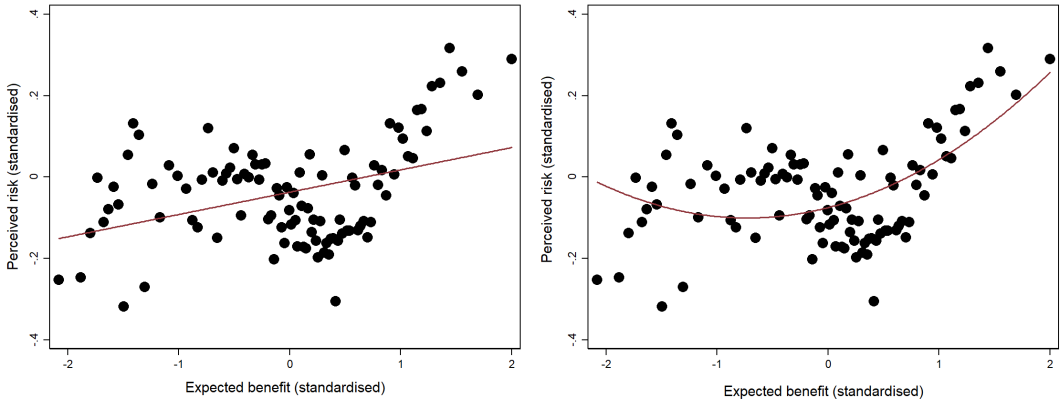

Figure 3: Linear and quadratic correlations between perceived financial risks and benefits, 15 countries

More interestingly, significant country differences arise. Institutional, cultural and geographical factors seem to have a substantial influence on the formation of individual risk-benefit perceptions associated with financial investment. Figure 4 suggests, for instance, that people living in the Netherlands, Austria and Germany think that investments in shares, mutual funds and bonds are on average extremely risky whilst their expected returns are very low. In contrast, populations in the US, Turkey, UK, and Australia tend to have the exact opposite belief, that is, investing in financial assets can be highly beneficial with a risk below the mean of other countries.

If we zoom into the country-specific correlations between financial risk and benefit perceptions, as observed in Figure 5, significant heterogeneity in the strength of such relationships becomes evident. The most striking fact is shown in the lower two graphs of Figure 5: in the Netherlands, Belgium, Czech Republic, and Turkey there is no significant pattern in the way people construct their perceptions of financial risks and benefits. Moreover, people living in Germany, Austria and Poland seem to have the counterintuitive belief that the riskier the investment, the lower the expected benefits are. The latter, however, could be some initial evidence for the low-volatility anomaly as researched in behavioural finance. Certainly, the

most interesting questions remain and further research on the institutional and cultural determinants of risk perceptions and attitudes should be further developed in the behavioural economics agenda.

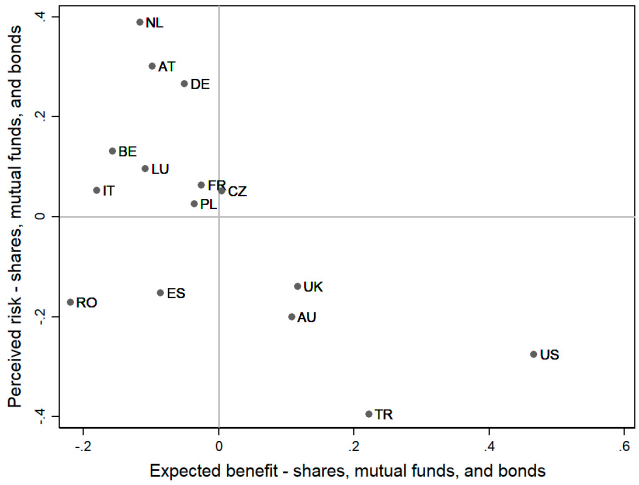

Figure 4: Average perception of financial risks and benefits by country

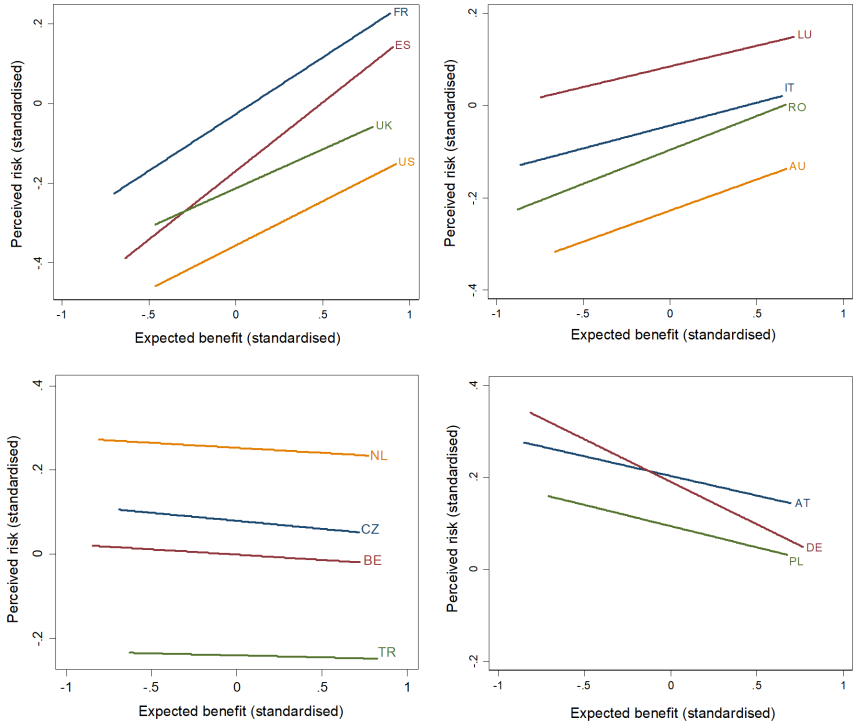

Figure 5: Country-specific correlations between perceived financial risks and benefits. *Note:* This figure plots estimations that control for observable covariates and country-fixed effects.

Risk Seekers or Risk Averse?

The main result of our application is, as shown in Figures 6 and 7, a significant negative association between financial risks perception and risk propensity (-0.172; s.e. 0.034). According to the psychological risk-return framework, this finding suggests that people are, on average, risk averse towards financial investments in shares, mutual funds and bonds, across the 15 countries in our sample.

Our estimates on other determinants of risk taking are consistent with the related literature (e.g. Luigi & Paiella 2008; Dohmen et al. 2011). Regarding financial risks, females are more risk averse than males; people become more risk averse with age but more risk-seeking with higher education and income; married individuals are more risk tolerant than single individuals but having children increases risk aversion; employed individuals are more risk-seeking than those unemployed and retired; and homeowners are more risk-seeking than renters.

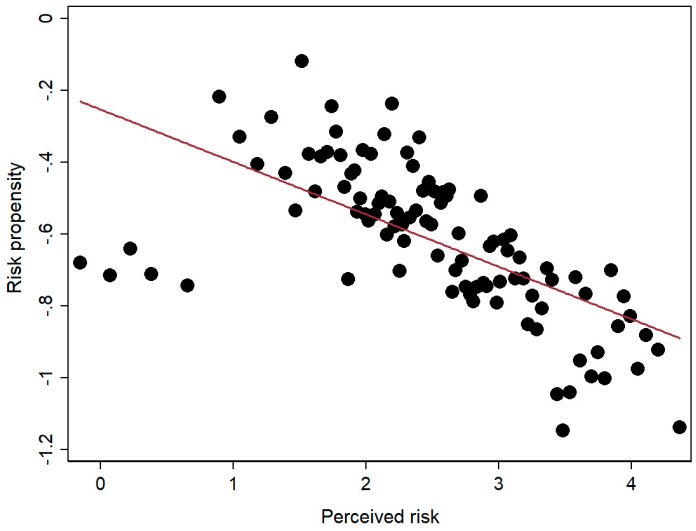

Figure 6: Correlation between financial risk propensity and perceived risk, 15 countries. *Note:* This figure plots an estimation that controls for observable covariates and country-fixed effects.

Moreover, risk attitudes are not uniform across or within countries. Figure 8 shows that, overall, the negative association between perceived financial risks and risk-taking propensity holds for all countries but three clear groups can be identified. Countries in group A are relatively more risk-prone and countries in group C are most risk-averse. Figure 9 shows a large heterogeneity within countries. The two 'investment personality' extremes (risk-taker vs. risk-averse) are just reference points; most individuals fall somewhere between the two extremes, a continuum from risk aversion to risk seeking. This is an important point and raises again interesting questions about the effect of both content and context on people's risk attitudes; for example, how market developments in the last decade might have affected people's preferences in different countries. Recent work by Wang et al. (2017) sheds new light on how cross-cultural dimensions matter more than macroeconomic variables in explaining loss aversion. However, there are still many other behavioural questions open to answers, particularly in the field of financial investment decision-making.

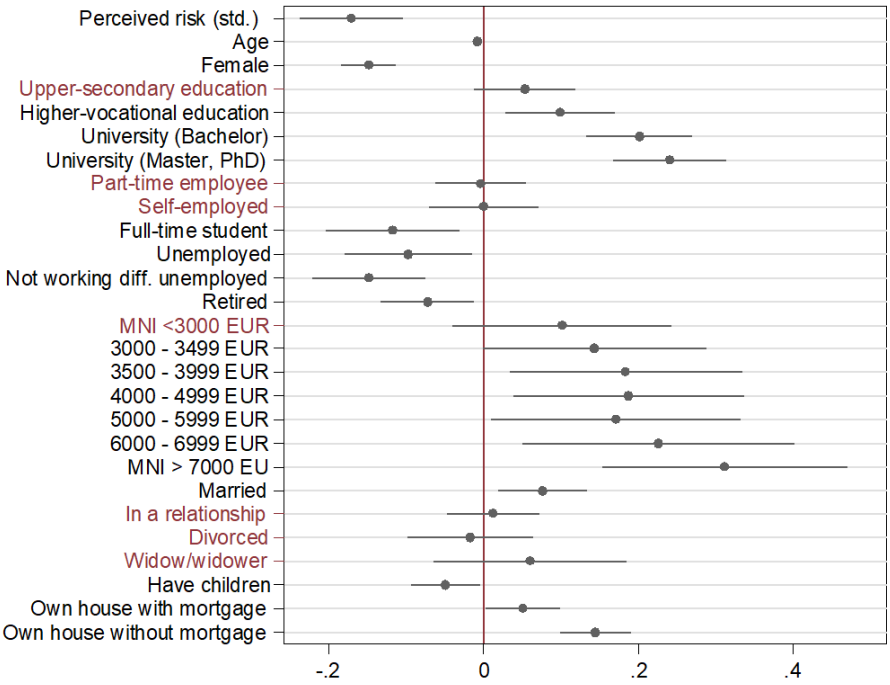

Figure 7: Risk attitude determinants (Coefficients plot). *Note:* Coefficients in red are not statistically significant at 90% of confidence levels.

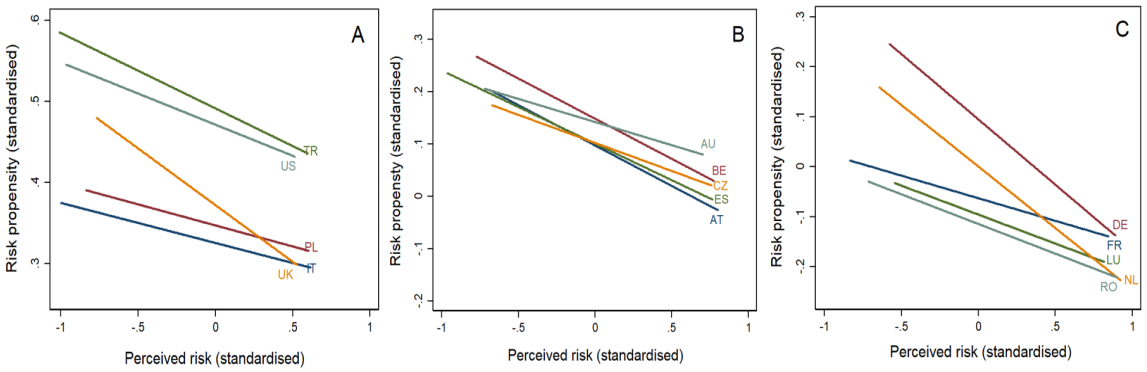

Figure 8: Country-specific correlations between financial risk propensity and perceived risk

A better understanding of people's risk attitudes will help the practical understanding of investment behaviours. Just as an example, we show in Figure 10 that individuals' attitude toward risk is a strong predictor of why the prevalence of financial investment products is so limited. This finding holds at the individual level as well: one standard deviation increase in risk-taking attitude is related to a 14 percentage points higher probability of holding financial investment assets.

This is a relevant insight into the persistent question why so few individuals invest in and diversify their portfolios, despite the considerable premium on investments with respect to risk-free assets, especially in the current context of low interest rates. According to both the IIS data and the ECB Household Finance Survey 2016, even though 96% of Europeans hold deposits and 77% hold savings accounts, only a small fraction of them (15%) owns bonds, shares or mutual funds. Compared with 2012, the latter participation rate even decreased slightly. Risk

attitude is here again a good predictor of investment behaviour: only 8% of individuals shifted savings into investments as a response to lower interest rates; a higher risk-taking attitude increases the probability of this behaviour by approximately 4 percentage points.

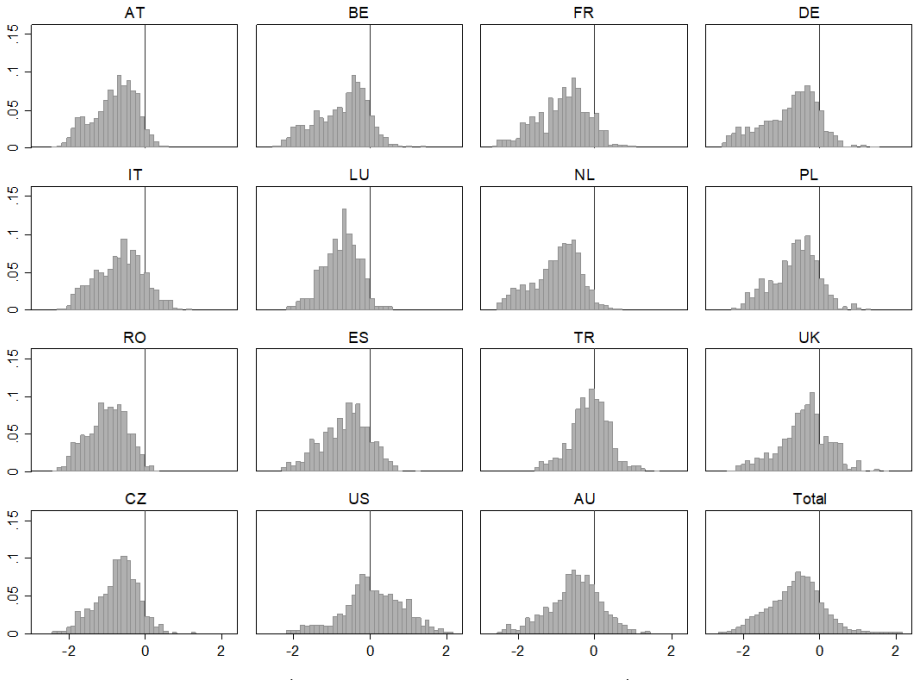

Figure 9: Histogram of predicted financial risk attitude by country. *Note:* zero in this figure denotes the risk indifference point.

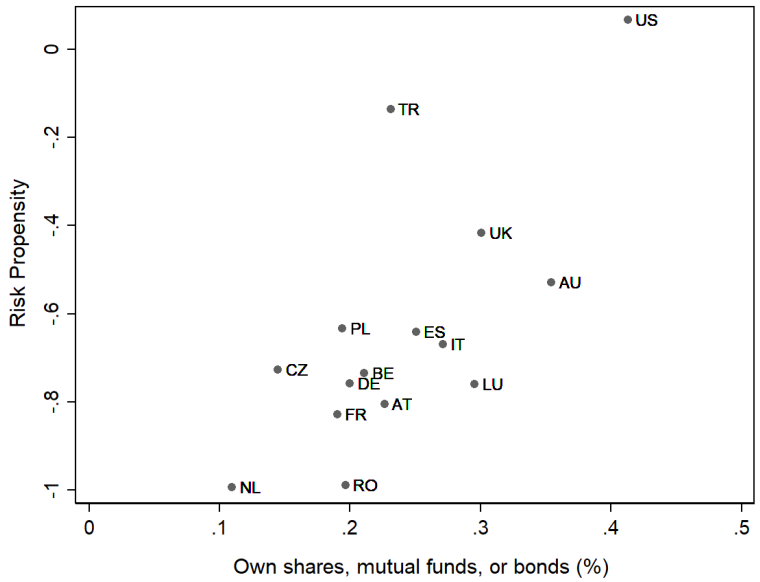

Figure 10: Average risk propensity and % of individuals holding investment products by country

Final Remarks

Personal risk attitudes are a key element of economic behaviour. There is still much to learn about the formation and stability of financial risk attitudes and how the substantial cross-country differences we observe are explained by institutional and cultural factors.

These differences are important for institutions offering portfolio investment options. Providers will need to take steps to increase perceived returns (or reduce perceived risks) if they are to be attractive to ordinary individual and households. This requires the use of behavioural insights to develop a more accurate understanding of the preferences and behaviours of potential consumers, for them to make better financial decisions. In some countries, financial advisors conduct questionnaires/interviews with their customers to measure clients' tolerance to risk-taking. Clearly, it is important that such questionnaires cover all possible dimensions of risk perception rather than simply focusing on aversion to volatility, for example.

As attributed to John Maynard Keynes, there is nothing so disastrous as a rational investment policy in an irrational world. Products and services must be designed so people can opt for products that carry risks appropriate for them. This requires not only nudging people in the 'right' direction, but also the creation of smart and personalised investment instruments that are more attractive for risk-averse investors than low-yielding bank accounts. The challenge of turning savings into investments requires individuals to personally perceive some appreciation of risk-return investments.

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"Piggy-Banking" on Friends: Finding Sub-Optimal Lending Among Peers

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Introduction

Lending between close friends may be an effective way to cover small expenses we find ourselves unable to pay. Yet borrowing among friends, even small amounts, comes with risk. Friendships are largely built on social norms of mutual and altruistic care (Clark & Mills, 2011; Fiske, 1992; Sawyer, 1966), and money can be a cause of stress within these relationships (Bank of America, 2017). Associating a financial value with friendship can be confusing as it challenges our understanding of social ties (Fiske & Tetlock, 1997).

As a consequence, the norms of social relationships can make friends (i.e. borrowers) less willing to carry out potentially embarrassing or burdensome requests for financial assistance. But when given the opportunity to provide support, friends (i.e. lenders) may be very willing to provide small levels of financial assistance. Indeed, it is not uncommon for friends to offer small loans for everyday conveniences, such as dinner or movie tickets. With management of our personal finances more mobile than ever, loans and repayments can hypothetically be made with a simple click.

An informal lending market among friends can be used to cover small expenses when we see willingness from both lenders and borrowers. Yet this ING study finds we are hesitant to ask friends for short-term loans and as a consequence do not optimally exploit the informal lending market.

Background

Social norms of mutual care govern friendships, as seen in our tendency to help each other when in need (Annis, 1987; Hays, 1989; Fiske, 1992; Clark & Mills, 2011; Sawyer, 1966). These social norms steer our daily interactions including small informal loans. Because friendships do not revolve around money, we have specific expectations of lending between close friends that differ to those of other types of lending arrangements (Mandel, 2006; Halpern, 1994; Straeter, 2017). When the norms of friendships are not met, such as when we start to focus too heavily on financial exchange, social ties can be damaged (McGraw & Tetlock, 2005).

The Borrower

When entering into a small, short-term lending arrangement with a friend, the obvious benefit for the borrower is an immediate increase in funds, generally pre-allocated to a specific use. This comes at the cost of making the request, entering into a debt arrangement and placing a financial burden on the lender. In line with previous research indicating people's discomfort with, and reluctance to arrange monetary transactions with friends (Straeter, 2017), it is expected that borrowers will feel uncomfortable when asking friends for money.

The Lender

For a lender, however, a small, short-term lending arrangement among friends can be a different experience. It offers the lender an opportunity to show care for a close friend and to meet social expectations (Straeter, 2017). As a consequence, individuals may be more content with investing, rather than receiving resources within a friendship, despite the financial outlay.

This comfort is consistent with the altruistic motivations for directly assisting someone in need and the internal "warm glow" or feeling of satisfaction that comes with completing a task that's considered to be moral or good. Most people can be recognised as impure altruists and are motivated by both (Andreoni, 1989).

Repeated Borrowing

When lending requests are repeated, friendships may be at risk of changing. On the one hand, monetising a friendship may completely remove the social ties, changing both the borrower's and the lender's willingness to participate in informal lending (McGraw & Tetlock, 2005). The borrower may start to feel more comfortable asking their friend for money while the lender may start to see requests as a nuisance. On the other hand, the social norms surrounding friendship could continue to guide both borrower and lender, strengthening the generosity of the lender and the discomfort of the borrower, widening the anticipated gap between willingness to lend and to borrow.

In sum we anticipate that friends do not make optimal use of informal loans. People are less likely to borrow money informally from a friend than to accept the same request from others. Friendships may therefore be an untapped source of short-term, relatively low levels of financial support, as not only the borrower but also the lender are motivated to participate.

Study

To test the willingness to borrow (WTB) and willingness to lend (WTL) between friends, a study with a 2 (Role: borrower vs. lender) x 2 (Request: first vs. fifth) between-subjects design was conducted among 293 American adults (M_{age} = 34.31, SD_{age} = 11.15, 51.5% male) on Amazon Mechanical Turk (Paolacci & Chandler, 2014).. They were asked to think of and describe a close friend of the same gender (e.g. rating of closeness on a 7 point scale, 1 = not close at all, 7 = very close).

Next, they were asked to imagine a hypothetical shopping situation where they (borrower conditions) or their friend (lender conditions) arrived at a store suddenly realising that he or she had forgotten to bring their wallet. Depending on the condition, this was the first or the fifth time within a few months that the wallet had been forgotten. (In the latter situation, it was specified that money was lent and efficiently repaid the four previous times, so as not to create differences in debt across conditions). The participants were asked to indicate whether they would be willing to request money from (borrower conditions) or lend money to (lender conditions) their friend to pay for the shopping activity that day (9-point scale: 1 = definitely not, 9 = definitely).

Findings

As hypothesised, there was a gap between participants' WTB and WTL, and this varied by request frequency (first-time vs. fifth-time; $F(1,289)=14.75$, $p < .001$, see Figure 1). For first-time requests, lenders were more willing (M_{WTB}= 6.62, SD_{WTB}= 0.72) to lend to a friend than borrowers were willing to borrow from a friend (M_{WTL}= 4.93, SD_{WTL}= 2.07). For repeated requests this gap widened. Lenders became even more likely to lend to a friend (M_{WTB}= 7.66, SD_{WTB}= 1.90) and borrowers became even less willing to borrow from a friend (M_{WTB} = 4.38, SD_{WTB} = 2.11).

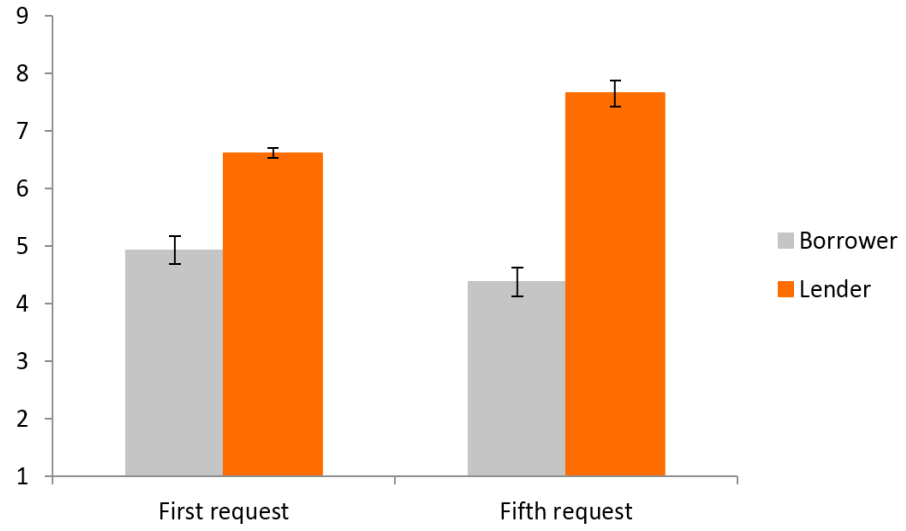

Figure 1: Friends' WTB or WTL across conditions. *Note:* All conditions differ (marginally) significantly (*t's* (289) > 1.856, p = .064, *Cohen's d's* > 0.31). Error bars represent ± 1 standard error.

We further investigated the influence of closeness on the relationship between role and request, and WTB or WTL via a linear regression analysis. An marginal significant interaction effect of closeness with the role of the participant was found (b = 0.28, $t(287)$ = 1.73, p = .085) on people's WTB / WTL. A follow-up floodlight analysis using the Johnson-Neyman technique (Spiller, Fitzsimons, Lynch & McClelland, 2013) identified that borrowers and lenders differ in their WTB or WTL if they are moderately close (X = 3.4, p = .04) or closer (see Figure 2).

Figure 2: Floodlight analysis indicating the values of relationship closeness that evoke differences between friends' WTB and WTL for first time requests. *Note:* The asterisk (*) denotes the values of relationship closeness for which borrowers and lenders differ significantly on their WTB / WTL money. For fifth time requests a similar pattern is found.

Discussion

Our study confirms that lenders are more willing to lend than to borrow from a close friend. This gap suggests there may be scope within friendships for providing small levels of monetary support. In addition, we find that this gap widens when requests are repeated. Interestingly, lenders become more willing to enter a lending arrangement if asked to lend money to their friend repeatedly. Borrowers become less likely to make a borrowing request if they have already done so on multiple occasions. Thus a repeated request does not alter the social norms governing friendships, instead both lenders' generosity and borrowers' discomfort increase, widening the gap between WTL and WTB.

These findings accord with the existing research. On the one hand, due to the social norms of mutual care within friendships, people are motivated to help a friend in financial need (Fiske, 1992). Giving to friends is typically expected to be rewarded with altruistic gratification and "warm glow" benefits (Leider, Mobius, Rosenblat & Do, 2009). On the other hand, social norms around mutual care can discourage friends from requesting informal loans; this may negatively impact the lender's finances and thus misalign the friendship with respect to the social norm of caring for others.

Hesitation to request an informal loan might stem from the fear of introducing a financial valuation, differentiating friendships by their new roles of lender and borrower. We expect that levels of indebtedness (i.e. having (not) paid back previous requests) may also affect WTB. In addition, while the current study focused on close friendships, this is a distinct type of relationship (Wiseman, 1986). Others, such as family ties, may produce differing insights.

Future research should focus on boundary conditions to these results, further investigating when the gap between WTL and WTB does not occur. For example, a lender's ability or willingness to part with funds, even temporarily, is likely to be directly related to their financial fitness. In addition WTL is also expected to rely heavily on the past repayment activity of the borrower, as well the ease at which transactions can be processed. Technological tools that simplify transactions, such as ING's Twyp, a peer-to-peer-payment app, or Venmo, which enables mobile payments between friends, may smooth the perception of the lending process and reduce the friction we see between WTB and WTL. The impact of new technologies within personal finance remains an area for much investigation.

Conclusion

Within close friendships, potential borrowers are less willing to enter into financial arrangements than potential lenders. This difference increases with repeated requests: potential lenders become more willing to lend and potential borrowers become less willing to make the request. Given this sub-optimal functionality within the informal lending market, surplus enthusiasm for lending suggests friends might benefit by piggy-backing on banking—*piggy-banking*, if we might coin a phrase—together.

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How Humans Predict Behavior (And Why This Matters to Practitioners!)

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Human brains are equipped to solve complex problems, extract information from noisy data and infer the structure of the world.

To account for our remarkable ability to make decisions in the face of uncertainty, the field of behavioral economics has accomplished much by describing how people often rely on systematic simplifications that occasionally produce suboptimal decisions. However useful, these prevailing theoretical perspectives in the field have yet to provide a general explanatory basis for the underlying mechanisms behind decision-making (Jones, 2018).

But does this matter to practitioners? After all, the field has achieved success applying interventions without much understanding of the specific mechanical workings of the brain.

In this article, we argue that we can enrich the full potential of behavioral applications by relating to an increasingly influential theory in neuroscience known as predictive processing. As we introduce this theory, we will argue how this account of brain function provides a useful starting point for a unified theory on decision-making by turning to likely associations with behavioral economics theory and practice. Additionally, we use this framework to provide a new, practical way of thinking about brand perception and perceived value.

The Brain as a Prediction Machine

In neuroscience, the Bayesian approach to brain function, consists of a number of frameworks that propose that the brain uses probability distributions to enable optimal decision-making under uncertainty.

One of such frameworks, predictive processing, is the idea that the brain accomplishes perception by comparing previous beliefs or expectations about the world with incoming sensory inputs and continuously shaping decision making (Clark, 2013).

While we can already draw some familiar motivations to the behavioral field, such as the role of uncertainty for decision making, perhaps the very least intuitive, but deep, consequence, translated to our field, is the way in which it turns behavior into a self-fulfilling prophecy.

Maybe one of the best accounts of why this carries deeply important implications for understanding perception, action and cognition has been put together account by Hawkins and Blakeslee (2014), explaining that:

"*As strange as it sounds, when your own behavior is involved, your predictions not only precede sensation, they determine sensation. Thinking of going to the next pattern in a sequence causes a cascading prediction of what you should experience next. As the cascading prediction unfolds, it generates the motor commands necessary to fulfil the prediction. Thinking, predicting, and doing are all part of the same unfolding of sequences moving down the cortical hierarchy.*"

Perhaps an even more profound implication of this curious idea, that brains act as machines that try to fulfill their predictions, has been formulated through the domain of information theory with the so-called minimization of free-energy, or "surprisal" (Friston, 2010). In familiar terms, this represents a mismatch between what we experience and what we predicted. We

further expand on the role of surprisal later when relating its consequences to understanding of the mechanisms behind cognitive biases.

We will now move forward on expanding the implications of predictive processing over behavioral economics by considering three possible areas of integration of major concepts in the field.

I Predict, Therefore I Confirm

Biases are known to help us reduce our use of mental resources —this is the reason we are able to quickly and efficiently recognize persons and objects through repeated exposure to previous similar stimuli, with the downside being of occasionally making mistakes in this pattern learning.

Predictive processing may relate to cognitive biases because of its active process of predicting our environment, which crucially helps the brain create a mental template that constraints future expectations about incoming sensory information (Summerfield et al., 2006), reducing cognitive resources while allowing fast action. For instance, a link has been suggested between optimism bias and attention bias as mechanisms obtain a common rewarding goal (Kress & Aue, 2017).

This process of active prediction through mental templates puts emphasis the interplay between expectation and attention and could readily be one of the best explanations of confirmation bias and would explain why beliefs are tend to be resilient to the integration of new information: overly optimistic individuals may be creating a mental image that draws their attention to sensory input that rewards confirmation itself, and as future expectations become entangled with previous expectations, they would tend to seek and pay attention for that which they already know.

The Efficacy of Context-Based Nudges

As outlined before, predictive processing states that prior beliefs or expectations shape our current perceptions and beliefs without really being of aware of it. In the nudge and interventions areas, cognitive biases become predictions based in prior probabilities given by culture, the social context and previous experiences. Crucially, this means that interventions that focus on changing beliefs by introducing counter-stereotypical examples will reduce the likelihood of an association only to the extent that they are experienced in relation to a particular predictive brain model.

The above also generally stresses the limited scope context-based nudges, since individuals are already heavily determined to look out for what they already know.

Not Biased, Just Surprise Averse!

The predictive brain, as an observation mechanism, is directed by minimizing the unexpected.

Over time, this surprisal minimization produces mental models that are “good enough” in the sense that they minimize long-term average surprisal (Clark, 2012). Through repeated experience, we can develop pretty good predictions that are usually correct. Of course, every so often we may be “surprised” by a mismatch of what we expected, and while this has an incre-

mental effect over expectations, this occasional mismatch will generally have a minimal effect on the priors that have been generated over a period of time.

Under this account, cognitive biases turn into a more specific case of deviation, one in which expectation plays a more central role in shaping our beliefs of the world.

A Practical Application for Brand Perception

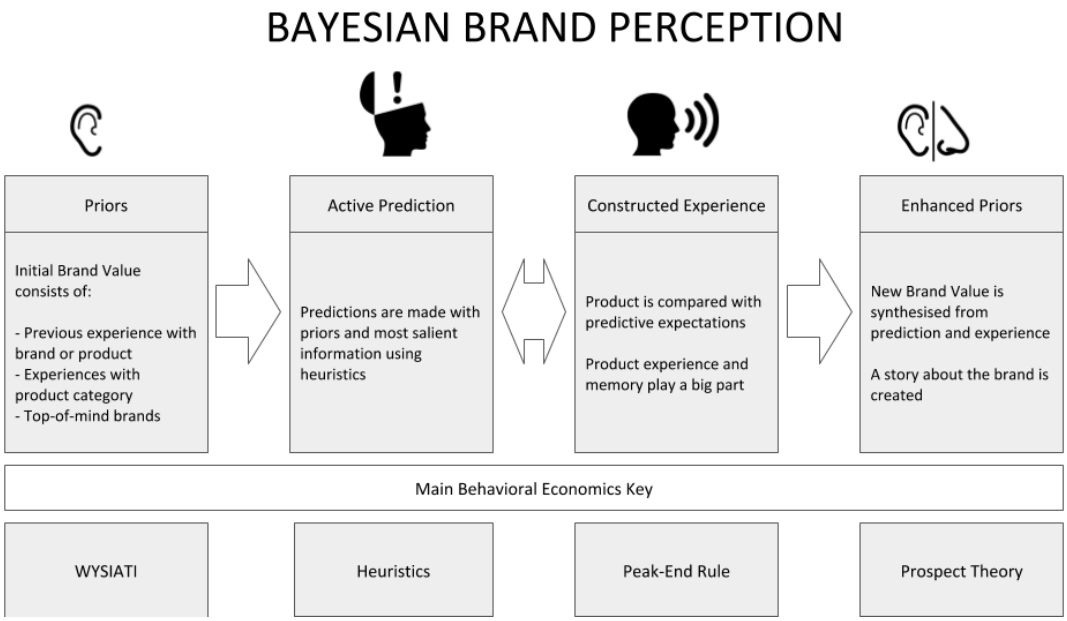

Figure 1: Bayesian brand perception: A framework to understand and create brand value.

From a practical viewpoint, taking the ideas of predictive processing together with the established ideas from behavioral economics, may help build a new framework to understand how people perceive, and marketers can build stronger brands.

In this section, we build a practical tool based on this ideas to help businesses understand the perceptions behind their brand, and use ideas from behavioral economics to enhance it.

The main idea from predictive processing posits that we actively seek information, based on the mental models we have built to find clues on the environment, to help us actively make inferences, in a process that constantly updates what actually happened compared to those predictions to form an new mental model about the world, and so on.

In our model for brand perceptions, priors form brand identity represent the story we have created about its value in our minds and it informs the lens through which we understand the company and its products (e.g., halo effect).

Another way we can understand this, is by considering the term coined by Daniel Kahneman in *Thinking, Fast and Slow* (2011) of WYSIATI ("What You See Is All There Is"). Kahneman considers that our immediate impressions are built by the things that are most mentally available to us. Therefore, our perception of a brand is informed by the mental associations that are most available in our brain about a specific product. Mostly, this priors are based on the previous experiences with the product, the brand, the entire product category (or similar ones), and other brands that occupy the top of mind within it.

Based on those priors, we start making rapid predictions about brands and products based on the most salient and available information about them. Following the information-theoretic free energy formulation, we will perceive the information that is easiest to process in our minds, and use it to reach initial mental conclusions about it.

In behavioral economics, the main theory that explains the mechanisms we use to turn scarce information judgements was developed by Kahneman & Tversky (Kahneman, 2003). They explained that the mind has a tendency to reach conclusions and make predictions via mental shortcuts, called heuristics. Heuristics work by helping us mentally (and unconsciously) answer difficult, often rationally taxing questions, with answers for easier, more emotional or intuitive ones.

The best and easiest example to understand is probably the affect heuristic, where we answer a rational question like "what is your opinion of this product?" with the answer for an easier, emotional one, like: "how do I feel about it? It makes me happy, so it is a good one". Consequently, strong emotional appeals, attractive packaging, persuasive arguments and good pricing strategies are easier to process than rational arguments, and can be very effective at steering client predictions about the brand, and decisions about whether to interact or acquire its products.

Once we decide to act, based on our initial beliefs and first set of predictors, we come into contact with the product or brand in question. There, our interactions and experiences are contrasted with the predictions we made, which we then use to mentally synthesize a new brand identity. There are two foundational theories in behavioral economics that are be very useful to understand how this process works, and where marketers could focus their energies to strengthen their brands.

The first one is the peak-end rule (Kahneman & Tversky, 1999), that states that there are two things that weight most heavily in how we remember an experience are: (1) the most extreme point (positive or negative), and (2) the end of the experience. This two moments have to be considered by marketing practitioners in order to leave their client with a positive experience that will go beyond the initial prediction and add value to its brand.

Finally, the memories and main impressions are integrated to form a new brand identity, with enhanced brand values. To this end, the last behavioral economics key is prospect theory (Kahneman & Tversky, 1979), especially as it relates to loss aversion. In this case, the new information will be framed as a positive or a negative interaction with the brand, which will influence future decisions about the brand and its products, with negatively perceived interactions holding more weight than positively framed ones.

Final Remarks

We have considered how behavioral economics may continue to develop through a particular integration with the predictive processing framework in neuroscience.

The inclusion of the resultant perspectives may enhance our understanding of biases, generalize pathways behind many phenomena concerning behavior, and provide applications for practitioners as behavioral science moves forward.

We have also suggested ways in which low level knowledge of behavioral phenomena has actual value for practitioners —that is, by working backwards on the biophysical mechanisms that ultimately result in observed behavior and decision-making, we can derive on ever more particular implementations, all while making the lines between different biases fuzzy and providing a more unified theory to help guide new research.

Altogether, considering the way prior beliefs and noisy sensory input interact continuously in shaping decision-making, can account for many aspects of our mental life including beliefs, desires, emotions, language, reasoning, cognitive biases —all which are at the center of behavioral economics, both in theory and in practice.

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A Positive Typology of Irrational Decision Strategies

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Introduction

Fundamentally speaking, behavioral economics consists of an incoherent collection of heuristics and biases: There is no general theory that consistently connects and explains most of the effects under one conceptual umbrella. Indeed, many of these effects overlap, while some even contradict each other. None of this has been an issue so long as behavioral economics was primarily a '*negative*' endeavor focused on proving what people are *not*, namely the rational decision-makers that are assumed by standard economic theory. Behavioral economics has been hugely successful in debunking the notion of a *homo economicus*, but as yet it has failed to deliver a '*positive model*' of human choice as an alternative to rational choice theory. Based on thousands of experiments, we know how people don't decide (i.e. rationally), but we *don't* yet have a consistent model that shows how they *do* decide.

Moreover, the classic behavioral economics research agenda has focused on analyzing if people normally fall into the trap of following a specific heuristic at a *specific stage* of a decision-making process, leading to a predictable bias in (stated) preferences. For example, research was undertaken to see if anchoring influences intuitive price estimates or if framing influences the initially perceived value of a product, and so forth. Hence, based on the classic experimental approach, the impact of small differences between choice situations is tested in carefully engineered cleanroom settings with a research design that magnifies effects. As a consequence, this research tradition has largely refrained from elaborating on the systematic irrationality of more *comprehensive* decision strategies which are applied to solve more complex decision tasks, such as real-world purchase decisions. If we look at this kind of complex decision task, the behavioral economics insights might even be misleading with their exclusive focus on specific dimensions and stages: For example, when answering the question as to whether it would be better to increase prices for a newspaper subscription to a certain level in one big step or many small steps, prospect theory would recommend increasing in one big step due to the decreasing slope of the value function (Kahneman & Tversky, 1979). However, this only covers the *price evaluation* dimension of this decision and ignores the *price knowledge* dimension, thereby totally disregarding the fact that – in reality – price increases will in most cases be forgotten after a few months (Bauer, 2011). Moreover, a small step is less likely to trigger an ad hoc cancelation, whereas one big step will make this significantly more probable. Thus if one takes a comprehensive look at the real-world decision (and not from a laboratory perspective), the correct recommendation in most cases is to increase in more frequent but smaller steps rather than less frequent but bigger ones (Bauer, 2013).

Finally, it might be worthwhile challenging another implicit tenet of behavioral economics, namely the idea that people do not systematically differ in terms of the kind of mistakes they make in a given choice situation. Behavioral economics tends to adopt a general rather than a differential perspective on human decision-making. Just as standard economic theory assumes that everybody always decides rationally, behavioral economics seems to assume that everybody decides in a predictably irrational – and similar – manner in every situation. Interpersonal differences with respect to heuristics and biases have not been the focus of behavioral economics research.

These three blind spots of behavioral economics have not been an issue so long as research has concentrated on the academic endeavor of challenging and refuting classic economic

theory. Nevertheless, these phenomena need to be resolved before the insights can be systematically applied in effectively designing the architecture of real decisions. To do this, we need to go beyond inductively picking one effect after the other in an experimental 'trial and error' approach, simply copying designs from academic research to the real world – which is probably the least efficient way of trying to apply behavioral economics.

Hence as a consulting company which focuses on applying behavioral economics to develop marketing, pricing and sales strategies, we had to answer the following questions in order to systematically leverage the insights in our projects:

- *Positive model:* How do people actually decide (beyond the fact that they are unable to decide rationally) so that we can predict and influence decision behavior?
- *Comprehensive strategies:* How are different heuristics and biases merged into comprehensive strategies which solve more realistic and complex decision tasks, thereby enabling us to apply behavioral economics to complex real-world behavior?
- *Individual differences:* Do we need to distinguish between different irrational strategies which inherently follow different psycho-logics and are sensitive to different biases (as traits or states) so that we can adapt to different choice situations (categories, channels, etc.)?

These questions have neither been posed nor answered in the normal research literature, so we had to dive into answering them on our own. In this paper, we want to show how we have condensed core behavioral economics insights to create a general typology of predictably irrational decision strategies which comprehensively describe the different psycho-logics of human choice, rather than simply looking at individual effects. For more than a decade, we have applied this typology in international projects in the area of marketing, pricing and sales in B2C as well as B2B industries, and we now want to provide examples and case studies highlighting the added value of this typology and the way in which it facilitates the systematic application of behavioral economics in a business context.

A Brief History of the GRIPS® Typology

The ultimate goal of marketing, pricing and sales is to influence purchase decisions, so a comprehensive understanding of human decision-making is a key success factor for marketeers. Nevertheless, trying to systematically apply the insights of behavioral economics in the real world can be a thankless task, especially if one wants to go beyond the mere copying of academic research designs. In our case, we definitely wanted to look behind individual effects in order to extract the essence of the collected insights, and design our interventions on this basis. To do this, we first had to sort, relate and combine the numerous effects that have been published – but this is easier said than done. Frustration already sets in if one tries to eliminate the contradictions that accompany popular listings of heuristics and biases (Benson, 2016). Some of their implications for marketing strategies are strikingly contradictory: Should I offer one option in order to avoid the 'paradox of choice' (Schwartz, 2004), or two options so I can leverage the second one as an anchor (Jacowitz & Kahneman, 1995), or maybe even three so I can exploit the 'Goldilocks effect' (De Ridder, 2008)? Moreover, the naming of effects is completely inconsistent: some refer to their bias (e.g. 'hyperbolic discounting'), some to their heuristic ('elimination by aspect'), some to their external trigger (e.g. 'framing'), and some to their psychological cause (e.g. 'risk aversion'). Furthermore, different wordings are sometimes used

to describe quite similar things from different academic perspectives (e.g. 'endowment effect', which describes an effect from an economic perspective versus 'loss aversion', which describes the reason for it from a psychological perspective). Finally, explanations of some effects are all too eager to combine different insights, which tends to muddy the waters rather than increase understanding of human decision-making. For example, the 'decoy effect' is often explained by referring to 'anchoring' (Smith, 2016) whereas the actual psychological foundation of both effects is quite different, as we will see later on when we observe that some decision strategies are more sensitive to 'anchoring' than a 'decoy', and vice versa. Viewed overall, this inconsistent groundwork makes it rather difficult to systematically apply behavioral economics – which in turn is not surprising, given that the focus has been on refuting standard economic theory rather than applying new insights.

From our perspective, the only way to develop an objective classification system as a basis for applying the heuristics and biases is to firstly ignore the typical wordings different researchers were using to name their findings, and secondly to solely rely on the objective classification of the independent variable that was experimentally varied, and thus obviously triggering the reported heuristic and bias in the underlying experiment. Logically, it was always these independent variables that were clearly not being rationally reflected in human decision-making, and they duly led to the respective differences between experimental and control groups. For example, the 'presence of a reference value' in a given choice situation is an objective independent variable of this sort which might trigger a predictively irrational decision bias. Instead of talking about the 'relativity' of human value perception (Kahneman & Tversky, 1979) or the perceived 'transaction utility' (Thaler, 2015a), we simply assign the underlying heuristic and bias to this objectively misconceived dimension instead of discussing different psychological constructs or theories. If one scrutinizes the research literature on this basis, one will end up with a mutually exclusive but collectively exhaustive classification hierarchy of qualitative and quantitative dimensions (Bauer, 2000). Despite their complexity, this has a unique advantage: It allows one to systematically classify and structure all the reported heuristics and biases in a coherent framework of dimensions which people are unable to rationally reflect in their decision-making strategies.

Having done this, we could design a master questionnaire which captures the presence of these notoriously misconceived dimensions in a given decision. For instance: "Had the price of the product you finally chose obviously been reduced, for example compared to the suggested retail price?" If that was the case, we quantified the subjective relevance of that dimension for the individual choice.

We then developed ten product-specific sub-versions of this questionnaire for a more realistic framing of questions, ranging from buying a car to insurance or soft drinks, or from booking an airline ticket to selecting a telco price plan. We did this because we wanted to end up with a general understanding of real human decision-making, and not a product-specific one. Using the same reasoning, we conducted this research in 16 countries across five continents because we wanted to ensure that we captured the essence of human decision-making regardless of any cultural differences. In total, we collected more than 30,000 decision datasets from respondents who had recently bought one of the ten predefined products or services in these countries.

Based on this questionnaire, we were able to comprehensively analyze the actual decision process the respondent had recently undergone. Without excessively restricting the focus

on specific biases, the construction of the questionnaire ensured that we captured all the bias-triggering dimensions that were (subjectively) relevant in the respective decision strategy; thus we were able to judge which heuristics and biases might have been involved. Finally, this helped us to deduce the different kinds of comprehensive decision-making strategies that people follow in the real world, and identify how many of them involve an inherent psycho-logic. To do this, we analyzed the dataset to segment decision strategies with regard to the notoriously misconceived dimensions these strategies were sensitive to. The core result was a typology of five decision strategies which are universally encountered across different products and cultures. We called this the GRIPS® typology (Bauer & Koth, 2014). None of these decision strategies are rational; each of them is 'irrational', yet they all follow their own implicit psycho-logic, which helps us to understand them beyond the constituent heuristics and biases that are merged in a special mix throughout their characteristic process.

Figure 1 provides an overview of the GRIPS® types; a short explanatory video is available at https://youtu.be/oFgfkJLBCQ0 or via the QR code.

Figure 1: The GRIPS® typology (Source: Vocatus).

The GRIPS® typology finally delivers answers to the questions that triggered the whole project:

- Positive model: We can now describe the psycho-logic people follow when making decisions in the real world, and not only what people fail to reflect from a rational perspective.
- Comprehensive strategies: We can now comprehensively look at the whole decision- making process, and not only selected stages of it.
- Individual differences: We can now describe five completely different decision strategies, with each of them following a specific psycho-logic and none of them being rational.

The most straightforward way to validate the GRIPS® typology is to reapply it to the study of heuristics and biases. If one analyzes the propensity to follow a certain heuristic and shows the resulting bias in the individual choice behavior, the different GRIPS® decision types exhibit

significantly different profiles based on the underlying psycho-logic of their decision processes. For example, the well-known 'decoy effect' (Huber, Payne & Puto, 1982) works very well for Bargain Hunters as it obviously signals a high transaction utility, whereas 'anchoring' does not influence their decision-making because a simple anchor does not implicitly guarantee that a bargain can be had, which is of course what Bargain Hunters are mainly sensitive to. Conversely, Price Accepters who are more interested in finding a good-value option which can satisfy their future needs are less likely to be influenced by a 'decoy' than a higher-priced 'anchor' (see Figure 2). This proves that the GRIPS® typology does indeed condense the insights of behavioral economics into a comprehensive typology of decision strategies. The key takeaway is that instead of merely talking about the difference between the *homo economicus* and the *homo heuristicus* (Gigerenzer & Brighton, 2009), we should start to elaborate the differences between various '*homines heuristici*'.

Figure 2: Behavioral economics effects are GRIPS-specific: 'Decoy' works much better with Bargain Hunters, while 'anchoring' is superior with Price Accepters (Source: Vocatus research projects).

It is worth mentioning that those differences are not linked to personality or character, but are a result of which heuristics work in which situation: For example, acting like a Bargain Hunter works in those sectors where getting a bargain is associated with low risk. For example, in the US automotive industry one can obtain considerable discounts without compromising on the product or service, so it pays to be a Bargain Hunter. However, other sectors have changed from being Bargain Hunter to Risk Avoider markets as customers have learned that falling for what initially seems a 'good deal' can turn out to generate higher costs in the long run, as is the case in the German fixed-line telco industry where monthly costs typically increase after a short period. Similarly, we are often Indifferent Buyers when we buy our favorite painkiller from a bricks & mortar pharmacy because we need immediate relief and cannot invest time in comparing prices; however, we can take our time and indulge ourselves as Bargain Hunters when we shop online to stock up on painkillers. Which decision strategy to apply, i.e. which GRIPS® type to inhabit, therefore depends on the category and channel, and does not reflect a personality trait but a state which is influenced by sector, channel, situation and personal experience.

The fact that GRIPS® segments situational decision strategies rather than people provides some food for thought for the classic 'value-based' marketing approach where most attention is focused on the value customers see in the product, and where this value is assumed to be somewhat stable – just like the underlying preferences the perceived value is based on. Traditional marketing is a notoriously 'product-centered' discipline which is primarily obsessed with trying to better explain and position the value of the product, believing that this will eventually lead to its purchase. In accordance with this notion, most marketing segmentations differentiate customers with regard to their preferences, i.e., *what* they want. GRIPS® adds a second dimension here because it is obvious that customers don't only differ in terms of their preferences, but also in relation to their decision strategies. GRIPS® differentiates consumers in accordance with *how* they decide, so marketing should not only be about matching preferences (what to offer), but also about designing decisions (how to sell). If marketing wants to influence decisions, it should better reflect the differences in individual decision strategies and stop assuming that customers only differ in terms of their product-related preferences. Even if two customers want exactly the same product, we still have to adapt marketing, pricing and sales to cater for the fact that one of them may be a Bargain Hunter while the other may be a Price Accepter. Reflecting this basic insight, companies should stop selling products and start designing choices.

Practical Implications of the GRIPS® Typology

From a practical perspective, there are two main implications of the GRIPS® typology: GRIPS® can help to improve classic marketing research tools, and GRIPS® can guide marketing strategy and tactics.

Improving marketing research tools: Many research tools (such as conjoint analysis) assume and/or induce (through the survey set-up) that people behave like the homo economicus (perfect product and price knowledge, high product and price interest, stable preferences), which duly forms the basis for calculating utilities and shares of preference. Integrating the GRIPS® typology into choice modelling by using hold-out tasks to calibrate utilities and shares of preference (specifically for each segment) significantly improves predictive validity (Bauer, 2012 a & b).

Guiding marketing strategy and tactics: Strategically, GRIPS® can help to challenge traditional myths and come up with counter-intuitive marketing strategies such as the integration of an independent price comparison tool on a last-minute travel website, which led to a 70% increase in conversion rates (see Bauer & Peters, 2013, for more details of this case study).

Tactically, it can directly influence the way one should market and sell at point of sale. One practical example of such a choice situation is the decision (not) to extend a mobile telco contract when contacted by a call center agent. In such situations, the GRIPS® types apply very different decision-making strategies: For example, they may see themselves as being 'smarter' than other customers (and even the agents) and want to negotiate (Bargain Hunters); alternatively, they may be insecure and seek the agent's advice (Risk Avoiders). Call center agents who have received GRIPS® training can recognize their respective customer's GRIPS® type within a few seconds, and can react appropriately. For example: should they agree to negotiate, give detailed information, or provide additional options to choose from? In a recent project, trained agents were compared with those who hadn't received any GRIPS® training: The approach outlined above increased conversion rates by 35%, reduced the average handling time by 44%, and cut the level of discounts granted to each customer by 35% on average (for another case

study, see *Harvard Business Manager*, Köder & Koth, 2012). Applying GRIPS® in such cases always involves two steps: identification and (appropriate) treatment. Firstly, we have to identify which GRIPS® type the customer belongs to, and this can be based on training or the usage of machine learning. We were recently able to show that different GRIPS® types use characteristic words and sentence structures when talking to salespeople (Koth, 2018). Text identification tools combined with machine learning could consequently help to automatically identify the GRIPS® type. In the second step, the sort of treatment that is appropriate for the respective GRIPS® type is selected and applied in order to optimally support the decision strategy one is faced with. This also implies adapting to the characteristic heuristics and biases of the respective GRIPS® decision strategy.[1]

Figure 3: The application of GRIPS® in the call center improves the performance of every relevant KPI (Source: Vocatus research project).

Incidentally, GRIPS® is not only valid in a B2C context: We have successfully used this typology in many B2B projects, since it reflects a universal typology of decision strategies.

Summary

By condensing key dimensions from behavioral economics, GRIPS® constitutes a positive model of real-world customer behavior: On the one hand, it condenses behavioral economics

[1] A short note on 'manipulation': In the academic discussion around nudging, people often try to distinguish between 'nudging for good' versus 'nudging for bad' (Thaler, 2015b). From a practical point of view, we to some extent regard this discussion as being bigoted and divorced from the real world, mainly due to three reasons: Firstly, as Paul Watzlawick once noted in the context of communication, 'one cannot not communicate' (Watzlawick, Beavin & Jackson, 2011); in the context of marketing, we would argue that 'one cannot not manipulate'. Marketing is and always has been about influencing customers' decisions. Secondly, marketing has also always been about increasing conversion, market share and profitability, regardless of the fact that this might be at the expense of reducing consumer's rent. Thus the core difference between traditional marketing techniques and the one that leverages behavioral economics insights is not of a motivational nature; instead, the distinction relates to the underlying model of decision-making, i.e. an inappropriate rational model versus a more valid – and predictively irrational – one. Thirdly, the criticism of nudging itself somehow still builds on the assumptions that behavioral economics has been refuting, since it implies that a purchase decision is always a kind of zero-sum game: What the seller gains, the buyer loses. However, if one looks at the psycho-logics of the different GRIPS® types, we can see that Risk Avoiders shun unexplained discounts because they make them doubt the quality of the product, whereas Bargain Hunters need them as proof that they truly are smart buyers. One type is more satisfied with their purchase decision if there aren't any discounts, while the other is more satisfied if there are. The subjective welfare of both types is improved via differentiated treatment, while the objective or 'rational' welfare is not. Judging (on the basis of the latter) that this is a bad use of behavioral economics insights is an illogical argument since it is predicated on the rational decision model which behavioral economics has taught us to see as invalid.

insights, while on the other hand it provides the basis for more selectively applying and leveraging these insights in a specific decision. All in all, GRIPS® has demonstrably allowed a much more systematic and effective application of behavioral economics insights in the marketing world, rather than trying to apply individual, overlapping, and even contradictory effects. It is based on comprehensive decision-making strategies, so can predict consumer behavior in real-world decisions. It reflects individual differences – such as varying responsiveness to behavioral economics effects and varying behavior in different categories and channels – which are nonetheless not driven by the consumer's personality (traits) but by their experiences of which decision strategy has proven valuable in which choice situation (states). In this respect, GRIPS® is a second dimension and a valuable complement to the classic perspective of value-based customer segmentations.

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RESOURCES

Selected Behavioral Science Concepts

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A

Action bias

Some core ideas in behavioral economics focus on people's propensity to do nothing, as evident in default bias and status quo bias. Inaction may be due to a number of factors, including inertia or anticipated regret. However, sometimes people have an impulse to act in order to gain a sense of control over a situation and eliminate a problem. This has been termed the action bias (Patt & Zeckhauser, 2000). For example, a person may opt for a medical treatment rather than a no-treatment alternative, even though clinical trials have not supported the treatment's effectiveness.

Action bias is particularly likely to occur if we do something for others or others expect us to act, as illustrated by the tendency for soccer goal keepers to jump to left or right on penalty kicks, even though statistically they would be better off if they just stayed in the middle of the goal (Bar-Eli et al., 2007). Action bias may also be more likely among overconfident individuals or if a person has experienced prior negative outcomes (Zeelenberg et al., 2002), where subsequent inaction would be a failure to do something to improve the situation.

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 heuristic** and **representativeness heuristic** in the sense that affect serves as an orienting mechanism akin to similarity and memorability (Kahneman and Frederick, 2002).

Altruism

According to neoclassical economics, rational beings do whatever they need to in order to maximize their own wealth. However, when people make sacrifices to benefit others without expecting a personal reward, they are thought to behave altruistically (Rushton, 1984). Com-

mon applications of this pro-social behavior include volunteering, philanthropy, and helping others in emergencies (Piliavin & Charng, 1990).

Altruism is evident in a number of research findings, such as **dictator games**. In this game, one participant proposes how to split a reward between himself and another random participant. While some proposers (dictators) keep the entire reward for themselves, many will also voluntarily share some portion of the reward (Fehr & Schmidt, 1999).

While altruism focuses on sacrifices made to benefit others, similar concepts explore making sacrifices to ensure **fairness** (see **inequity aversion** and **social preferences**).

Ambiguity (uncertainty) aversion

Ambiguity aversion, or uncertainty aversion, is the tendency to favor the known over the unknown, including known risks over unknown risks. For example, when choosing between two bets, we are more likely to choose the bet for which we know the odds, even if the odds are poor, than the one for which we don't know the odds.

This aversion has gained attention through the Ellsberg Paradox (Ellsberg, 1961). Suppose there are two bags each with a mixture of 100 red and black balls. A decision-maker is asked to draw a ball from one of two bags with the chance to win $100 if red is drawn. In one bag, the decision-maker knows that exactly half of the pieces are red and half are black. The color mixture of pieces in the second bag is unknown. Due to ambiguity aversion, decision-makers would favor drawing from the bag with the known mixture than the one with the unknown mixture (Ellsberg, 1961). This occurs despite the fact that people would, on average, bet on red or black equally if they were presented with just one bag containing either the known 50-50 mixture or a bag with the unknown mixture.

Ambiguity aversion has also been documented in real-life situations. For example, it leads people to avoid participating in the stock market, which has unknown risks (Easley & O'Hara, 2009), and to avoid certain medical treatments when the risks are less known (Berger, et al., 2013).

Anchoring (heuristic)

Anchoring is a particular form of **priming** effect whereby initial exposure to a number serves as a reference point and influences subsequent judgments about value. The process usually occurs without our awareness (Tversky & Kahneman, 1974). One experiment asked participants to write down the last three digits of their phone number multiplied by one thousand (e.g. 678 = 678,000). Results showed that people's subsequent estimate of house prices were significantly influenced by the arbitrary anchor, even though they were given a 10 minute presentation on facts and figures from the housing market at the beginning of the study. In practice, anchoring effects are often less arbitrary, as evident 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). Anchoring effects have also been shown in the consumer packaged goods category, 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**.

B

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.**)

(Economic) Bubble

Economic (or asset) bubbles form when prices are driven much higher than their intrinsic value (see also **efficient market hypothesis**). Well-known examples of bubbles include the US Dot-com stock market bubble of the late 1990s and housing bubble of the mid-2000s. According to Robert Shiller (2015), who warned of both of these events, speculative bubbles are fueled by contagious investor enthusiasm (see also **herd behavior**) and stories that justify price increases. Doubts about the real value of investment are overpowered by strong emotions, such as envy and excitement.

Other biases that promote bubbles include **overconfidence**, **anchoring**, and **representativeness**, which lead investors to interpret increasing prices as a trend that will continue, causing them to chase the market (Fisher, 2014). Economic bubbles are usually followed a sudden and sharp decrease in prices, also known as a crash.

C

Certainty/possibility effects

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

Choice architecture

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

Choice overload

Also referred to as 'overchoice', the phenomenon of choice overload occurs as a result of too many choices being available to consumers. Choice overload may refer to either choice attributes or alternatives. The greater the number or complexity of choices offered, the more likely a consumer will apply heuristics. Overchoice has been associated with unhappiness (Schwartz, 2004), **decision fatigue**, going with the **default** option, as well as choice deferral—avoiding making a decision altogether, such as not buying a product (Iyengar & Lepper, 2000). Choice overload can be counter-acted by simplifying choice attributes or the number of available options (Johnson et al., 2012).

Cognitive bias

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

Cognitive dissonance

Cognitive dissonance, an important concept in social psychology (Festinger, 1957), refers to the uncomfortable tension that can exist between two simultaneous and conflicting ideas or feelings—often as a person realizes that s/he has engaged in a behavior inconsistent with the

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

Commitment

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

Confirmation bias

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

Control premium

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

Curse of knowledge

Economists commonly assume that having more information allows us to make better decisions. However, the information asymmetry that exists when one economic agent has more

information than another can also have negative effects for the better-informed agent. This is known as the curse of knowledge (Camerer et al., 1989), which occurs because better-informed agents are unable to ignore their own knowledge.

The curse of knowledge can manifest itself in many domains of economic life, such as setting prices or estimating productivity. With respect to the latter, one study found that experts consistently underestimate the amount of time required by novices to perform a task (Hinds, 1999).

A fun way to show the curse of knowledge in action is through a musical game in which participants are either the "tapper" or a "listener." In the game, the tapper selects a simple, well-known song, such a "Happy Birthday," and taps out the rhythm on a table. The listeners then try to guess the song. In an early experiment, tappers expected the listeners to correctly guess the song 50% of the time, yet, in reality, listeners were only correct 2.5% of the time (Newton, 1990).

D

Decision fatigue

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

Decision staging

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

Decoy effect

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

Default (option)

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

Delusion of competence (Dunning-Kruger effect)

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

Dictator game

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

Discounting

See **Time discounting**

Disposition effect

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

Diversification bias

People seek more variety when they choose multiple items for future consumption simultaneously than when they make choices sequentially, i.e. on an 'in the moment' basis. Diversification is non-optimal when people overestimate their need for diversity (Read & Loewenstein,

1995). In other words, sequential choices lead to greater experienced **utility**. For example, before going on vacation I may upload classical, rock and pop music to my MP3 player, but on the actual trip I may mostly end up listening to my favorite rock music. (See also **projection bias**.)

Dual-self model

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

Dual-system theory

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

E

Efficient market hypothesis

According to the efficient market hypothesis, the price (market value) of a security reflects its true worth (intrinsic value). In a market with perfectly rational agents, "prices are right". Findings in behavioral finance, by contrast, suggests that asset prices also reflect the trading behavior of individuals who are not fully rational (Barberis & Thaler, 2003), leading to anomalies such as asset **bubbles**.

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 de-

pletion and a subsequently diminished ability to exercise self-control. In the lab, ego depletion has been induced in many different ways, such as having to suppress emotions or thoughts, or having to make a range of difficult decisions. The resulting ego depletion leads people to make less restrained decisions; consumers, for example, may be more likely to choose candy over 'healthy' granola bars (Baumeister et al., 2008). Some studies now suggest that the evidence for this resource depletion model of self-control has been overestimated (e.g. Hagger & Chatzisarantis, 2016).

Elimination-by-aspects

Decision makers have a variety of **heuristics** at their disposal when they make choices. One of these effort-reducing heuristics is referred to as 'elimination-by-aspects', and when it is applied, decision makers gradually reduce the number of alternatives in a choice set, starting with the aspect that they see as most significant. One cue is evaluated at a time until fewer and fewer alternatives remain in the set of available options (Tversky, 1972); for example, a consumer may first compare a number of television sets on the basis of brand, then screen size, and finally price, etc., until only one option remains.

(Hot-cold) Empathy gap

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

Endowment effect

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

Extrapolation bias

See **Representativeness heuristic**

F

Fairness

In behavioral science, fairness refers to our **social preference** for equitable outcomes. This can present itself as **inequity aversion**, people's tendency to dislike unequal payoffs in their own or someone else's favor. This tendency has been documented through experimental games, such as the **ultimatum**, **dictator**, and **trust games** (Fehr & Schmidt, 1999).

A large part of fairness research in economics has focused on prices and wages. With respect to prices, for example, consumers are generally less accepting of price increases as result of a short term growth in demand than rise in costs (Kahneman et al., 1986). With respect to wages, employers often agree to pay more than the minimum the employees would accept in the hope that this fairness will be **reciprocated** (e.g. Jolls, 2002). On the flip side, perceived unfairness, such as excessive CEO compensation, has been behaviorally associated with reduced work morale among employees (Cornelissen et al., 2011).

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

G

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**.

H

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 are commonly defined as cognitive shortcuts or rules of thumb that simplify decisions. They represent a process of substituting a difficult question with an easier one (Kahneman, 2003). Heuristics can also lead to **cognitive biases**. There are disagreements regarding heuristics with respect 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).

There are generally different classes of heuristics, depending on their scope. Some 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.

Honesty

Honesty is an important part of our everyday life. In both business and our private lives, relationships are made and broken based on our **trust** in the other party's honesty and **reciprocity**.

A 2016 study investigated honesty, beliefs about honesty and economic growth in 15 countries and revealed large cross-national differences. Results showed that average honesty was positively associated with GDP per capita, suggesting a relationship between honesty and economic development. However, expectations about countries' levels of honesty were not correlated with reality (the actual honesty in reporting the results of a coin flip experiment), but rather driven by **cognitive biases** (Hugh-Jones, 2016).

People typically value honesty, tend to have strong beliefs in their morality and want to maintain this aspect of their self-concept (Mazar, Amir & Ariely, 2008). Self-interest may conflict with people's honesty as an internalized social norm, but the resulting cognitive dissonance can be overcome by engaging in self-deception, creating moral "wiggle room" that enables people to act in a self-serving manner. When moral reminders are used, however, this self-deception can be reduced, as demonstrated in laboratory experiments conducted by Mazar, Amir and Ariely (2008). It is not surprising, then, that a lack of social norms is a general driver of dishonest behavior, along with high benefits and low costs of external deception, a lack of self-awareness, as well as self-deception (Mazar & Ariely, 2006).

Honesty must also be understood in the context of group membership. Employees of a large international bank, for example, behaved honestly on average in an experiment's control condition, but when their professional identity as bankers was rendered salient, a significant proportion of them became dishonest. This suggests that the prevailing business culture in the banking industry weakens and undermines the honesty norm (Cohn, Fehr & Maréchal, 2014) (see also **identity economics**).

Hot and cold states

See **Empathy gap**

Hyperbolic discounting

See **Time discounting**

Identity Economics

Identity economics describes the idea that we make economic choices based on monetary **incentives** and our identity. A person's sense of self or identity affects economic outcomes. This was outlined in Akerlof & Kranton's (2000) seminal paper which expanded the standard utility function to include pecuniary payoffs and identity economics in a simple **game-theoretic** model of behavior, further integrating psychology and sociology into economic thinking.

When economic (or other extrinsic) incentives are ineffective in organizations, identity may be the answer: A worker's self-image as jobholder and her ideal as to how his job should be done, can be a major incentive in itself (Akerlof & Kranton, 2005). Organizational identification was found to be directly related to employee performance and even indirectly related with customer evaluations and store performance in a study on 306 retail stores, for example (Lichtenstein, Maxham & Netemeyer, 2010). Also, when employees were encouraged to create their own job titles such that they better reflected the unique value they bring to the job, identification increased, and emotional exhaustion was reduced (Grant, Berg & Cable. 2014). In some cases, identity can also have negative implications. Bankers whose professional identity was made salient, for example, displayed more dishonest behavior (see **honesty**).

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).

Incentives

An incentive is something that motivates an individual to perform an action. It is therefore essential to the study of any economic activity. Incentives, whether they are intrinsic or extrinsic, can be effective in encouraging behavior change, such as ceasing to smoke, doing more

exercise, complying with tax laws or increasing public good contributions. Traditionally the importance of intrinsic incentives was underestimated, and the focus was put on monetary ones. Monetary incentives may backfire and reduce the performance of agents or their compliance with rules (see also **over-justification effect**), especially when motives such as the desire to **reciprocate** or the desire to avoid social disapproval (see **social norms**) are neglected. These intrinsic motives often help to understand changes in behavior (Fehr & Falk, 2002).

In the context of prosocial behavior, extrinsic incentives may spoil the reputational value of good deeds, as people may be perceived to have performed the task for the incentives rather than for themselves (Bénabou & Tirole, 2006). Similarly, performance incentives offered by an informed principal (manager, teacher or parent) can adversely impact an agent's (worker, student or child) perception of a task or of his own abilities, serving as only weak reinforcers in the short run and negative reinforcers in the long run (Bénabou & Tirole, 2003). (For an interesting summary of when extrinsic incentives work and when they don't in nonemployment contexts, see Gneezy, Meier and Rey-Biel, 2011).

Inequity aversion

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

Inertia

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

Information avoidance

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

Intertemporal choice

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

L

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 concept associated with **prospect theory** and is encapsulated in the expression "losses loom larger than gains" (Kahneman & Tversky, 1979a). It is thought that the pain of losing is psychologically about twice as powerful as the pleasure of gaining. As 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 can explain why penalty **frames** are sometimes more effective than reward frames in motivating people (Gächter, Orzen, Renner, & Starmer, 2009) and is sometimes applied in behavior change strategies. The website Stickk, for example, 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.**)

M

Mental accounting

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

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

Mindless eating

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

Money illusion

The term 'money illusion' has been coined by Irving Fisher (1928) and refers to people's tendency to think of monetary values in nominal rather than real terms. This usually occurs when we neglect to consider money's decrease in purchasing power as a result of inflation. Investors, for example, may focus on more salient nominal returns rather than real returns that also account for inflation (Shafir et al., 1997).

Myopic loss aversion

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

N

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 allocatio**n of resources.

O

Optimism bias

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

Ostrich effect

See **Information avoidance**

Overconfidence (effect)

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

Over-justification effect

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

P

Pain of paying

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

Partition dependence

See **Naive allocation**

Partitioning

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

Peak-end rule

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

Planning fallacy

Originally proposed by Kahneman and Tversky (1979b), the planning fallacy is the tendency for individuals or teams to underestimate the time and resources it will take to complete a project. This error occurs when forecasters overestimate their ability and underestimate the possible risk associated with a project. Without proper training teams of individuals can exacerbate this

phenomena causing projects to be based on the team's confidence rather than statistical projections. One way to combat the planning fallacy is to use a method termed Reference Class Forecasting (Flyvbjerg, Skamris Holm, & Buhl, 2005; Kahneman & Tversky, 1979b). This method begins by creating a benchmark using data on similar projects. Then estimates are built based on variances from the benchmark, depending on variables related to the project at hand. For example, a construction company might estimate that building a house will take five weeks instead of the average reference class time of six weeks, because the team at hand is larger and more skilled than previous project teams. (See also **optimism bias**, **overconfidence**.)

Possibility effect

See **Certainty/possibility effects**

Precommitment

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

Preference

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

Preference reversal

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

Present bias

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

(Conceptual) Priming

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 is a behavioral model that shows how people decide between alternatives that involve risk and uncertainty (e.g. % likelihood of gains or losses). It 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 indicates that people are **loss-averse**; since individuals dislike losses more than equivalent gains, they

are more willing to take risks to avoid a loss. Due to the biased weighting of probabilities (see **certainty/possibility effects**) and loss aversion, the theory leads to the following pattern in relation to risk (Kahneman & Tversky, 1979a; Kahneman, 2011):

	GAINS	LOSSES
HIGH PROBABILITY	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

R

Ratio bias

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

Reciprocity

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

product), followed up by a smaller request (e.g. a less expensive option), if the initial request is denied by the responder. The responder then feels obligated to 'return the favor' by agreeing to the conceded request (Cialdini, Vincent, Lewis, Catalan, Wheeler, & Darby, 1975).

Recognition heuristic

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

Reference dependence

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

Regret aversion

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

Regulatory focus theory

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

from bad habits such as smoking or eating junk food. Prevention and promotion orientations are a matter of both enduring dispositions and situational factors.

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

Representativeness heuristic

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

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

A. Bob plays trumpet for a major symphony orchestra

B. Bob is a farmer

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

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

Risk-as-feelings

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

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

In contrast to theories such as the **affect heuristic**, where feelings play an informational role helping people to decide between alternatives, risk-as-feelings can account for cases where

choices (e.g. refusal to fly due to a severe anxiety about air travel) diverge from what individuals would objectively consider the best course of action.

S

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 market-ing to induce purchases. An experiment (Lee & Seidle, 2012) that used wristwatch advertise-ments 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 **intertemporal 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 **reciprocit**y, 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. 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. This suggests that a lack of switching could not be explained by unchanging **preferences**.

Samuelson and Zeckhauser note that status quo bias is consistent with **loss aversion**, and that it could be psychologically explained by previously made **commitments**, **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**

T

Take-the-best (heuristic)

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

Take-the-first (heuristic)

Take-the-first is a fluency **heuristic**. Fluency-based decision-making strategies occur when different alternatives are recognized, but the one that is recognized faster is given higher value with respect to a criterion (Gigerenzer & Gaissmaier, 2011). In the case of take-the-first, decision-makers simply choose the first alternative that comes to mind (Johnson & Raab, 2003). Similar to other **fast and frugal** approaches, this strategy is most suitable in situations that present limitations to people's ability to analyze information carefully. When experienced handball players were asked to decide between taking a shot or passing the ball in video

sequences, the first option that came to mind tended to be superior to later options or a condition under which when they had more time to analyze the situation.

Time (temporal) discounting

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

Transitive/intransitive preferences

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

Trust

Trust pervades human societies. It is indispensable in friendships, love, family, organizations and politics. Interpersonal trust is a mental construct with implications for social functioning and economic behavior as studied by **trust games**, for example.

Although neoclassical economic theory suggests that trust in strangers is irrational, trust and trustworthiness can be widely observed across societies. In fact, **reciprocity** exists as a basic element of human relationships and behavior, and this is accounted for in the trust extended to an anonymous counterpart (Berg, Joyce & McCabe, 1995). The nature of trusting behavior is a multi-faceted part of psychology, investigated in terms of underlying dispositions, intergroup processes, and cognitive expectations (Evans & Krueger, 2009). Behavioral and biological evidence indicates that trusting is not simply a special case of risk-taking, but based rather on important forms of **social preferences**, such as betrayal aversion (Fehr, 2010).

Both trust and trustworthiness increase when individuals are closer socially, but the latter declines when partners come from different social groups, such as nationality or race. Furthermore, high status individuals are found to be able to elicit more trustworthiness in others (Glaeser et al., 2000). For example, CEOs are considerably more trusting and exhibit more trustworthiness than students. Trust seems to reinforce trustworthy behavior. In a behavioral experiment, trustworthiness was highest when the threat to punish was available but not used, and lowest when the threat to punish was actually used. Paradoxically, however, most

CEOs and students used the punishment threat; although CEOs made use of it significantly less (Fehr & List, 2004).

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**.)

U

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** and **fairness**) (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).

W

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

In economics, willingness to accept (WTA) and willingness to pay (WTP) are measures of preference that do not rely on actual choices between alternative options. Instead, they ask individuals to specify monetary amounts. WTA is a measure of the minimum financial compensation that a person would need in order to part with a good or to put up with something undesirable (such as pollution or crime). Willingness to pay (WTP) is the opposite—the maximum amount of money someone is willing to pay for a good or to avoid something undesirable. According to standard economic intuition, WTP should be relatively stable across decision contexts and WTA should be very close to WTP for a given good. However, behavioral economics has shown that WTP and WTA may be context-dependent; for example, Thaler (1985) found evidence that people presented with a hypothetical scenario of lying on a beach and craving a beer would be willing to pay significantly more for a beer purchased at a resort hotel as opposed to a rundown grocery store (see also transaction **utility** and **mental accounting**). In addition, sometimes the average WTA for a good exceeds its WTP, which may be indicative of an **endowment effect**, i.e. people value something more if they already own it. Research has also shown that the farther a good is from being an ordinary private (market) good, the more likely it is that WTA exceeds WTP. The WTA-to-WTP ratio is particularly high for health/safety and public/non-market goods (Horowitz & McConnel, 2002).

Winner's curse

The winner's curse describes the phenomenon that the winning bid of an auction tends to exceed the true (and uncertain to the bidders) value of the commodity, resulting, in effect, in the

winner overpaying. Emotion, **cognitive biases** and incomplete information seem to account for this behavior, which can, in extremis, lead to **bubbles** in the stock or real estate markets.

In his seminal paper, "Anomalies: The Winner's Curse", Richard Thaler (1988) stated that if he were to auction of a jar of coins amongst his students, (1) the average bid would be significantly less than the actual value of the coins (bidders are risk averse) and (2) the winning bid would exceed the value of the jar (even if it might be overpriced). This is not consistent with the idea of all bidders being rational. In theory, if perfect information were available to everyone and all participants were completely rational in their decision-making and skilled at valuation, no overpayments should occur. However, the winner's curse, a robust and persistent deviation from theoretical predictions established in experimental economics, reflects **bounded rationality** quite well, since people have difficulty in performing contingent reasoning on future events (Charness & Levin, 2009) (see **intertemporal choice**). Not surprisingly, in an experimental demonstration of the winner's curse, the degree of uncertainty concerning the value of the commodity and the number of competing bidders were identified as the two factors that affect the incidence and magnitude of this curse (Bazerman & Samuelson, 1983).

In an attempt to overcome the winner's curse, an experiment has identified two factors that account for its persistence: a variability in the environment, which leads to ambiguous feedback (i.e. choices and outcomes being only partially correlated), and the tendency of decision makers to learn adaptively. Therefore, reducing the variance in the feedback (such that choices and outcomes are correlated), performance can be significantly improved (Bereby-Meyer & Grosskopf, 2008).

Z

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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Our M.A. in Behavioral Economics program blends elements of consumer, social, and cognitive psychology to provide a psychological perspective of consumer behavior.

Graduates are prepared to deliver professional services, perform research, excel as leaders and policy advisors, and to sensitively and inclusively serve diverse populations in business, marketing, and politics.

ABOUT THE CHICAGO SCHOOL:

The Chicago School of Professional Psychology is a nonprofit, regionally accredited institution with over 4,300 students at campuses across the country (Chicago, Southern California, Washington, D.C. and Online). The Chicago School has been an innovator in the field of Psychology and related behavioral science since 1979. The Chicago School offers over 20 degree programs and several opportunities for international experiences.

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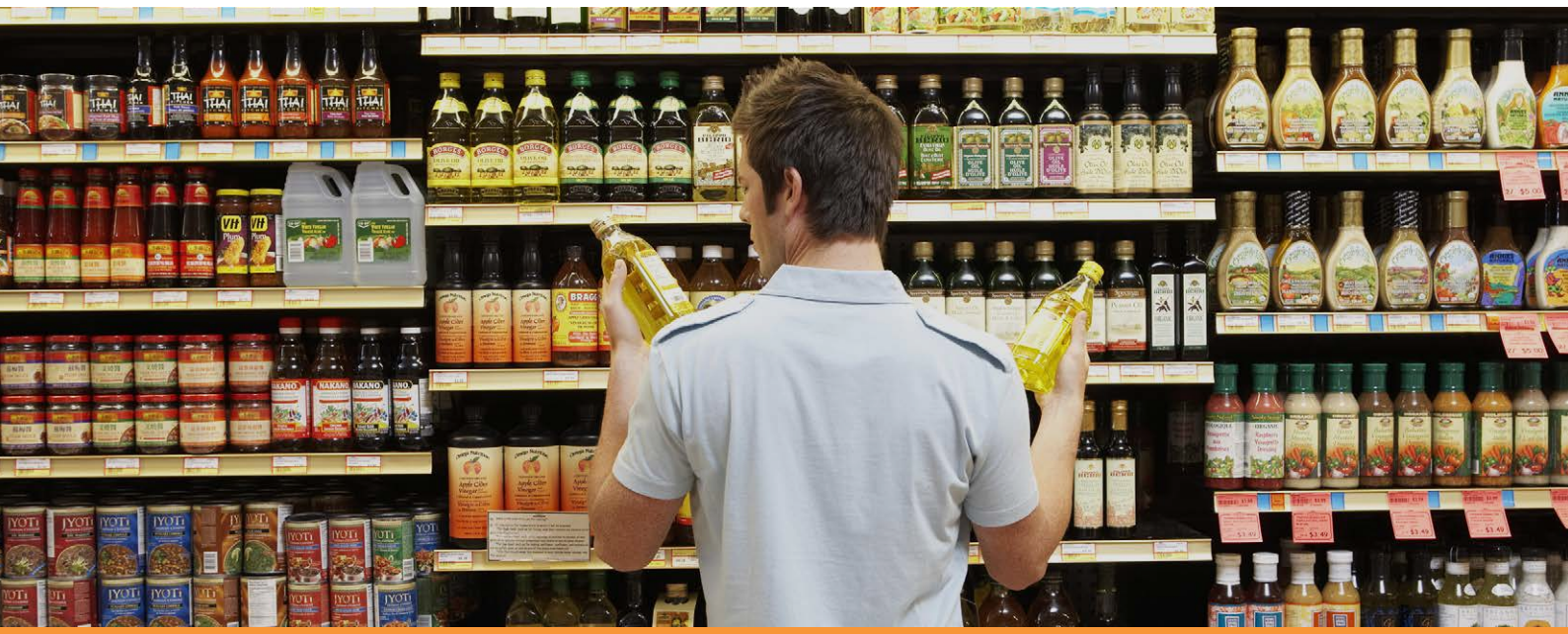
A student-faculty partnership model that encourages collaborative work between students and instructors, enhancing professional, academic, and community engagement.

Integrated learning that balances classroom instruction and "real work" research and application, as students complete their capstone project in the field before graduating.

A curriculum that values exposure to a variety of strategies for understanding and researching diverse human experience and behaviors.



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M.A. IN BEHAVIORAL ECONOMICS

The online M.A. Behavioral Economics (B.E.), non-licensure program is designed for working adults interested in psychological perspectives of human decision making, risk assessment, and consumer behavior. This program provides students an alternative to the traditional M.B.A by offering a curriculum with a foundation in advanced psychology that addresses broader business applications to decision making, negotiation, marketing, and consumer behavior.

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Graduates are prepared to deliver professional services, perform research, excel as leaders and policy advisors, and to sensitively and inclusively serve diverse populations in business, marketing, and politics.

WHAT DISTINGUISHES THIS PROGRAM?

• The online Behavioral Economics M.A. program provides students with an alternative to the traditional MBA by combining social psychological theory with a practical application toward decision making and consumer behavior within the context of a psychology degree.

• The program is distinct from those of competing institutions both in its flexible online delivery model and its curriculum, which blends elements of consumer, social, and cognitive psychology while providing a psychological perspective to B.E. as opposed to an economic one.

• Upon successful completion of the online M.A. in Behavioral Economics program, students who meet admissions requirements will be prepared to enter TCSPP's Business Psychology Ph.D. program, allowing them to pursue additional post-graduate and career opportunities.

CAREER OUTCOMES:

Graduates can consider careers in some of the following fields:

- **Consulting**
- **Public Service**
- **Marketing**
- **Public Relations**
- **Healthcare**
- **Higher Education**
- **Human Resources**
- **Nonprofit**
- **Government**

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PROGRAM SPECIFICATIONS:

The M.A. in Behavioral Economics is a non-licensure 40 credit hour program. The program includes:

- **18 credit hours of core course work**
- **16 credit hours of research course work**
- **6 credit hours of elective course work**

This program culminates in a capstone project that is a journal article submission based on data obtained during relevant field work/service learning. This capstone project forms the summative assessment of the program and is designed to satisfy the requirement of the competencies of the Master's in Behavioral Economics program for a culminating experience.

STUDENT EXPERIENCE:

The MA Behavioral Economics program is designed to support interaction and learning among students and faculty by incorporating cohort membership, small groupings, a blended delivery system, active learning, and pedagogical "best practices" within the design.

Cohort Model: Students in the MA Behavioral Economics program move through a sequence of courses collectively. The common goal of starting and completing the program together encourages students to work collectively, which promotes the development of personal relationships and the building of a professional network. Cohort membership enables students to support and learn from other students.

Small Groupings: The program strategically allows for arrangement of students in small groups for online learning that is advantageous for active learning. As approximations: Online Courses have fewer than 20 students.

Diverse Delivery System: This program utilizes both synchronous and asynchronous instructional modalities to provide students an accommodative learning environment that encourages interaction among students and faculty, supports active learning, and respects diverse talents and ways of learning. Asynchronous learning includes the use of online forums, audio and video recordings. Synchronous learning includes the use of live chat sessions and GoToMeeting live virtual meetings.

Student Services: Online students have access to a range of students support services provided by TCSPP including: Access to TCSPP Library Services, professional skill development through Career Services, opportunities to study abroad, the chance to present original research at the Graduate Research Forum, the potential to publish their Capstone Research projects in a journal, and engagement opportunities through student groups and societies.

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For further information, please visit: lse.ac.uk/MScBehaviouralScience
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LSE Department of Psychological and Behavioural Science

Executive MSc Behavioural Science

Uncover the science behind behaviour

The programme

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- Policy Appraisal and Ethics
- Behavioural Science in an Age of New Technology
- Corporate Behaviour and Decision Making
- Behavioural Science for Health
- Organisational Culture

Our students

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We carefully consider each application on an individual basis, taking into account all the information presented on your application form, including your:

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- Personal statement
- Two references
- CV

For detailed information on how to apply, please visit
lse.ac.uk/study-at-lse/Graduate/Applicants

For further information, please visit
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AGE RANGE

AVERAGE AGE

CLASS SIZE

What our alumni have to say about the programme

"The benefits of the exec masters is that it allows you to position yourself uniquely across your industry / expertise and behavioural science. And if you are smart about it, being at a crossroad like this allows you to move in all sorts of professional directions."

Antoine, 2014/15 cohort

"The programme has great integrity from an academic perspective, so it incentivizes and demands a much deeper, nuanced reflection about behavioural insights. On day 2 we were already in deeper territory than the standard trade book discussions on behavioural science/economics."

Guilherme, 2016/17 cohort

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Understand how individuals and groups make decisions, and how to affect those decisions

Our program features:

- One-year completion
- An interdisciplinary curriculum
- Industry and research opportunities

48%

Percentage of international students in the 2018 cohort, representing 9 countries

46%

Percentage of students matriculating directly from the workplace

16

Number of undergraduate majors represented in our inaugural class

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Master of Behavioral and Decision Sciences

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Impact decisions and behaviors

Learn the theory, apply the tools and make a difference

The Master of Behavioral and Decision Sciences program equips students with theoretical and practical tools to understand how individuals and groups make decisions, how to affect those decisions and how social norms play a role in motivating and changing social behaviors.

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- Train at the forefront of social norms research, examining the role social norms play in changing social behaviors and applying the latest and best methods to their areas of interest
- Establish a theoretical, methodological and quantitative foundation in the field with a common core covering behavioral economics, psychology, social norms and public policy
- Select elective courses from disciplines and schools across the university, including the Wharton School and the Annenberg School for Communication
- Learn to model how individuals and groups make decisions and design lab and field experiments to test hypotheses

"Wherever there is a human group there are social norms."
-Cristina Bicchieri

MEET THE PROGRAM'S FOUNDING DIRECTOR

Cristina Bicchieri

Director, Master of Behavioral and Decision Sciences;
S.J. Patterson Harvie Professor of Social Thought and Comparative Ethics,
Departments of Philosophy and Psychology

Cristina Bicchieri is a world authority on social norms and has consulted with UNICEF, the World Bank, the Gates Foundation, the United Kingdom's Department for International Development and many other organizations. She is the founder of the Master of Behavioral and Decision Sciences program, the Penn Social Norms Group (PENN SoNG) and the Behavioral Ethics Lab.

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Think peace

A Penn student envisions social solutions to reduce violence

As the managing director of a nonprofit organization based in Bogotá, Andrés Casas had plenty of experience with social change in the field. With Corporación Visionarios por Colombia (Corpovisionarios), Andrés and his fellow researchers traveled to municipalities around Colombia and worked closely with communities to develop solutions for reducing violence. "We were doing social change from the heart," he says, "but I wanted to get exposed to the current behavioral revolution in the social sciences."

In his research, Andrés became acquainted with the work of Cristina Bicchieri, S.J. Patterson Harvie Professor of Philosophy and Psychology at Penn, whose publications on social norms influenced Andrés' approach to social change. "One day I saw online that Cristina was starting the Master of Behavioral and Decision Sciences (MBDS) at Penn," Andrés recalled, "and I said for sure I needed to be part of that first cohort."

Through the program's curriculum and learning opportunities with Penn's behavioral laboratories, Andrés has continued to develop models for managing postconflict risks in what he calls "the ongoing experiment that is Colombia." After graduating with the first class of Penn's MBDS program, Andrés will remain at Penn as a visiting scholar with Penn Social Norms Group (PENN SoNG), where he will work with Cristina on fostering projects to support the ongoing peace process in Colombia. "Penn walks the talk," he assures prospective students. "It is the best place to be inspired to change the world."

Penn
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Modules will include

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- 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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United States

University	School/Department	Program
Brown University	School of Public Health	Master in Behavioral and Social Health Sciences
	Department of Economics	PhD in Economics (see also Brown Experimental and Economic Theory Group)
California Institute of Technology (Caltech)	Division of the Humanities and Social Science	PhD in Behavioral & Social Neuroscience
Carnegie Mellon University	Dietrich College of Humanities and Social Science	PhD in Social and Decision Sciences
	Department of Social and Decision Sciences	(see also Dynamic Decision Making Laboratory and Center for Behavioral and Decision Research)
Chicago School of Professional Psychology		MA in Behavioral Economics **See pp. 165-167**
Claremont Graduate University	School of Social Science, Policy, and Evaluation	PhD in Economics (see also Center for Neuroeconomics Studies)
Columbia University	Columbia Business School	MBA, MS, and PhD in Business (See also Center for Decision Sciences)
Cornell University	The Charles H. Dyson School of Applied Economics and Management	PhD in Applied Economics and Management Master of Professional Studies (MPS) in Applied Behavioral Economics and Individual Choice (see also Cornell Center for Behavioral Economics in Child Nutrition Programs)
Duke University	The Fuqua School of Business	PhD in Decision Sciences MBA and PhD in Marketing
Franklin University	College of Arts, Sciences & Technology	Master's in Business Psychology
Georgetown University	McDonough School of Business	MBA and Executive MBA (see also Behavioral Research Laboratory)

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

University of California, Berkeley		PhDs in Marketing, Psychology and Economics (see also Berkeley Decision Science Research Group)
University of California, San Diego	Randy School of Management	MBA and PhD in Management (see also Rady Behavioral Lab)
University of California, Santa Barbara	College of Letters & Science	PhD in Economics (see also Experimental and Behavioral Economics Laboratory)
University of Chicago	Booth School of Business	PhD in Behavioral Science (see also Center for Decision Research)
University of Colorado	Business School	MS in Decision Sciences
University of Kansas	College of Liberal Arts and Sciences	MA in Applied Behavioral Science PhD in Behavioral Psychology (see also KU Applied Behavioral Economics Laboratory)
University of Maryland	College of Behavioral & Social Sciences	PhD in Social, Decision, and Organizational Sciences
University of Oregon	College of Arts and Science	MA and PhD in Psychology (see also Institute of Cognitive and Decision Sciences)
University of Pennsylvania	School of Arts & Sciences	Master of Behavioral and Decision Sciences **See pp. 171-173** (see also Behavioral Ethics Lab) (see also Social Norms Lab)
University of Pittsburgh	Katz Graduate School of Business	PhD in Marketing and Business Economics
University of Southern California	Dana and David Dornsife College of Letters, Arts, and Sciences	PhD in Economics (see also Los Angeles Behavioral Economics Laboratory)
University of Wisconsin	School of Human Ecology	MS and PhD in Human Ecology: Consumer Behavior and Family Economics (see also Behavioral Research Insights Through Experiments Lab)

Washington University in St. Louis	School of Arts and Sciences	PhD in Behavior, Brain and Cognition
Yale University	Yale School of Management	Doctoral Programs in Financial Economics, Marketing, and Organizations and Management (See also Yale-Ipsos Consumer Marketing & Behavioral Economics Think Tank)

United Kingdom

Bangor University		MA Business with Consumer Psychology
City University London	Interdisciplinary School of Arts and Social Sciences	MSc in Behavioural Economics PhDs in Economics and Psychology (see also Decision Making and Behavioural Economics Research Group)
Kingston University	Faculty of Arts and Social Sciences	MSc in Behavioural Decision Science
Lancaster University	Management School	PhD Behavioural and Experimental Economics
London School of Economics and Political Science	Departments of Social Policy and Management	Executive MSc in Behavioural Science **See pp. 168-170** PhDs in Management Science, Social Policy, Economics and Psychology (see also LSE Behavioural Research Lab)
Manchester Metropolitan University	Department of Economics, Policy and International Business	MSc Behavioural and Economic Science
Middlesex University	Business School	MSc in Behavioural Economics in Action
Queen Mary University of London	School of Economics and Finance	MSc in Behavioural Finance
Ulster University	Coleraine campus	MSc in Applied Behaviour Analysis
University College London	Division of Psychology And Language Sciences Division of Psychology And Language Sciences School of Management and the Behavioural Insights Team	Executive Programme in Behavioural Science MSc in Cognitive and Decision Sciences PhD in Experimental Psychology PhDs in Management with Behavioural Science and Policy

University of Bath		MSc Applied Psychology and Economics Behaviour
University of Cambridge	Judge Business School	MBA, Executive MBA and PhDs in Business Economics, Marketing, etc.
	Faculty of Economics	PhD in Economics (see also Cambridge Experimental and Behavioural Economics Group)
University of East Anglia	Department of Economics	MSc in Behavioural and Experimental Economics (see also Centre for Behavioural and Experimental Social Science)
University of Essex	Department of Economics	MSc in Behavioural Economics
University of Exeter	School of Business	MSc in Behavioural Economics and Finance
University of Leeds	Leeds University Business School	MSc in Business Analytics and Decision Sciences (see also Centre for Decision Research)
University of Nottingham	School of Economics	MSc in Behavioural Economics PhD in Economics (see also Centre for Decision Research and Experimental Economics)
University of Oxford	Department of Economics	DPhil in Economics (see also Behavioural Economics Research Group) (see also Nuffield Centre for Experimental Social Sciences)
University of Reading	Henley Business School	MSc Behavioural Finance
University of Stirling	Stirling Management School	MSc in Behavioural Decision Making for Finance MSc in Behavioural Science for Management (see also Behavioural Science Centre)

University of Warwick (Warwick Business School)	Interdisciplinary	MSc in Behavioural and Economic Science **See pp. 174-176**
	Department of Psychology	MSc Behavioural and Data Science PhD in Psychology (see also Behavioural Science Group) (see also Decision Research at Warwick)

The Netherlands

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

Germany

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

Other Countries

Australia

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

Austria

University of Vienna	Faculty of Business, Economics, and Statistics	PhD in Economics MSc in Economics (see also Vienna Center for Experimental Economics)
Sigmund Freud University		Master in Psychology (Economic Psychology)

Canada

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

Finland

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

France

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

Israel

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

Ireland

University College Dublin	School of Economics	MSc Behavioural Economics

Italy

Catholic University of the Sacred Heart, Milan	Graduate School In Public Economic	PhD in Economics (see also Behavioral and Experimental Economics Research Group)

LUISS (Libera Università Internazionale degli Studi Sociali Guido Carli)	LUISS School Of European Political Economy	Master in Behavioral Science and Administration
University of Chieti-Pescara	School of Advanced Studies	PhD in Business and Behavioural Sciences
University of Trento	Doctoral School of Sciences	PhD in Economics and Management (Behavioural Economics)

Norway

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

Portugal

Universidade Catolica Portuguesa		Master in Psychology in Business and Economics

Russia

National Research University Higher School of Economics		Master in Applied Social Psychology

Singapore

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

Sweden

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

Switzerland

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


TED & TEDx Talks

Sources: TED / TEDx

*** = Recommended viewing**

2018

Saving money and saving lives*

Cass Sunstein

Every day we make choices—about what to buy or eat, about investments, about our children's health and education, even about the causes we champion or the planet itself. Unfortunately, we often choose poorly. Nudging is a way to improve those choices. By knowing how people think, we can use sensible "choice architecture" to nudge people toward the best decisions for themselves, their families, and their society, without restricting their freedom of choice.

>Watch

2017

You aren't at the mercy of your emotions—your brain creates them

Lisa Feldman Barrett

Can you look at someone's face and know what they're feeling? Does everyone experience happiness, sadness and anxiety the same way? What are emotions anyway? For the past 25 years, psychology professor Lisa Feldman Barrett has mapped facial expressions, scanned brains and analyzed hundreds of physiology studies to understand what emotions really are. She shares the results of her exhaustive research—and explains how we may have more control over our emotions than we think.

>Watch

Choice blindness

Petter Johansson

We think we know why we do as we do. Through his research on choice blindness, Petter Johansson and his research group shows that this is not always the case. As cognitive scientist at Lund University and a Fellow at Swedish Collegium for Advanced Study, Uppsala, he studies choice blindness and preference change using methods ranging from questionnaires to close-up card magic.

>Watch

How political biases affect your perception of science

Nathan Nguyen

In this talk, Nathan discusses how our political leanings affect the way we perceive scientific evidence. He explains how to examine and minimize such biases, which would in turn bring about important changes in the nature of current political discourse.

>Watch

Nudge behavior for a more inclusive world

Tinna Nielsen

Anthropologist and Global Change Maker Tinna Nielsen shares 11 ways you can outsmart your brain and be a better leader.

>Watch

The history of human emotions

Tiffany Watt Smith

The words we use to describe our emotions affect how we feel, says historian Tiffany Watt Smith, and they've often changed (sometimes very dramatically in response to new cultural expectations and ideas. Take nostalgia, for instance: first defined in 1688 as an illness and considered deadly, today it's seen as a much less serious affliction. In this fascinating talk about the history of emotions, learn more about how the language we use to describe how we feel continues to evolve—and pick up some new words used in different cultures to capture those fleeting feelings in words.

>Watch

Acting more rational - changing our automatic behavior

Ashley Zahabian

Our feelings naturally determine our behavior, but learning to become aware and change our behavior for a better outcome takes emotional intelligence. How can we learn and increase emotional intellect? Ashley Zahabian teaches us two practical ways we can all biologically and actively change the way we behave for better outcomes, and how we can think more clearly and rationally towards life success.

>Watch

2016

The power of decision-making

Benedikt Ahlfeld

Every day we make 20.000 decisions. Most of them with lightning speed; brain research proves that. The least of them, on the other hand, are rational and well thought through; the behavioral economy shows that. Benedikt Ahlfeld reveals which three decision traps you should certainly avoid and how you can utilize the findings of brain research.

>Watch

Green nudges

Robert Böhm

In his talk, Robert Böhm explains how so-called "green nudges" can help to improve human behaviour towards climate and environmental protection, without changing economic incentives or using any form of coercion. Moreover, he provides an insight into some of his research and the astonishing results.

>Watch

The science of altruism

Dustin Daniels

Is the compassion we feel for others a virtue. Or is it embedded in something deeper? Dustin Daniels looks at biology, behavioral science, and economics to explain the science of altruism, and the truth of our common humanity.

>Watch

Do you really know why you do what you do?

Petter Johansson

Experimental psychologist Petter Johansson researches choice blindness — a phenomenon where we convince ourselves that we're getting what we want, even when we're not. In an eye-opening talk, he shares experiments (designed in collaboration with magicians! that aim to answer the question: Why do we do what we do? The findings have big implications for the nature of self-knowledge and how we react in the face of manipulation. You may not know yourself as well as you think you do.

>Watch

3 design principles to help us overcome everyday bias

Thaniya Keereepart

Can we design ourselves to be more inclusive? Thaniya Keereepart explores 3 design principles to help us overcome everyday bias.

>Watch

Using psychology in food menu design to influence decisions

Madhu Menon

Every menu is a carefully constructed to persuade you into making certain decisions, predominantly ones that will ultimately make you spend more MONEY. The psychology behind menu engineering is backed by science and countless hours of research, and covers aspects such as positioning, color theory, use of buzz words, controlled costing and more.

>Watch

How to trick yourself into good behavior*

Bob Nease

By now, we all know that people make lousy decisions and behave badly. We eat the cake, wait until the last minute to do our taxes, and generally work against our own self-interest no matter how much we want to succeed. So...what can we do to fight it? Behavioral scientist Bob Nease shares some tricks to align our good intentions with our actions.

>Watch

The science of regret

Marcel Zeelenberg

A researcher and lecturer at Tilburg University; works on economic psychology, behavioural economics, and decision research. Mr ZEELENBERG talked about the science of regret.

>Watch

2015

How to use data to make a hit TV show*

Sebastian Wernicke

Does collecting more data lead to better decision-making? Competitive, data-savvy companies like Amazon, Google and Netflix have learned that data analysis alone doesn't always produce optimum results. In this talk, data scientist Sebastian Wernicke breaks down what goes wrong when we make decisions based purely on data—and suggests a brainier way to use it.

>Watch

A simple way to break a bad habit

Judson Brewer

Can we break bad habits by being more curious about them? Psychiatrist Judson Brewer stud-ies the relationship between mindfulness and addiction—from smoking to overeating to all those other things we do even though we know they're bad for us. Learn more about the mechanism of habit development and discover a simple but profound tactic that might help you beat your next urge to smoke, snack or check a text while driving.

>Watch

Everything you know about addiction is wrong

Johann Hari

What really causes addiction—to everything from cocaine to smart-phones? And how can we overcome it? Johann Hari has seen our current methods fail firsthand, as he has watched loved ones struggle to manage their addictions. He started to wonder why we treat addicts the way we do—and if there might be a better way. As he shares in this deeply personal talk, his questions took him around the world, and unearthed some surprising and hopeful ways of thinking about an age-old problem.

>Watch

The surprisingly logical minds of babies

Laura Schulz

How do babies learn so much from so little so quickly? In a fun, experiment-filled talk, cognitive scientist Laura Schulz shows how our young ones make decisions with a surprisingly strong sense of logic, well before they can talk.

>Watch

Phishing for phools

Robert Shiller

A behavioral economist, Robert Shiller talks about deception and his upcoming book, "Phishing for Phools".

>Watch

2014

10 myths about psychology, debunked

Ben Ambridge

How much of what you think about your brain is actually wrong? In this whistlestop tour of disproved science, Ben Ambridge walks through 10 popular ideas about psychology that have been proven wrong — and uncovers a few surprising truths about how our brains really work.

>Watch

Can prejudice ever be a good thing?

Paul Bloom

We often think of bias and prejudice as rooted in ignorance. But as psychologist Paul Bloom seeks to show, prejudice is often natural, rational … even moral. The key, says Bloom, is to understand how our own biases work—so we can take control when they go wrong.

>Watch

How to make hard choices

Ruth Chang

Here's a talk that could literally change your life. Which career should I pursue? Should I break up—or get married?! Where should I live? Big decisions like these can be agonizingly difficult. But that's because we think about them the wrong way, says philosopher Ruth Chang. She offers a powerful new framework for shaping who we truly are.

>Watch

Minds and markets

Paul Craven

Paul Craven is a coach, consultant and public speaker in the area of Behavioural Economics. His talk on "The Mind, Markets and Magic" reveals why human beings have hardwired biases and often make 'mental shortcuts' - whether in the field of finance, more broadly in life or even when watching a magician. With 27 years investment experience at Schroders, PIMCO and most recently Goldman Sachs, and as a lover of history, Paul's talk highlights some of the key biases shown by investors, as seen, for example, in stockmarket bubbles. As a member of the exclusive Magic Circle, Paul appreciates how the mind can play tricks, and delivers a talk that is highly interactive with the audience. He concludes by offering practical advice on how

firms and individuals can use behavioural economics for their competitive advantage. He also enjoys, as @ CravenPartners, tweeting about Behavioural Economics.

>Watch

The psychology of your future self

Dan Gilbert

"Human beings are works in progress that mistakenly think they're finished." Dan Gilbert shares recent research on a phenomenon he calls the "end of history illusion," where we somehow imagine that the person we are right now is the person we'll be for the rest of time. Hint: that's not the case.

>Watch

An economist walks into a bar

Robert Litan

Litan's talk explores the surprising role economists have played in the development of the internet economy—and quite possibly your love life.

>Watch

Applying behavioral economics to real-world challenges

Kelly Peters

BE BRIGHT: "Overcome your fear of making a mistake. Take a bold stance, an active role in big life situations. Calculate the risk, and take control!"

>Watch

The decline of consumer irrationality

Itamar Simonson

Stanford professor Itamar Simonson spent much of his career showing that consumers tend to act irrationally and their preferences are highly malleable. But a few years ago he started having second thoughts in light of the Internet and the changing consumer environment. In this talk he will discuss the rise in consumer rationality and the decline of current marketing mantras about branding and loyalty. Contrary to the now prevalent belief that consumers usually make irrational decisions and can be easily influenced (which he helped establish), Simonson will show how everything changes when consumers base their decisions on reviews from other users, easily accessed expert opinions, price comparison apps, and other emerging technologies. Instead of relying on often unreliable proxies such as brand names, prior experience and loyalty, or price, consumers can make decisions based on the products' "Absolute Value." Based on his new book Absolute Value (with Emanuel Rosen) Simonson

will present the far reaching implications of the changes in consumer decision making for marketing and management, including positioning, persuasion, market research, and influence more generally.

>Watch

Can emotions influence our economic decision making

Ágnes Virlics

She completed her Ph.D. in Economics and her field of research is behavioral economics. Ágnes spent two semesters at the Faculty of Economics of the University of Cambridge, in the United Kingdom, as a visiting Ph.D. student. She investigates the psychological influences on economic decision making: why do people make their economic decisions the way they do it.

She creates her own mathematical model, which is a simulation of the interaction between rational objectivity and emotional subjectivity in economic decision making. During her research, Ágnes tested in practice the idea behind the model on a sample of decision makers, and she also conducted an economic laboratory experiment to study the effects of mood on investment decision making.

>Watch

2013

When you're making a deal, what's going on in your brain?*

Colin Camerer

When two people are trying to make a deal—whether they're competing or cooperating—what's really going on inside their brains? Behavioral economist Colin Camerer shows research that reveals how badly we predict what others are thinking. Bonus: He presents an unexpected study that shows chimpanzees might just be better at it.

>Watch

The strategizing brain

Colin Camerer

Colin Camerer is the Robert Kirby Professor of Behavioral Economics at Caltech. He earned a Ph.D. from the University of Chicago in 1981 and worked at Northwestern, Penn, and Chicago before Caltech. He has published more than 150 articles worked on four books, most notably Behavioral Game Theory (2003). Colin's research group is interested in the psychological and neural basis of choice, strategizing in games, and trading in markets. His group uses many methods, including eye tracking, SCR, fMRI, EEG, TMS, field experiments, and analysis of field data on taxicabs, sports performance, and movie revenues. Colin has been the past president

of the Economic Science (experimental economics), the Society for Neuroeconomics, and was elected a Fellow of the Econometric Society.

>Watch

How to make a behavior addictive

Zoë Chance

Zoë professes at Yale School of Management, researching decision making and social welfare, and helping students make their dreams come true. Her work has been covered in The New York Times, Wall Street Journal, The Economist, Scientific American, Psychology Today, Financial Times, and Discover. Before getting her doctorate from Harvard, she marketed a $200 million segment of Barbie toys for Mattel. Now, she collaborates with academic and industry colleagues to use behavioral economics to help people avoid temptation and make decisions that will benefit them in the long run. And she'll be talking about a new type of toy that might do just that—if it doesn't drive you crazy first.

>Watch

How your "working memory" makes sense of the world

Peter Doolittle

"Life comes at us very quickly, and what we need to do is take that amorphous flow of experience and somehow extract meaning from it." In this funny, enlightening talk, educational psychologist Peter Doolittle details the importance— and limitations— of your "working memory," that part of the brain that allows us to make sense of what's happening right now.
>Watch

Changing behaviour by design

Edward Gardiner

Edward is an exceptional behavioural scientist who is currently leading the UK's first Behavioural Design Lab, applying insights and methods of behavioural science to the design of new products. He has also applied his innovative theories to complex social issues such as obesity, binge drinking and climate change.

>Watch

The psychology of self-motivation

Scott Geller

Scott Geller is Alumni Distinguished Professor at Virginia Tech and Director of the Center for Applied Behavior Systems in the Department of Psychology. He is a Fellow of the American Psychological Association, the Association for Psychological Science, and the World Academy

of Productivity and Quality. He has written numerous articles and books, including When No One's Watching: Living and Leading Self-motivation. Scott will examine how we can become self-motivated in "The Psychology of Self-Motivation."

>Watch

Design to nudge and change behaviour

Sille Krukow

Today human behaviour is the biggest threat to mankind. We keep overeating, even though we know it´s bad for us. We keep using to much energy, even though we know the planet can't keep up with our consumption. We keep driving too fast, even though we know it kills us. But this doesn't mean that we have no intentions to change. We do. But changing actual human behaviour calls for good design solutions that take basic human instincts, flaws and habits into consideration. That is design to nudge.

>Watch

How behavioral science can lower your energy bill*

Alex Laskey

What's a proven way to lower your energy costs? Would you believe: learning what your neighbor pays. Alex Laskey shows how a quirk of human behavior can make us all better, wiser energy users, with lower bills to prove it.

>Watch

How reliable is your memory?

Elizabeth Loftus

Psychologist Elizabeth Loftus studies memories. More precisely, she studies false memories, when people either remember things that didn't happen or remember them differently from the way they really were. It's more common than you might think, and Loftus shares some startling stories and statistics—and raises some important ethical questions.

>Watch

Does money make you mean?*

Paul Piff

It's amazing what a rigged game of Monopoly can reveal. In this entertaining but sobering talk, social psychologist Paul Piff shares his research into how people behave when they feel wealthy. (Hint: badly.) But while the problem of inequality is a complex and daunting challenge, there's good news too.

>Watch

2012

Predictably Irrational - Basic human motivations

Dan Ariely

Best selling author and behavioral economics professor Dan Ariely delves into the essence of human motivation. His clever yet brilliantly simple experiments uncover universal truths about human irrationality and increasing motivation.

>Watch

What makes us feel good about our work?

Dan Ariely

What motivates us to work? Contrary to conventional wisdom, it isn't just money. But it's not exactly joy either. It seems that most of us thrive by making constant progress and feeling a sense of purpose. Behavioral economist Dan Ariely presents two eye-opening experiments that reveal our unexpected and nuanced attitudes toward meaning in our work.

>Watch

Could your language affect your ability to save money?*

Keith Chen

What can economists learn from linguists? Behavioral economist Keith Chen introduces a fascinating pattern from his research: that languages without a concept for the future—"It rain tomorrow," instead of "It will rain tomorrow"—correlate strongly with high savings rates.

>Watch

What we're learning from 5,000 brains

Read Montague

Mice, bugs and hamsters are no longer the only way to study the brain. Functional MRI (fMRI) allows scientists to map brain activity in living, breathing, decision-making human beings. Read Montague gives an overview of how this technology is helping us understand the complicated ways in which we interact with each other.

>Watch

The optimism bias*

Tali Sharot

Are we born to be optimistic, rather than realistic? Tali Sharot shares new research that suggests our brains are wired to look on the bright side—and how that can be both dangerous and beneficial.

>Watch

Sometimes it's good to give up the driver's seat

Baba Shiv

Over the years, research has shown a counterintuitive fact about human nature: Sometimes, having too much choice makes us less happy. This may even be true when it comes to medical treatment. Baba Shiv shares a fascinating study that measures why choice opens the door to doubt, and suggests that ceding control—especially on life-or-death decisions—may be the best thing for us.

>Watch

2011

Saving for tomorrow, tomorrow*

Shlomo Benartzi

It's easy to imagine saving money next week, but how about right now? Generally, we want to spend it. Economist Shlomo Benartzi says this is one of the biggest obstacles to saving enough for retirement, and asks: How do we turn this behavioral challenge into a behavioral solution?

>Watch

The battle between your present and future self*

Daniel Goldstein

Every day, we make decisions that have good or bad consequences for our future selves. (Can I skip flossing just this one time?) Daniel Goldstein makes tools that help us imagine ourselves over time, so that we make smart choices for Future Us.

>Watch

How to make choosing easier

Sheena Iyengar

We all want customized experiences and products— but when faced with 700 options, consumers freeze up. With fascinating new research, Sheena Iyengar demonstrates how businesses (and others can improve the experience of choosing.

>Watch

How to buy happiness

Michael Norton

At TEDxCambridge, Michael Norton shares fascinating research on how money can indeed buy happiness—when you don't spend it on yourself. Listen for surprising data on the many ways pro-social spending can benefit you, your work, and (of course) other people.

>Watch

Living under scarcity

Eldar Shafir

Eldar Shafir is the William Stewart Tod Professor of Psychology and Public Affairs in the Department of Psychology and the Woodrow Wilson School of Public and International Affairs at Princeton University. His research focuses on decision-making, and on issues related to behavioral economics, with an emphasis on empirical studies of how people make decisions in situations of conflict and uncertainty.

>Watch

2010

Social experiments to fight poverty

Esther Duflo

Alleviating poverty is more guesswork than science, and lack of data on aid's impact raises questions about how to provide it. But Clark Medal-winner Esther Duflo says it's possible to know which development efforts help and which hurt—by testing solutions with randomized trials.

>Watch

The art of choosing*

Sheena Iyengar

Sheena Iyengar studies how we make choices—and how we feel about the choices we make. At TEDGlobal, she talks about both trivial choices (Coke v. Pepsi) and profound ones, and shares her groundbreaking research that has uncovered some surprising attitudes about our decisions.

>Watch

The riddle of experience vs. memory*

Daniel Kahneman

Using examples from vacations to colonoscopies, Nobel laureate and founder of behavioral economics Daniel Kahneman reveals how our "experiencing selves" and our "remembering selves" perceive happiness differently. This new insight has profound implications for economics, public policy—and our own self-awareness.

>Watch

The Happy Planet Index

Nic Marks

Statistician Nic Marks asks why we measure a nation's success by its productivity—instead of by the happiness and well-being of its people. He introduces the Happy Planet Index, which tracks national well-being against resource use (because a happy life doesn't have to cost the earth. Which countries rank highest in the HPI? You might be surprised.

>Watch

A monkey economy as irrational as ours*

Laurie Santos

Laurie Santos looks for the roots of human irrationality by watching the way our primate relatives make decisions. A clever series of experiments in "monkeynomics" shows that some of the silly choices we make, monkeys make too.

>Watch

Sweat the small stuff

Rory Sutherland

It may seem that big problems require big solutions, but ad man Rory Sutherland says many flashy, expensive fixes are just obscuring better, simpler answers. To illustrate, he uses behavioral economics and hilarious examples.

>Watch

2009

Our buggy moral code*

Dan Ariely

Behavioral economist Dan Ariely studies the bugs in our moral code: the hidden reasons we think it's OK to cheat or steal (sometimes). Clever studies help make his point that we're predictably irrational—and can be influenced in ways we can't grasp.

>Watch

Teach statistics before calculus!

Arthur Benjamin

Someone always asks the math teacher, "Am I going to use calculus in real life?" And for most of us, says Arthur Benjamin, the answer is no. He offers a bold proposal on how to make math education relevant in the digital age.

>Watch

Solving social problems with a nudge*

Sendhil Mullainathan

MacArthur winner Sendhil Mullainathan uses the lens of behavioral economics to study a tricky set of social problems—those we know how to solve, but don't. We know how to reduce child deaths due to diarrhea, how to prevent diabetes-related blindness and how to implement solar-cell technology … yet somehow, we don't or can't. Why?

>Watch

The puzzle of motivation

Dan Pink

Career analyst Dan Pink examines the puzzle of motivation, starting with a fact that social scientists know but most managers don't: Traditional rewards aren't always as effective as we think. Listen for illuminating stories—and maybe, a way forward.

>Watch

Don't eat the marshmallow!*

Joachim de Posada

In this short talk from TED U, Joachim de Posada shares a landmark experiment on delayed gratification—and how it can predict future success. With priceless video of kids trying their hardest not to eat the marshmallow.

>Watch

Life lessons from an ad man*

Rory Sutherland

Advertising adds value to a product by changing our perception, rather than the product itself. Rory Sutherland makes the daring assertion that a change in perceived value can be just as satisfying as what we consider "real" value—and his conclusion has interesting consequences for how we look at life.

>Watch

The psychology of time

Philip Zimbardo

Psychologist Philip Zimbardo says happiness and success are rooted in a trait most of us disregard: the way we orient toward the past, present and future. He suggests we calibrate our outlook on time as a first step to improving our lives.

>Watch

2008

Are we in control of our own decisions?*

Dan Ariely

Behavioral economist Dan Ariely, the author of Predictably Irrational, uses classic visual illusions and his own counterintuitive (and sometimes shocking) research findings to show how we're not as rational as we think when we make decisions.

>Watch

The psychology of evil

Philip Zimbardo

Philip Zimbardo knows how easy it is for nice people to turn bad. In this talk, he shares insights and graphic unseen photos from the Abu Ghraib trials. Then he talks about the flip side: how easy it is to be a hero, and how we can rise to the challenge.

>Watch

2007

Why aren't we more compassionate?

Daniel Goleman

Daniel Goleman, author of "Emotional Intelligence," asks why we aren't more compassionate more of the time.

>Watch

2006

Why people believe weird things

Michael Shermer

Why do people see the Virgin Mary on a cheese sandwich or hear demonic lyrics in "Stairway to Heaven"? Using video and music, skeptic Michael Shermer shows how we convince ourselves to believe—and overlook the facts.

>Watch

2005

How juries are fooled by statistics

Peter Donnelly

Oxford mathematician Peter Donnelly reveals the common mistakes humans make in interpreting statistics—and the devastating impact these errors can have on the outcome of criminal trials.

>Watch

Why we make bad decisions

Dan Gilbert

Dan Gilbert presents research and data from his exploration of happiness—sharing some surprising tests and experiments that you can also try on yourself. Watch through to the end for a sparkling Q&A with some familiar TED faces.

>Watch

The paradox of choice*

Barry Schwartz

Psychologist Barry Schwartz takes aim at a central tenet of western societies: freedom of choice. In Schwartz's estimation, choice has made us not freer but more paralyzed, not happier but more dissatisfied.

>Watch

2004

Happiness and its surprises

Nancy Etcoff

Cognitive researcher Nancy Etcoff looks at happiness—the ways we try to achieve and increase it, the way it's untethered to our real circumstances, and its surprising effect on our bodies.

>Watch

The surprising science of happiness*

Dan Gilbert

Dan Gilbert, author of "Stumbling on Happiness," challenges the idea that we'll be miserable if we don't get what we want. Our "psychological immune system" lets us feel truly happy even when things don't go as planned.

>Watch

Choice, happiness and spaghetti sauce

Malcolm Gladwell

"Tipping Point" author Malcolm Gladwell gets inside the food industry's pursuit of the perfect spaghetti sauce—and makes a larger argument about the nature of choice and happiness.

>Watch

The freakonomics of crack dealing

Steven Levitt

"Freakonomics" author Steven Levitt presents new data on the finances of drug dealing. Contrary to popular myth, he says, being a street-corner crack dealer isn't lucrative: It pays below minimum wage. And your boss can kill you.

>Watch

2003

Human nature and the blank slate

Steven Pinker

Steven Pinker's book The Blank Slate argues that all humans are born with some innate traits. Here, Pinker talks about his thesis, and why some people found it incredibly upsetting.

>Watch


Scholarly Journals

Sources: Journal websites (edited for length)

Economics Journals

Econometrica

Impact Factor: 3.38

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

The Economic Journal

Impact Factor: 2.61

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

Experimental Economics

Impact Factor: 2.39

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

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

Impact Factor: 0.81

The Journal of Behavioral and Experimental Economics (formerly the Journal of Socio-Economics) welcomes submissions that deal with various economic topics but which also involve issues that are related to other social sciences, especially psychology, or the use of experimental methods of inquiry. Thus, contributions in behavioral economics, experimental

economics, economic psychology, and judgment and decision making are especially welcome. The journal is open to different research methodologies, as long as they are relevant to the topic and employed rigorously. Possible methodologies include, for example, experiments, surveys, empirical work, theoretical models, meta-analyses, case studies, and simulation-based analyses. Literature reviews that integrate findings from many studies are also welcome.

Journal of Economic Behavior & Organization

Impact Factor: 1.32

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

Journal of Economic Perspectives

Impact Factor: 5.01

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

Quarterly Journal of Economics

Impact Factor: 6.66

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

Finance Journals

Journal of Behavioral and Experimental Finance

Impact Factor: N/A

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

Journal of Finance

Impact Factor: 6.04

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.

Psychology Journals

Health Psychology

Impact Factor: 3.46

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

Journal of Behavioral Decision Making

Impact Factor: 2.77

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

Journal of Consumer Psychology

Impact Factor: 3.39

The Journal of Consumer Psychology (JCP) publishes top-quality research articles that contribute both theoretically and empirically to our understanding of the psychology of consumer behavior. JCP is the official journal of the Society for Consumer Psychology, Division 23 of the American Psychological Association. It publishes articles in areas such as consumer judgment and decision processes, consumer needs, attitude formation and change, reactions to persuasive communications, consumption experiences, consumer information processing, consumer-brand relationships, affective, cognitive, and motivational determinants of consumer behavior, family and group decision processes, and cultural and individual differences in consumer behavior. Most published articles are likely to report new empirical findings, obtained either in the laboratory or in field experiments that contribute to existing theory in both consumer research and psychology. However, results of survey research, correlational studies, and other methodological paradigms are also welcomed to the extent that the findings extend our psychological understanding of consumer behavior. Theoretical and/or review articles integrating existing bodies of research and providing new insights into the underpinnings of consumer behavior and consumer decision processes are also encouraged.

Journal of Economic Psychology

Impact Factor: 1.28

The Journal of Economic Psychology aims to present research that will improve understanding of behavioral, especially socio-psychological, aspects of economic phenomena and processes. The journal seeks to be a channel for the increased interest in using behavioral science methods for the study of economic behavior, and so to contribute to better solutions for societal problems, by stimulating new approaches and theorizations about economic affairs. Economic psychology as a discipline studies the psychological mechanisms that underlie consumption and other economic behavior. It deals with preferences, choices, decisions, and factors influencing these elements, as well as the consequences of decisions and choices with respect to the satisfaction of needs. This includes the impact of external economic phenomena upon human behavior and well-being. Studies in economic psychology may relate to different

levels of aggregation, from the household and the individual consumer to the macro level of whole nations. Economic behavior in connection with inflation, unemployment, taxation, economic development, consumer information, and economic behavior in the marketplace are thus the major fields of interest. Special issues of the journal may be devoted to themes of particular interest. The journal encourages exchanges of information between researchers and practitioners by acting as a forum for discussion and debates on issues in both theoretical and applied research.

Journal of Health Psychology

Impact Factor: 2.18

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

Journal of Personality and Social Psychology

Impact Factor: 5.02

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

Judgment and Decision Making

Impact Factor: N/A

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

such as utility theory; and applications of relevant theory to medicine, law, consumer behavior, business, public choice, and public economics.

Organizational Behavior and Human Decision Processes

Impact Factor: 2.45

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

Psychological Science

Impact Factor: 5.67

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

Marketing/Management Journals

Management Science

Impact Factor: 2.82

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

Marketing Science

Impact Factor: 2.16

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

Journal of Marketing Research

Impact Factor: 3.7

The Journal of Marketing Research (JMR) publishes manuscripts that address research in marketing and marketing research practice. The journal publishes articles representing the entire spectrum of research in marketing, ranging from analytical models of marketing phenomena to descriptive and case studies. Most of the research currently published in JMR fits into the following two categories: (1) Empirical research that tests a theory of consumer or firm behavior in the marketplace and (2) methodological research that presents new approaches for analyzing data or addressing marketing research problems.

Multidisciplinary Journals

Behavioral Medicine

Impact Factor: 2.39

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.

Behavioural Public Policy

Impact Factor: N/A

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

Behavioral Science & Policy

Impact Factor: N/A

Behavioral Science & Policy is a new journal that features short, accessible articles describing actionable policy applications of behavioral scientific research that serves the public interest and has an impact on public and private sector policy making and implementation. The journal will publish reports of public and business policy recommendations that are firmly grounded in empirical behavioral scientific research. Empirical refers to research based on an analysis of data including but not limited to field and laboratory experiments, analysis of archival data, meta□analysis, and/or observational study. Research is behavioral in the sense of being grounded in the study of individual, group, and/or organizational behavior. Finally, contributions are scientific if the research tests falsifiable hypotheses and/or careful systematic observation, using rigorous scientific methods.

Decision

Impact Factor: N/A

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

Games and Economic Behavior

Impact Factor: 0.90

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

International Journal of Applied Behavioral Economics

Impact Factor: N/A

The scope of the International Journal of Applied Behavioral Economics encompasses how preferences, attitudes, and behavioral issues influence economic agents involved in business and organizations. Special attention is given to the impact that globalization and digitalization have on businesses and organizations from a behavioral point of view. An interdisciplinary approach is required, as economics, psychology, sociology, and anthropology are domains that contribute to understanding complex economic behavior, its triggers, and its practical

implications. The journal encourages practice-oriented research papers from academics and reflective papers from practitioners, as well as case studies. Both quantitative and qualitative research papers are welcomed, as well as research that uses innovative methodologies to explore new insights in the field and theory.

Journal of Behavioral Finance

Impact Factor: 0.58

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

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

Impact Factor: N/A

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

Journal of Behavioral Public Administration (JBPA)

Impact Factor: N/A

The Journal of Behavioral Public Administration (JBPA) is a peer-reviewed, interdisciplinary open access journal that focuses on behavioral and experimental research in public administration, broadly defined. JBPA encourages submissions of both basic scholarly and applied work conducted by academics or practitioners.

Journal of Consumer Research

Impact Factor: 3.8

The Journal of Consumer Research (JCR) publishes scholarly research that describes and explains consumer behavior. Empirical, theoretical, and methodological articles spanning fields

such as psychology, marketing, sociology, economics, communications, and anthropology are featured in this interdisciplinary journal. The primary thrust of JCR is academic rather than managerial, with topics ranging from micro-level processes (such as brand choice) to more macro-level issues (such as the development of materialistic values).

Journal of Economics and Behavioral Studies

Impact Factor: N/A

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

Journal of Marketing Behavior

Impact Factor: N/A

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

Journal of Neuroscience, Psychology and Economics

Impact Factor: 1.19

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

Journal of Risk and Uncertainty

Impact Factor: 1.30

This journal is an outlet for research in decision analysis, economics and psychology dealing with choice under uncertainty. It publishes both theoretical and empirical papers that analyze risk-bearing behavior and decision-making under uncertainty. The journal addresses decision

theory and the economics of uncertainty, psychological models of choice under uncertainty, risk and public policy, etc. Among the topics covered in the journal are decision theory and the economics of uncertainty, psychological models of choice under uncertainty, risk and public policy, experimental investigations of behavior under uncertainty, and empirical studies of real-world, risk-taking behavior.

Medical Decision Making

Impact Factor: 2.36

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

Mind & Society

Impact Factor: N/A

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

Policy Insights from the Behavioral and Brain Sciences

Impact Factor: N/A

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

Psychology & Marketing

Impact Factor: 2.0

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

Review of Behavioral Economics

Impact Factor: N/A

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

APPENDIX

AUTHOR AND CONTRIBUTING ORGANIZATION PROFILES


Author Profiles

Alain Samson (Editor)

Alain Samson is the editor of the Behavioral Economics Guide, founder of BehavioralEconomics.com and Chief Science Officer at Syntoniq. In the past, he has worked as a consultant, researcher and scientific advisor. His experience spans multiple sectors, including finance, consumer goods, media, higher education, energy and government.

Alain studied at UC Berkeley, the University of Michigan and the London School of Economics, where he obtained a PhD in Social 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.

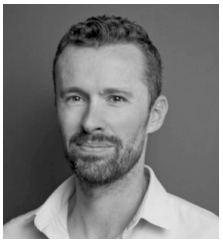
Alain can be contacted at alain@behavioraleconomics.com.

Robert B. Cialdini (Introduction)

Robert B. Cialdini is Regents' Professor Emeritus of Psychology and Marketing at Arizona State University. He has been elected president of the Society of Personality and Social Psychology. He is the recipient of the Distinguished Scientific Achievement Award of the Society for Consumer Psychology, the Donald T. Campbell Award for Distinguished Contributions to Social Psychology, the (inaugural) Peitho Award for Distinguished Contributions to the Science of Social Influence, the Lifetime Contributions Award of the Western Psychological Association and the Distinguished Scientist Award of the Society of Experimental Social Psychology. He is also president of Influence At Work, a company that offers workshops on the science of ethical influence.

Professor Cialdini's book *Influence*, which was the result of a three-year program of study into the reasons that people comply with requests in everyday settings, has sold over three million copies while appearing in numerous editions and 32 languages. Dr. Cialdini attributes his interest in social influences to the fact that he was raised in an entirely Italian family, in a predominantly Polish neighborhood, in a historically German city (Milwaukee), in an otherwise rural state.

Robert Metcalfe (Guest editorial)



Robert Metcalfe is an Assistant Professor at Boston University. He was a postdoctoral scholar at the University of Chicago and a research fellow at the University of Oxford. Rob's research tests economic and behavioral theory using field experiments, and also identifies practical solutions to challenges facing business and government. He has conducted a number of field experiments on improving resource efficiency and productivity, demand analysis, and understanding the efficacy of financial and non-financial interventions on changing human behavior. He has partnered with many companies and national and local governments to conduct research. Rob's recent research has been featured in the *Harvard Business Review*, *The Wall Street Journal* and the *Financial Times*. He is also a co-founder of two companies, The Behavioralist and Signol. His website is www.rmetcalfe.net.

Contributing Organizations

Aboab & Co

Aboab & Co is a Saudi-born strategic advisory, established in the spring of 2010 in response to a growing need to deliver locally relevant, pragmatic strategies built to be immediately actionable. Over the years, Aboab & Co has continuously built on its operating model to ensure it is able to deliver value into an ever-changing region. Today, the organization is home to over 50 consultants with projects executed in the public, private and third sectors.

The advisory extends its services over six key disciplines; research and insight, strategic communications, behavioral insights, impact assessment, and implementation oversight. The firm engages in turnkey solutions from the initial fact finding research, to strategy, to implementation and ultimately assessment. Each vertical is built to operate as a standalone product or as part of a larger initiative, covering multiple disciplines.

Aboab currently has three offices in the Kingdom of Saudi Arabia, with a satellite presence in both the United Kingdom and the United Arab Emirates.

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

Affective Advisory

Affective Advisory applies the latest academic insights from behavioural science to design revolutionary strategies for customer, employee and citizen engagement.

We create value for private, public and non-profit organisations through the systematic study of human behaviour and the development of strategic interventions to intentionally change behaviour by design, leveraging scientific insights from experimental economics, social psychology and cognitive science. Understanding, interpreting and shaping what drives human beings is at the heart of everything we do.

We are locally rooted and globally connected. Based in Zurich, Switzerland, we draw on a global network of professional and academic experts with diverse industry experience to deliver the best possible solutions for our clients.

For more information, please visit www.affective-advisory.com.

Behavioral Science Lab

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

We built the lab to start over, removing ourselves from existing methodologies and past thinking. We set out to revolutionize the way we look and think about people. By understanding

individual pattern of expected utility through our own proprietary behavioral economics research tools and methodologies, we provide our clients with solutions to their marketing and business problems ever thought possible. By deciphering the full complexity of the human mind and all elements that influence one's decision process, we are truly rethinking the way we study, identify and engage with people, transcending into a new era of human insights.

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

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

Behavioural Economics Team of the Australian Government (BETA), Department of the Prime Minister and Cabinet

BETA was established in 2016 to improve the wellbeing of Australians through the application and rigorous evaluation of behavioural insights to public policy and administration. BETA is situated within the Australian Government's Department of the Prime Minister and Cabinet and provides advice to government on the application of behavioural insights. It also works collaboratively across government to design and deliver behavioural interventions, primarily through randomised control trials.

For more information, please visit www.pmc.gov.au/domestic-policy/behavioural-economics.

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.

Genesis Analytics

The Applied Behavioural Economics team at Genesis Analytics are management consultants that specialise in human behaviour and thinking. In the private sector, they help businesses grow and become more profitable by changing customer behaviour using behavioural economics. In the public sector, they help solve large-scale behavioural issues, such as those related to sexual health, personal finance, or other prosocial behaviours.

For more information, please visit www.genesis-analytics.com.

ING

ING is a global financial institution with a strong European base, offering banking services through its operating company ING Bank. The purpose of ING Bank is empowering people to stay a step ahead in life and in business. ING Bank's more than 51,000 employees offer retail and wholesale banking services to customers in over 40 countries.

Group Research supports ING's purpose by monitoring and applying lessons from behavioural science to personal finance through the eZonomics website and the ING International Survey. It is also a key supporter of the Think Forward Initiative. eZonomics shows how attitudes to money affect our lives, now and in the future. The ING International Survey is one of the biggest surveys of its type in Europe and delivers a better understanding of how people spend, save, invest and feel about money. The Think Forward Initiative is a multi-year movement bringing together experts representing governments, academics, consumers, and the financial and technology sectors with the aim of developing tools that can help people make conscious and informed choices about money.

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

Irrational Co

Irrational Company was created in 2014 with the intention of introducing two subjects that were not well known in Mexico, but that we are very passionate about: behavioral economics and data science. Since then, we have mixed those disciplines in rigorous yet creative ways to generate great value for our clients.

We have worked in a variety of industries, governments and political campaigns to help them solve their biggest challenges. We have created a variety of research and consulting tools to understand why people do what they do, and how to innovate using insights from behavioral economics.

We are the academic coordinators and teachers of the first Behavioral Economics Diploma program in Spanish at the Universidad Anahuac Norte.

For more information, please visit www.irrational.ly

London Economics

Our Behavioural Economics team applies innovative, leading-edge techniques in the fields of behavioural economics and experimental economics. We help clients in the public and private sectors to meet their objectives by applying behavioural science, combined with academically rigorous testing, to deliver insights into consumer and firm behaviour where conventional techniques reach their limits. Underpinning all our work is a strong commitment to delivering methodologically robust and independent analysis that meets the needs of our clients.

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

Vocatus

Vocatus is a market research and consulting company specializing in the application of behavioral economics to portfolio, product, sales and pricing strategy in both B2C and B2B. We have been awarded numerous prizes for developing research methodology (for example, 'ESOMAR Congress Award' 2012 for the 'Best Methodological Paper') as well as for proving that the application of behavioral economics has a significant impact on our clients' return on investment (for example, 'ESOMAR Research Effectiveness Award' 2012 and 2013 for the most effective market research projects). Founded in 1999, Vocatus is headquartered in Munich, Germany, and serves clients all over the world.

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