

A History of Behavioral Economics and its applications: what we know and future research directions

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“Behavioral economics is ... no new thing. Alfred Marshall of *Industry and Trade* could well have labeled himself a behavioralist. And, of course, behavioral economics can claim John R. Commons, Thorsten Veblen, Joseph Schumpeter, George Katona, and many other distinguished economists of past and recent generations.”

Herbert Simon, (1986, p. xvi)

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Introduction

To write a history of behavioral economics is a risky enterprise. The term has been claimed by many, often competing and even concurrent endeavors over a long period of time and as such carries numerous meanings. In retrospect, as Herbert Simon, one of many founding fathers of the field, observed in the quote above one can easily characterize many past (and present) economist as a behavioral economist.

This universal appeal of behavioral economics might be explained by a momentous shift in economists' understanding of the subject matter of economics. Over the course of the 20th century, economists have come to equate economics with the study of human behavior. Lionel Robbins' now universally accepted means-ends definition defined economics as "the science which studies human behaviour as a relationship between ends and scarce means which have alternative uses (Robbins 1932, p. 15). It departed from the earlier understanding of economics as the study of markets and business activities with the underlying assumption of human rationality (i.e. homo economicus) and this shift paved the way not only to mathematical tools such as optimization, but also eventually opened the doors into cognitive aspects of decision making that until then remained sealed in a black box as well as influenced the crucial distinction between normative and positive perspective on the underlying rationality assumption in economics (Backhouse and Medema 2009).

The subject matter of economics was not the only thing that evolved. Behavioral economics needs to be viewed as an important episode in the long history of interaction of economics and psychology. As Goodwin (2016) argued, this relationship has always been a fraught one with many failed declarations and attempts to bridge the two disciplines. These attempts were fueled in no small part by methodological differences — most notably economics in the Anglo-Saxon tradition was since Jeremy Bentham and John Stuart Mill's time in the early 19th century was viewed as a logical-deductive science, while psychology, a younger discipline that came of age in the late 19th century, insisted on empirical-inductive inference.

Psychology too over the 20th century dramatically changed transitioning from a behaviorist framework dominant in mid-century to a cognitive psychology with far reaching implications on the adoption of experimental methods in economics (add references). Indeed, as we shall see throughout this paper, both behavioral and experimental economics are closely intertwined with periods of intense engagement and cooling-off periods bringing about scholars with mixed identities, different methodological convictions about the role of theory and its adjustment in light of countervailing evidence, and validity of various empirical methods.

Peeking into the black box of human decision making opens up the relationship of behavioral economics with mainstream economics as it emerged by mid 20th century. Various approaches to behavioral economics exhibit varying degrees of dissatisfaction with the direction of economics, the realism of its simplistic assumption of rational economic agents including perfect information, optimal information processing or utility maximization.

Pinning down behavioral economics is a historiographic challenge. Including only those who explicitly carry the banner of behavioral economics might not enough to capture the richness of research into human (economic) behavior. On the other hand, following Simon and labeling almost anyone, even in distant past, as a behavioral economist is counterproductive. In this paper we try to highlight the difficulties in drawing up clear boundaries of behavioral economics and attempt to situate its history in the broader context of the history of economics. We argue that exactly this gray area is a fertile ground and of particular historical interest as it might provide insights for those considering the future directions of behavioral economics and its policy applications.

This paper provides an overview of existing historiography of behavioral economics and attempts to provide current practitioners a better, more nuanced understanding of what behavioral economics has been. Section 1 discusses the various early users of behavioral economics including the most notable one associated with Herbert Simon before Kahneman and Tversky's research program became identified with behavioral economics. The main difference between the "old" and "new" behavioral economics is the explicit opposition to mainstream economics and the fact that "old" BE remained marginal within mainstream economics. Relationship with experimental economics is also explored as both fields have been intertwined and mutually reinforced each other. Section 2 focuses on "new" behavioral economics following the path of economists associated with the Russell Sage & Alfred P. Sloan Foundations (aka Sloan-Sage approach) since the 1990s. "New" behavioral economists challenged a particular articulation of the relationship between empirical evidence and theory. Behavioral economics emerged from a critical perspective on mainstream economics, but it did not intend to upend its foundations. Rather, it aimed at a more conciliatory synthesis. Section 3 deals with the success of behavioral economics in the early 2000s that was accompanied by behavioral economists' move towards other cognitive and social sciences as well as practical applications. While early years of behavioral economics focused on theoretical and empirical issues, the 2010s can be characterized by an applied turn spurred by the development of nudge theory in the preceding decade. Applied behavioral economics became a collection of increasingly autonomous specialties in economics. Also a plethora of controversial conceptual and empirical issues emerged around nudges.

1) How behavioral economics became identified with the heuristics and biases program: A short history of the label “behavioral economics”

1.1 1950-1980: The emergence of the “Behavioral Economics” label

Nowadays, besides the occasional references to Simon (1955) or Allais (1953), behavioral economics is mostly understood to have originated in the heuristics and biases research program of Daniel Kahneman, Amos Tversky, and Richard Thaler that started in the 1980s (Truc, 2022a). However, the label “behavioral economics” is far older — the term has been around as early as in the 1940s (Heukelom, 2014, p.75). And it gained on popularity at the end of the 1950s and the early 1960s (Angner and Loewenstein 2012; Sent ,2004).

Some historians of economics have drawn an explicit distinction between the “old” and “new” behavioral economics with the latter being characterized by lesser antagonism to neoclassical economics (e.g., traditional rationality as normative foundations) and by a broad mainstream success in economics never achieved by other “behavioral economics” research programs (Sent, 2004). Furthermore, “old” behavioral economics itself is an aggregation of a very diverse set of research programs that prospered at different times. One of them was Herbert Simon’s behavioral economics program that he started while at Carnegie Mellon University in the 1950s. Another was spurred concurrently by George Katona’s research at Michigan who used the term “behavioral economics” as early as 1947 (Juster 2004, p. 120). Both are regularly identified as the point of origins for behavioral economics by proponents of their approaches. Schwartz (2002, p.181) sees Simon as having “provided the starting point for behavioral economics”, and for Curtin (2016, p.18) “Katona justly deserves recognition as a founding father of behavioral economics”.

The list of early claimants of the behavioral economics label includes also the Oxford group active in the 1960s associated with P. W. S. Andrews, D. M. Lamberton, H. Malmgren, J. Marschak, G. B. Richardson, and G. L. S. Shackle; and the Stirling group associated with Neil Kay, Brian Loasby, Richard Shaw, John Sutton, Andrew Tylecote, and Peter Earl active in the UK in the 19XXs. Tomer (2007) also adds to the list other behavioral economics research programs such as Harvey Leibenstein’s X-efficiency theory, and the evolutionary approaches of Richard Nelson and Sidney Winter.¹

During the 1970s, a first well-recognized effort to bring psychology and economics closer was made by Katona. In 1977, the American Psychology Association acknowledged him as “having

¹ We also find a large array of other personalities that do not necessarily claimed to be behavioral economists themselves but are sometime included by contemporary actors for intellectual reasons (e.g., Adam Smith (Ashraf et al., 2005), Elinor Ostrom (Tarko, 2020), or Reinhard Selten which is more often identified as an experimental economist but became identified as the head of the “Selten School of Behavioral Economics” (Selten et al., 2010).

pioneered the development of a new body of knowledge bridging the gap between economics and psychology” (Hosseini, 2011, p.979). Strumpel et al. (1972, p. 3) considered at the time of publication that Katona was the leading figure of behavioral economics: “Virtually all research in the field of behavioral economics is an outgrowth of pioneering work done by George Katona and his colleagues at the University of Michigan’s Survey-Research Center” (Strumpel et al., 1972, p. 3 in Hosseini, 2011, p.977).

Katona was a psychologist by education who became interested in economics, a characteristic he shared with Kahneman and Tversky. He was heavily influenced by Gestalt psychology and initially worked on the psychology of perception and experimental psychology. His most recognized contribution in economics is probably lies in aggregate macroeconomics behavior, but he more generally contributed to many research areas related to decision making (Hosseini, 2011, pp.979-80). His approach to economics included the idea that the discipline needed psychology for realistic foundations, but that psychology would also benefit from economics insights: “Economics without psychology has not succeeded in explaining important economic processes and psychology without economics has no chance of explaining some of the most common aspects of human behavior” (Katona, 1951, p.9 in Hosseini, 2011, p.979). One distinctive feature of Katona compared to contemporary behavioral economics is the use of surveys as well as detailed interviews with consumers, investors, and business owners. Katona collected economic data about savings and assets, but also data about attitudes, decision-making processes, and expectations. While the contribution of Katona is often recognized as important in parts of economics, his influence remained limited in influencing the discipline (Hosseini, 2011, p.983).

Whereas Katona and his followers were interested in consumer behavior and macroeconomic issues, Simon’s Carnegie group focused mostly on firm behavior (Sent 2004, p. 741). Simon (1955) rejected the standard rational choice theory entirely and suggested an alternative route with a focus on bounded rationality, satisficing, and procedural (as opposed to substantive) rationality. On the one hand, Simon’s contributions are well-recognized as important in economics. The concept of “bounded rationality” that he coined had success in economics publications (Klaes and Sent, 2005, p.39-45). He received the Nobel prize in 1978, and by the mid-1970s, Simon was already a very cited economist and remained so throughout his life (Offer and Söderberg, 2016, p.123). However, most citations in economics journals remained confined to Simon (1955) (Geiger, 2017, p.570). the “closest to the mathematical format with which economists are comfortable” (Sent, 2005b, p.255), and many of its publications remained misunderstood by economists (Sent, 2005a). Like Katona, one reason often put forward to explain why Simon’s influence remained somehow limited relates to the formal framework that he used. Robert Aumann (1997, p.3) opined: “For many years after his initial work, it was

recognized that the area was of great importance, but the lack of a formal approach impeded its progress". Furthermore, after the 1970s Simon's increasingly shifted his attention to other disciplines such as cognitive sciences and artificial intelligence, Simon did not foster a successful stable community of behavioral economists around his research program despite an individual success in the discipline (see section XX for some of the contemporary attempts to revive Simon's tradition and section XX on the relationship between Simon and "new" behavioral economics).

Detailing the history and contributions of the all variants of "old" behavioral economics research programs goes beyond the scope of this paper. However, they shared common interests in (1) a critical take on mainstream economics, (2) a strong emphasis on interdisciplinarity, and (3) a preference for empirical approaches (surveys, experiments, interviews...). But they also had different focus, goals, strategies, and more generally, members of the different research programs did not form any well-connected community. From the 1950s until the end of the 1980s, the history of the label "behavioral economics" is a history of heterogenous communities that were not part of a coherent approach. Most researchers close to Katona or Simon would identify each as one of the most important figures of behavioral economics, and despite sharing common larger goals, "old" behavioral economics approaches were not part of one community. Just at Michigan University, Heukelom (2014, p.77) identifies four research programs that brought economics and psychology closer between the 1950s and 1960s: Rapoport and Miller's Mental Health Research Institute, Katona's Survey Research Center, Edwards's Engineering Psychology Laboratory, and Coombs's Michigan Mathematical Program. Despite being in the same university and having some common intellectual interests, the four research programs "largely went their own ways" (Heukelom, 2014, p.77). While the last two would help shape Kahneman and Tversky's approach to economics, it was only in the 1980s that a strong community of like-minded economists adopting the identity of behavioral economists would emerge. Yet, "old" behavioral economists still benefitted from their association with the label. Most attempts to bring economics and psychology closer such as the creation of particular journals (e.g., *Journal of Economic Behavior & Organization* in 1980) or conferences (e.g., Annual Conference on Behavioral Economics starting in 19XX) would acknowledge Katona, Simon, Harvey Leibenstein, or Kahneman and Tversky as contributors of "behavioral economics". But unlike "new" behavioral economics which stems from one well-identified research program, the label "behavioral economics" of the 1980s was an umbrella term for various heterogenous approaches.

1.2 1980-1990s: Abundance of Behavioral Economics Approaches

The original vision of the behavioral economics program at the Alfred P. Sloan Foundation in 1984 was to support research that would on the one hand advance Simon's behavioral economics and on the other study empirical and experimental anomalies violating the normative model of rational choice in Kahneman and Tversky's vein while also proposing alternative models of decision-making based on the preference/utility formal framework. By 1985 the latter became dominant, but the goal to bring economists and psychologists together remained.

The creation of the behavioral economics research program at the Sloan Foundation arrived relatively late as the label behavioral economics remained contested throughout the 1980s and the various older behavioral economists continued advancing their agendas. For instance, two years prior to Sloan's start, the *Society for the Advancement of Behavioral Economics (SABE)* was co-founded by numerous scholars including Benny Gilad, Stanley Kaish and Peter Loeb, George Akerlof, Herbert Simon, Richard Thaler and many others in 1982 (Kaish et al., 1984, p.3, SABE newsletter, Spring 2013). However, only John Tomer, Shoshana Grossbard, and Shlomo Maital are nowadays acknowledged as co-founders and honorable members of SABE. The SABE was associated with the *Journal of Behavioral Economics* created ten years earlier in 1972. Around the same time, the *Journal of Economic Behavior and Organization (JEBO)* was created in 1980, and *The Journal of Economic Psychology* in 1981. The first issue of the JEBO included Thaler's (1980) programmatic article for a positive economics, but also included an editorial emphasizing the diversity of the field by mentioning both what would be known as "new" and "old" behavioral economics with "bounded rationality", "behavioral theory", "evolutionary theory", "prospect theory", or "X-efficiency theory" (SOURCE).

Following the first Annual Conference on Behavioral Economics funded by the Sloan Foundation and sponsored by the SABE, the winter 1984 issue of *The Journal of Behavioral Economics* opened with a survey of behavioral economics. The survey included a diverse set of authors with "old" and "new" behavioral economists on equal footing. For example, George Katona is credited as being the first to use the term behavioral economics (Kaish et al., 1984, p.4). The survey also made clear connections to traditional heterodox approaches by stating, for example that "it is not surprising to find Keynesians, post Keynesians, institutionalists, Austrians and some basically neoclassical economists with open minds engaged in behavioral economics research" (Kaish et al., 1984, p.7). Besides intellectual questions, the survey was also an opportunity to discuss scientific strategies that behavioral economists should adopt. Most notably: (1) should behavioral economists label themselves as such?, (2) should behavioral economists "chip away at mainstream" or attempt to "add on to it"?, (3) should specialized journals be created?

Such discussions were also raised by experimental economists afraid of being “ghettoized” in the early 1980s (Maas and Svorenčík, 2016, p.68) and by program’s organizers of the Sloan Foundations (Heukelom, 2014, p.156). But these questions also revealed tensions between behavioral economists with for examples “heated debate on whether or not they or others should call themselves behavioral economists or just economists doing behaviorally oriented research” (Kaish et al., 1984, p.19). While SABE entertained strong links with the *The Journal of Behavioral Economics* and other specialized journals latter one, “new” behavioral economists more often made the explicit choice of focusing on mainstream journals (Earl and Peng, 2012, p. XX). “New” behavioral economists mostly opted for publishing in the top economics journals. Most of Kahneman and Tversky’s publications in economics in the 1980s were in top generalist journals, not in specialized behavioral, or heterodox economics journals. For example, Kahneman and Thaler never published in the *Journal of Behavioral Economics*, *Journal of Behavioral and Experimental Economics*, and only one article by Thaler was published in the *Journal of Economic Psychology* in the mid-2000s.

In addition to journals and scientific societies, the 1980s also saw multiple handbooks being published. For example, two “Handbook of behavioral economics” by Gilad and Kaish (1986a, 1986b) and Earl (1988) were published, predating the first behavioral economics handbook by “new” behavioral economists (Camerer, 2004) by 18 years.

1.3 1990s-2000s: Maintaining an “old” BE tradition alive.

The SABE and *The Journal of Behavioral Economics* had a tumultuous history in the 1990s. The *Journal of Behavioral Economics* became the *Journal of Socio-Economics* in 1991 with a wider emphasis on other social sciences, while also maintaining “old” BE origins and traditions alive (Schwartz, 2002; Hosseini, 2003). In 2014, it became the *Journal of Behavioral and Experimental Economics* adopting a more focused orientation on economics and psychology. The SABE went on a hiatus in 1988 and was revived in 1992 by Morris Altman, Shlomo Maital, Shoshana Grossbard, John Tomer, and Bijou Yang-Lester. None of the now well-known “new” behavioral economists and members of the Sloan-Sage Foundations were involved.

Overall, the landscape of behavioral economics during the 1980s and early 1990s was split between two groups. (1) The Sloan-Sage group related to the heuristic and biases research program was US-centered, trying to advance a very specific approach of behavioral economics, focused on psychology, mostly disconnected from older behavioral economics trends, and with the explicit goal to address and influence the mainstream of the profession. (2) The SABE group was more heterogenous, varied in researchers’ origins with many Europeans, focused on a more diverse set of

disciplines and approaches (sociology, institutional approaches...), oriented towards specialized journals and towards maintaining “old” behavioral economics traditions alive.

Despite preceding Kahneman and Tversky in almost every way, “old” behavioral economics remain largely ignored by modern economics. It is not rare to find some frustration from economists still interested in these “old” behavioral economics approaches or those who were active during that time. There are recent attempts to bring the “old” and “new” approaches together. For example, the *Routledge Handbook of Behavioral Economics* has many chapters dedicated to individuals such as Katona, Boulding, Leibenstein, Simon, Selten, Gigerenzer in addition to Kahneman, Thaler and Vernon Smith (Frantz et al. 2016). A more recent book by Frantz (2020) about the origin of behavioral economics is simply titled: “The beginnings of behavioral economics: Katona, Simon, and Leibenstein’s X-efficiency theory”.² Peter Earl’s (2022) most recent attempt to “bring together old, new and evolutionary approaches”, also expresses some frustration about what happened to “old” behavioral economics:

“[N]owadays it is common to see his [Herbert Simon] work being completely ignored by those who call themselves behavioral economics. [...] a cynic might suggest that it looks rather as if the earlier work has been airbrushed from the history of economic thought by the strategic redefinition of what constitutes behavioral economics. A more charitable and reflexive view would see the situation as resulting from insufficient familiarity with the earlier literature [...]”.

From a historical perspective, if one wants to investigate the history of “new” behavioral economics, one would generally look at the Sloan-Sage Foundations (see section 2), or the work of Ward Edwards and Clyde Coombs to understand how they shaped the view of founding figures like Kahneman, Tversky, Slovic and Lichtenstein (Heukelom, 2014). The relatively absence of historical ties between “new” and “old” behavioral economics is itself something that supports the observation that “new” behavioral economists constructed its research program in relative independence, or with an explicit will to distinguished itself from older approaches (Heukelom, 2014, p.155).

In addition to Kahneman and Thaler receiving the Nobel in 2002 and 2017 respectively, the creation of a JEL code “D03-Behavioral Economics – Underlying Principles” in 2008 marked a late recognition and institutionalization of behavioral economics as a legitimate specialty of economics. Scientometrics evidence of the origin of contemporary behavioral economics confirms the relative independence of “new” behavioral economists from “old” (Truc, 2022). Contemporary behavioral

² Roger Franz was the Executive Director of the SABE between 1983-1987.

economists very rarely cite older literature. The only exception being Kahneman and Tversky (1979). Even early articles of “new” behavioral economics published in the 1980s mostly ignored the “old” behavioral economics literature. In other words, the history of the “new” behavioral economics research program is only weakly connected to the older history of the label “behavioral economics”.

The reason why “new” behavioral economics succeeded while “old” behavioral economics’ exerted little influence can be easily identified. Earl and Peng (2012) emphasize the scientific strategies adopted by “new” behavioral economists: by publishing in leading general economics journals and avoiding being identified as related to traditional economics heterodoxies, “new” behavioral economists avoided the stigma of earlier attempts to revolutionize economics. For Sent (2004) and Heukelom (2014) new behavioral economics’s adoption of utility-maximizing framework and taking rational model as a normative benchmark made the program more amenable to economists’ concerns. This point is often identified as a source of failure of “old” behavioral economics, as exemplified by the case of Katona: “What put them [economists] off was his disdain for utility-maximizing or profit-maximizing models of individual behavior, and his failure to base his statistical inferences and macro-economic conclusions on explicit formal system-wide models” (Tobin, 1972, p. 37 in Hosseini, 2011, p.983). Another explanation lies in the timing and historical context of the emergence of different generations. For Sent (2004), the late emergence of “new” behavioral economics was actually an advantage. While Simon criticized economics during a time when the discipline was strong with growing confidence in its foundations, Kahneman and Tversky arrived at a time when economics was facing anomalies and multiple subfields were such as the general equilibrium and rational expectations program were in crisis. Economics at the end of the 1980s also experienced a turn towards empirical work and was more open to stimuli from other disciplines (Backhouse and Cherrier, 2017; Angrist et al., 2020; Truc et al., 2022, Svorenčik and Maas 2016). Behavioral economists contributed to this turn, but they also benefited from this more general transformation by making experiments and psychology a more acceptable source of economics knowledge. The role of different attitude of “old” and “new” behavioral economics towards policy application is explored in section 3.2.

1.4. Divergence and Convergence of Experimental and Behavioral Economics in the US and the Selten School of Behavioral Economics in Europe

The patronage of the Sloan and Sage Foundations played a crucial role in the rapid ascent of behavioral economics (more details will come in Section 2). Another crucial factor was the emergence and rise of laboratory experimental methods since the 1960s that eventually led to an experimental turn in economics at the turn of the 1980s (Svorenčik 2015, 2018, 2021, Maas and Svorenčik 2018,

Svorenčík and Maas 2016). The first to pick up on behavioral decision research's experimental results of psychologists were actually experimental economists. Grether and Plott (1979, 1982) corroborated the experimental findings and concluded that preference theory should be entirely abandoned as a positive description of individual human behavior.

Experimental economists were also involved in the Behavioral Economics Program from early on, as well. There was even a working group on decision making and experimental economics created. Its first meeting was a conference at Caltech plainly titled "Experimental Economics and Psychology" held in February 1988. When it took place, economists following the work of Tversky and Daniel Kahneman, two cognitive psychologists, had not yet identified as behavioral economics. The campus of the California Institute of Technology was chosen because of Caltech's position at the forefront of experimental economics research. Most important, unlike Smith's University of Arizona, the other leading center of experimental economics in the United States at the time, it housed experimentalists also doing research on individual choice—a topic near and dear to psychologists (Svorenčík 2016).

In a seminal paper on preference reversals, the Caltech economists David Grether and Charles Plott had attempted a decade earlier to remedy what they considered the flaws of psychologists' experimental design. Two of the thirteen reasons that they entertained as possible explanations for this phenomenon stand out. One was that the experimenters in the previous studies were psychologists. Having the reputation for deceiving subjects and subjects second-guessing psychologists' experiments, Grether and Plott (1979, 629) "felt that the experimental setting should be removed from psychology" in order to give the results additional credibility. Thus, the critical point was not the involvement of particular psychologists per se but how deception and reputation for deceiving corrodes experimental control. The other reason that stands out is what Grether and Plott called misspecified incentives. Most prior studies focused on hypothetical, unmotivated choice and did not incorporate performance-based monetary payments for experimental subjects. Despite the great lengths that Grether and Plott took to prevent preference reversal from occurring, ultimately, they failed in their attempt to disprove the psychologists' findings.

The no-deception rule and insistence on paying subjects are the hallmarks of experimental economics research, and the latter is being traced back by experimental economists to none other than Sidney Siegel, a psychologist briefly active in the 1950s and early 1960s. Tversky, a meticulous experimenter himself, was aware of the pitfalls of deception and proper motivation for maintaining experimental control. Yet during the 1970s, as Floris Heukelom (2014) argued, the types of experiments run jointly by Tversky and Kahneman while developing their research program of heuristics and biases shifted toward questionnaires with hypothetical choices.

The 1988 meeting at Caltech was also the last gathering of the working group funded by the Sloan-Sage BE program, and what emerged from it sheds light on the separation of experimental and behavioral economics at the end of the 1980s (Svorenčik 2016).

However, behavioral economics and experimental economics were developing somewhat separately in Europe since the 1950s through the work of Reinhard Selten, the 1994 Nobel laureate for his experimental and game theoretic work on subgame perfect equilibrium [add more details]:

“It is at that time that he read with great interest the work of Herbert Simon, who had just introduced the concept of bounded rationality (Simon, 1957, 1959). Selten became quickly convinced that the standard assumption of fully rational agents could not be a good starting point in economics since, in reality, it could not be expected that humans would behave so rationally. In 1958, Reinhard Selten and Heinz Saueremann conducted their first economic experiment, investigating real human behavior in an oligopoly environment (Saueremann and Selten, 1959). Their main interest was in the investigation of oligopoly theories, with which it was difficult to proceed empirically. In the experimental economics laboratory, it was at least possible to check whether a theory could make correct predictions under the conditions it assumed” (Selten et al 2010).

The divergence of experimental and behavioral economics at the turn of the 1980s changed in the course of 1990s: as experimental economics became less US centric and more international, and Selten’ disciples in particular spread throughout Germany and Europe (in no small part thanks to his Nobel prize) and experimental economists became interested in issues such as fairness, cooperation, reciprocity, coordination or inequity that were also investigated by behavioral economists.

2) Dominance of the Sloan-Sage Approach to Behavioral Economics

2.1. Scientometric evidence of the success of BE in the 1990s and early 2000s

- Braesemann, F. (2019). How behavioural economics relates to psychology – some bibliographic evidence. *Journal of Economic Methodology*, 26(2), 133-146.
<https://doi.org/10.1080/1350178X.2018.1511257>
- Truc, A. (2022). Forty years of behavioral economics. *The European Journal of the History of Economic Thought*, 29(3), 393-437.

2.2. Conventional story emphasizes the Kahneman-Tversky duo which was important in developing the foundations of the program. However, the mid-1980s are heavily characterized by the Kahneman-Thaler interaction with a focus on making BE successful in economics.

- Sloan-Sage archives
- Truc, A. (2021). The Disciplinary Mobility of Core Behavioral Economists. Working Paper. Available at: <https://ssrn.com/abstract=3919485>

- Truc, A. (2022). Interdisciplinary Influences in Behavioral Economics: A Bibliometric Analysis of Cross-Disciplinary Citations. *Journal of Economic Methodology*, Forthcoming.
- 2.3. BE emerged from a critical perspective on mainstream economics, but it nonetheless relied on a strategy that focused on publishing in mainstream economics journals. This echoes experimental economics strategy of the 1980s: avoiding marginalization in specialized journals and avoiding identification of BE or EE as niche fields.
- 2.4. Thaler's columns in the JEP (1987-1991 and 1996-2003) played an important role in laying out a "blueprint for change". Neoclassical economics was presented as a failing paradigm and the column format presented a typical BE approach of experiments discovering anomalies and leading to specialized alternative utility models with psychological elements.
- Truc, A. (2022). Becoming paradigmatic: The strategic uses of narratives in behavioral economics. *The European Journal of the History of Economic Thought*, 29(1), 146-168.
- 2.5. Behavioral economists also challenged a particular articulation of the relationship between empirical evidence and theory. From early on providing an alternative model to the observed anomalies was integral to their endeavor:
- Bibliometric evidence of the importance of theoretical models as a structuring force in the history of the field e.g Truc, 2022 (Forty years of behavioral economics).
 - Andrej Svorenčik (2021) The Driving Forces Behind the Rise of Experimental Economics, *Review of Political Economy*, 33:2, 344-361.
- 2.6. The history of BE is characterized by a series of arguments with mainstream economists. However, most founding behavioral economists rarely engaged with opponents publicly. The rare instances of public exchanges such as the 1986 *Journal of Business* special issue that motivated Thaler's JEP column provide a window into understanding the contemporary differences between BE and opposing communities. More recent controversies that involved some of the second-generation behavioral economists seem to have become increasingly acrimonious:
- 1986: the rational versus behavioral paradigms as well as finance
 - *Journal of Business* Part 2: The Behavioral Foundations of Economic Theory:
 - A few comments from Lucas, Kleidon... with the notion of paradigm clashes and turf battle being present in multiple instances (Zeckhauser)
 - 1998: the rational versus behavioral law and economics
 - *Stanford Law Review* Vol. 50, No. 5, May, 1998 (Sunstein/Thaler versus Posner/Kelman)
 - 1996-2010: the Ecological rationality controversy
 - Gigerenzer, G. (1996). On narrow norms and vague heuristics: A reply to Kahneman and Tversky. *Psychological Review*, 103(3), 592-596
 - Berg, N., & Gigerenzer, G. (2010). As-if behavioral economics : Neoclassical economics in disguise? *History of Economic Ideas*, 18(1), 133-165.
 - 1999: Experimental Economics controversy Volume 109, Issue 453 1 February 1999 (both against Vernon Smith and against rationalists)
 - Binmore, K. (1999). Why Experiment in Economics? *The Economic Journal*, 109(453), F16-F24.
 - Loewenstein, G. (1999). Experimental Economics From the Vantage-point of Behavioural Economics. *The Economic Journal*, 109(453), 25-34.
 - 2005-2010: Social Preferences controversy
 - Binmore, K. (2005). Economic man – or straw man? *Behavioral and Brain Sciences*, 28(06).
 - Binmore, K., & Shaked, A. (2010a). Experimental economics : Where next? *Journal of Economic Behavior & Organization*, 73(1), 87-100.
 - Binmore, K., & Shaked, A. (2010b). Experimental Economics : Where Next? Rejoinder. *Journal of Economic Behavior & Organization*, 73(1), 120-121.

- Fehr, E., & Schmidt, K. M. (2010). On inequity aversion : A reply to Binmore and Shaked. *Journal of Economic Behavior & Organization*, 73(1), 101-108. <https://doi.org/10.1016/j.jebo.2009.12.001>
 - 2008: definition and frontiers of economics in the mindful vs mindless controversy:
 - Camerer, C. F. (2008). The Case for Mindful Economics. In A. Caplin & A. Schotter (Éds.), *The Foundations of Positive and Normative Economics : A handbook* (p. 43-69). Oxford University Press.
 - Gul, F., & Pesendorfer, W. (2008). The case for mindless economics. In A. Caplin & A. Schotter (Éds.), *The Foundations of Positive and Normative Economics : A handbook* (p. 3-42). Oxford University Press.
- 2.7. After the end of the Sloan-Sage BE programs, the Behavioral Economics Roundtable became the main vehicle for promoting BE fostering a nascent community, but also gate-keeping. Its importance somewhat declined as BE was adopted more widely by various research groups in the US and especially in Europe.

3) Behavioral Economics in the 21st Century: Gaining Policy Relevance

3.1) The End of the 2000s and 2010s: Transformations of Behavioral Economics

After an exponential success at the end of the 1990s, the mid 2000s and 2010s are marked by generational change (Geiger, 2017). The structure of the field shifted from a research program mostly structured around contributions by Kahneman, Tversky and Thaler, toward a more diverse research programs with increasingly independent sub-specialties (Truc, 2022a, p.417-423). Some new leading figures, like Colin Camerer or George Loewenstein, were part of the Sloan-Sage programs as early-career researchers. Others, like Ernst Fehr moved to behavioral economics from the experimental economics community (Fehr et al 1993, Fehr and Schmidt 1999)). The emergence of this second generation was accompanied by multiple transformations.

First, while the Sloan-Sage program was very much US-centered and the SABE was more Europe-oriented, the 2000s and 2010s have seen an increasing importance of European researchers in behavioral economics. While in the 1980s around 75% of behavioral economics articles were authored by American economists without European co-authors, this proportion decreased to 30% by the end of the 2010s (Truc, 2022a, p.417-423). With the establishment of behavioral economics research centers and graduate programs at universities in Zurich, Rotterdam, Amsterdam, Cologne, Bonn, and Paris, the standard “new” behavioral economics approach set out by Sloan-Sage (and European experimental economists) became increasingly influential in Europe.

Second, behavioral economics gained additional trappings of a mature, institutionalized field. A JEL code “D03 Behavioral Economics—Underlying Principles” was created in 2008 and disappeared

in 2018 in favor of “D9 Micro-Based Behavioral Economics”. Before 2008, behavioral economists simply used common JEL codes related to the investigated topic such as game theory or decision theory.

The institutionalization of behavioral economics was slower than the institutionalization of new frontiers related to behavioral economics. For instance, a JEL code for neuroeconomics was created already in 2004. The *Society for Neuroeconomics* was created the same year with Glimcher and Camerer as the first two presidents, the *Journal of Neuroscience, Psychology, and Economics* was created in 2008, and by 2009 the first *Handbook of Neuroeconomics* was published (Glimcher et al., 2009).

Third, an increasingly diverse set of disciplines became identified by prominent behavioral economists as part/as the next step of the program. Loewenstein (1996) more generally promoted the inclusion of visceral factors and non-behavioral data into behavioral economics. With neuroeconomics, some want to include all cognitive science as relevant disciplines for behavioral economics (Glimcher, 2004; Camerer et al., 2005).³ Neuroeconomics is viewed as a way for economics to contribute to neuroscience, but also as a way to do “behavioral economics in the scanner” (Ross, 2008). Biology, endocrinology and behavior genetics became increasingly relevant disciplines whether as a way to include the effect of hormones in experimental studies (Kosfeld et al., 2005) or genes in geneconomics (Benjamin et al., 2012). The inclusion of anthropology in the program also led to collaborative interdisciplinary efforts to conduct economic experiments in small-scale societies (Henrich et al., 2001) and renewed the interest for evolutionary and societal explanations in the study of individual behavior. This trend follows a more general increasing interest of cognitive sciences for the study of the relationship between cognitive and brain sciences with culture (Frith and Frith, 2022). This interest for new frontiers manifests very explicitly in the publications authored by leading behavioral economists like Fehr, Camerer or Laibson who have had more than half of their publications of the last decade in non-economics journals (Truc, 2022c). More generally, for the more interdisciplinary-inclined behavioral economists, behavioral economics is not solely about the relationship between economics and psychology (Kahneman, 2003a, 2003b), but about a varied set of disciplines. In its most explicit version, behavioral economics is presented as a part of a larger attempt to unify behavioral sciences (or at least encourage strong interdisciplinarity) (Gintis, 2007; Buyalskaya et al., 2021). For Schimmelpfennig and Muthukrishna (2022), behavioral economics was just a step towards a more general “cultural evolutionary behavioural science in public policy”. The relationship between economics and psychology evolved to involve all relevant social sciences (psychology, anthropology, historical psychology...) (Schimmelpfennig and Muthukrishna, 2022, p.7). This unifying

³ See also Volume 24 Issue 3 of *Economics & Philosophy* for a discussion involving behavioral and non-behavioral economists such as Glenn Harrison, Kevin McCabe, Colin Camerer, Ariel Rubinstein or Ran Spiegler.

vision of behavioral economics is not shared by all behavioral economists. Matthew Rabin, has written explicit programmatic writings encouraging a refocusing of behavioral economics towards the core issues of economics rather than those of psychology or behavioral science (Rabin, 2013), and generally, we do not see a large-scale effect on citations between disciplines that suggests that economics is close to becoming unified with psychology or behavioral sciences (Truc et al., 2022). Overall, even if it did not lead to the integration of the different disciplines involved (Grüne-Yanoff, 2016), we can definitely say that the relationship between economics and cognitive science has radically changed in the last 30 years, and even more rapidly so in the last 15 years (Truc, 2022d).

Fifth, whereas experimental and behavioral economists diverged at the end of the 1980s, the 1990s witness a convergence in topics covered. However, field boundaries and some tensions have remained. In the course hot topics in experimental economics research issues like fairness, cooperation, reciprocity, coordination or inequity that were also investigated by behavioral economists. [add references/expand depending on parts of second section]

Finally, policy application became an important part of behavioral economics, thus fulfilling the new orientation promoted and wished for by members of the newly formed behavioral economics roundtable in 1992. This applied turn is investigated further in the following two sections.

3.2) The Applied Turn of Behavioral Economics

During the 1980s and 1990s, the Sloan-Sage approach was dedicated to identifying behavioral patterns which were not congruent with neoclassical economics, while also providing their alternative explanations inspired by psychology. In 1992, when the decision to close BE program at the Sage Foundation (Sloan discontinued its support already in 1989, see section 2), Eric Wanner elicited feedback about the program from all its participants:

“[T]he accomplishment of behavioral economics has, to date, been mainly to demonstrate systematic exceptions to the assumptions and predictions of neoclassical models. [...] [T]he reviewers agreed that behavioral economics has progressed beyond anomaly accumulation to develop a small set of explanatory hypotheses” (Eric Wanner’s letter to “Participants of the Behavioral Economics Program”, August 11, 1992).

During the 1980s various researchers affiliated with the program identified numerous anomalies which highlighted shortcomings of neoclassical theory. They became well known thanks to

highly visible column in the Journal of Economic Perspectives penned by Thaler.⁴ Members of the program recognized the limit of focusing solely on anomalies and dedicated resources to developing alternative models because they believed that anomalies would not be enough to impact economists' commitment to neoclassical models (Truc, 2022c, p.152). Whereas by the end of the Sloan-Sage BE program in 1992 its success was well recognized, behavioral economics' future direction was uncertain. One potential research direction that was explored to justify additional financial support from the Sage Foundation was to try and steer the program into a more applied direction. Eric Wanner for example asked participants of the program: "What do you see as the most promising lines of behavioral research that should be developed in the future? And most important, do you see areas where behavioral approaches might be usefully applied the analysis of practical economic and social problems in ways that are not now under study".⁵ After an evaluation by reviewers, and after gathering suggestions from participants of the Sloan-Sage program, it was decided in 1992 that the program would take a new form with a much smaller annual funding with a new orientation towards more applied research:

"[T]he Trustees decided that the Foundation should redirect the program toward an effort to develop the implications of behavioral economics for addressing social problems and designing social policy. [...] In light of the diversity and richness of these suggestions, the RSF Board decided not to involve itself direct in choosing policy problems for development, but opted instead to provide institutional means for participants in the program to develop the implications of behavioral economics for policy they see fit. Our principal effort of this sort over the next five years will be to establish a group that we plan to call the "Russell Sage Roundtable in Behavioral Economics." (Eric Wanner's letter to "Participants of the Behavioral Economics Program", August 11, 1992)

The general tenor of responses that Wanner gathered emphasized the desirability of designing policy intervention based on behavioral economics research though their feasibility was an unresolved matter.⁶ Some of the participants, however, were already working on a number of issues they considered applied or relevant to real world problems. Some of them included :

⁴ "The first series contained fourteen anomalies articles and appeared from the first issue of the journal in 1987 through to 1991. The second series contained four publications and appeared between 1995 and 2001. Thaler's anomalies columns provided the core of the new Kahneman and Tversky-inspired behavioral economics with a highly visible platform, and arguable served as a strong catalyst for its development" (Heukelom 2014, p. 156).

⁵ Eric Wanner's letter to Vernon Smith, April 30, 1992.

⁶ "While no one fundamentally disagreed with this opinion, there were broad differences in estimates of the feasibility of developing the policy implications of behavioral work. Some of you thought that behavioral

“Intertemporal problems such as gambling, substance abuse, and savings/consumption patterns; negotiation and dispute resolution; investor behavior and its implications for financial market regulation; poverty, urban decay and the development of improved anti-poverty policy; equity considerations and their implications for management strategy, worker productivity, and unemployment; cooperation and trust and their effect effects on firm efficiency; and the implications of loss decision worker productivity, and unemployment; cooperation and their effects on firm efficiency; and the implications aversion and various “cognitive illusions” on business making.” (Eric Wanner’s letter to “Participants of the Behavioral Economics Program”, August 11, 1992)

There were three limits to the applied turn of behavioral economics. First, BE was not as relevant in term of policy-making as traditional areas of economics. Behavioral economists had paid a lot of attention to anomalies and developed a variety of alternative theories, but their theory lacked the unified and large-encompassing approach of traditional economics theory that contributed to making economics a successful science in policy-making. More generally, BE was still new and might have still lack well-established foundations to challenge traditional economic theory on policy. Theories were evolving rapidly and different explanations for a variety of phenomena were still competing which made the foundation of the field unstable for strong policy recommendations (Camerer et al., 2003, p.1214). Second, behavioral economics was very much an academic-oriented research program. Economists had an already established academia/policy pipeline in place. They held position as advisors in governments, central banks and international organizations, but behavioral economists were still very much confined to the academic milieu. More importantly, the role they could play as traditional economics advisors (e.g., monetary or macroeconomics policy) was far from obvious. Finally, at first glance, BE theories mostly dismissed consumer sovereignty as a relevant issue. If individuals systematically make mistakes, are ruled by emotions and engage in impulsive decisions, an evident conclusion might be a need to introduce more restrictive policies. Ultimately, consumer sovereignty, especially in policy-making, was a historical core value of economics as a discipline which

considerations already inform policy discussion to some extent, pointing for example to the paternalistic arguments for forced savings that enter debates about social security. Others felt that behavioral research will not support clear policy recommendations until it improves its understanding of the effects of individual decisions on the behavior of markets and other social institutions. Still others argued that behavioral research is "in some sense, too fundamental" to support immediate policy recommendations directly, although many policy recommendations would change in light of our understanding of behavioral economics." One of you who concurred with this point even praised the program for being willing to support basic research with no immediate implications for policy and no direct recommendations for addressing social problems. [...] By and large, most of you agreed that behavioral research would be improved by attempting to develop its implications for addressing social problems, designing institutions, and guiding social policy." (Eric Wanner’s letter to “Participants of the Behavioral Economics Program”, August 11, 1992)

contributed to maintaining its strict separation from psychology (Hands, 2003). Behavioral economists had to develop a framework that would maintain rational choice as a normative theory both in economics theory, but also in policy terms. They also had to make behavioral economics more than just applied behavioral research if they were to convince economists and not be deemed as a branch of psychology.

During the mid-1990s the focus on applied research led participants of the program to develop new approaches that would frame the applied part of behavioral economics research in “the mildest possible manner”:

“The core principle underlying the Chicago School’s libertarian beliefs is consumer sovereignty [...] [W]e approached the topic in the mildest possible manner using a term Cass had coined: “anti-antipaternalism.” The double negative implied that we were not ready to put forward a positive argument for paternalism. [...] The short, two-page section on this topic was followed by a longer section on “behavioral bureaucrats.” It was, for Cass and me, the first of many times that we went out of our way to say that if the government bureaucrat is the person trying to help, it must be recognized that the bureaucrat is also a Human, subject to biases. Frustratingly, no matter how many times we repeat this refrain, we continue to be accused of ignoring it.” (Thaler, 2015, p. XX)

The first developments of such a research program were made by Jolls, Sunstein, and Thaler (1998) with “Anti-Antipaternalism”. The core idea would evolve as “Asymmetric Paternalism” (Camerer et al., 2003) and “Libertarian Paternalism” (Thaler and Sunstein, 2003) in the early 2000s with the latter becoming a flagship concept of the behavioral economics. As explicitly titled by Camerer et al. (2003), the applied approach of behavioral economics was thought of as “Regulation for Conservatives”. With the publication of *Nudge* in 2008 (Thaler and Sunstein, 2008), the second flagship concept of applied behavioral economics emerged, and gave a strong identity to behavioral economics as an economics research program that had relevant policy-recommendations.

[to be elaborated on: “new” behavioral economics only came up with policy questions very late in the research program (nudges, before that mostly anomaly+alternative model). But many other “old” behavioral economics started from policy issues.

“Katona’s interest in public policy and his support of the positive role of government is also obvious in his statements of a few pages later in which he advocates government announcements directed “to change business attitudes and to rally public opinion behind price control” (Katona, 1945, p. 221), or his argument that the “failure to evoke full understanding of the functions of price control” and the

businessmen’s confidence in its success were “largely responsible for occasional waves of hoarding and inventory accumulations and the resulting price increases” (Katona, 1945).” (Hosseini, p.979)

Missing from the narrative: Maital, S. (Ed.) (1988). Applied behavioural economics. New York: New York University Press]

3.3) Behavioral Economics in the Wild

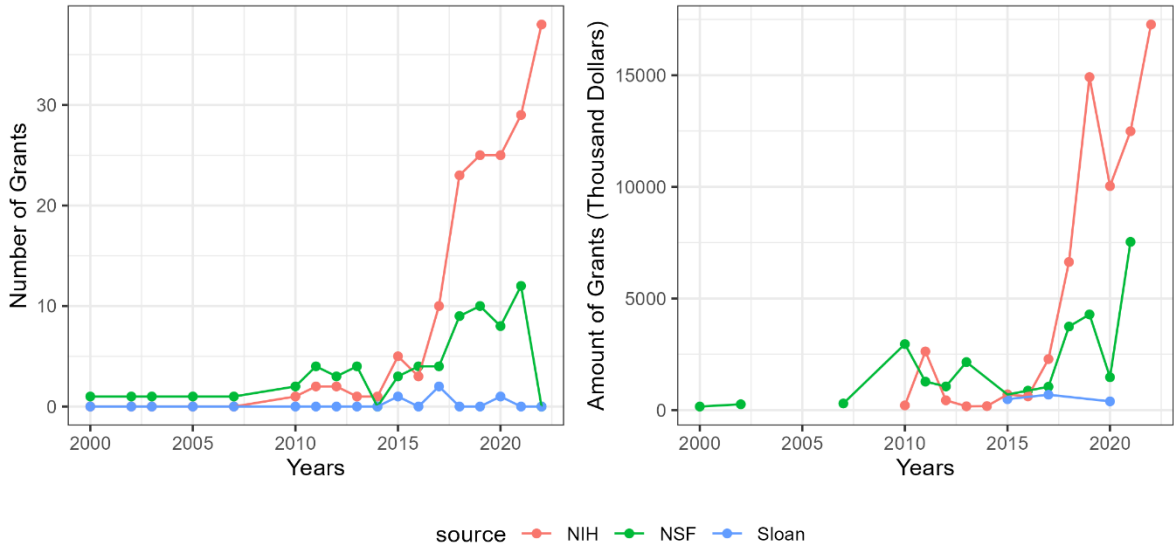


Figure 1: Number and amount of grants containing the word “nudge” and its variations in proposal titles and abstracts

Funding by National Institutes of Health (NIH) and the National Science Foundation (NSF) shows that the behavioral nudges garnered a lot of success, especially after 2010 (Figure 1). For example, before 2010 NIH did not fund any grants that contained the word nudge. By 2019, 15 million dollars were awarded to such projects . This signals two things. First, there has been an increasing interest in applied behavioral economics research in relation to health. Second, such applied research has been not only successful at attracting funding, the concept of nudges also became a popular concept to be included in applied research project.

The University of Pennsylvania and the Northwestern University Chicago are among universities that received the most grants with a variety of projects ranging from clinical decision-making involving geriatrics patients⁷ to firearm safety and suicide prevention.⁸ We also find a variety

⁷ NIH Project number 5R33AG057383-05 (available here as of 15/09/2022: <https://reporter.nih.gov/search/r1KYI6wCLE20n-41eLQxoA/project-details/10249263>)
⁸ NIH Project number 3R01MH123491-02S1 (available here as of 15/09/2022: <https://reporter.nih.gov/search/fyRLTgflukO9hVtN4wjpQw/project-details/10448721>)

of health centers and hospitals such as the Denver Health Medical Center or Veterans Affairs Portland Health Care Center which attests to the success of behavioral economics and nudges in penetrating applied medical research.

Nudges are one of the well identifiable behavioral interventions that are a hallmark of behavioral economics. However, behavioral economics also became more applied by becoming increasingly relevant and present in non-academic institutions. In 2017, the OECD identified 202 institutions “applying behavioural insights to public policy”.⁹ Some institutions are directly part of the government like the “Competence Centre on Behavioural Insights” at the European Commission, while others are private institutions that are hired by governments for particular tasks. Private institutions include for-profit entities like the famous “Behavioural Insights Team” or “FehrAdvice & Partners AG” which consult both public and the private sector. There are also non-profit organization like the “Busara Center for Behavioral Economics” dedicated to poverty alleviation most notably in developing countries.¹⁰

These institutions are not only providing consulting services, they are also producers of behavioral economics knowledge through academic publications as applied behavioral economics research creates opportunities for field experiments.¹¹ Such behavioral interventions allow for good control conditions, but also provide a way to test the validity of theoretical behavioral interventions in various settings (Larkin et al., 2019). For example, the Busara Center for Behavioral Economics intentionally applies behavioral economics outside Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies to improve generalizability of behavioral economics insights (Berge et al., 2020, Henrich et al., 2010).¹²

Behavioral interventions stemming directly from behavioral economics became very successful in the last decades, but the last few years have seen an increasing number of criticisms emerging. As mentioned previously, the WEIRD criticism argues that the generalization of behavioral intervention based on evidence gained in WEIRD settings to non-WEIRD settings is justified. The overall efficiency of nudges has been challenged by recent scholarship about the impact of publication bias. Maier et al., (2022) conclude that there is “no evidence for nudging after adjusting for publication

⁹ <https://www.oecd.org/gov/regulatory-policy/behavioural-insights.htm> consulted the 15/09/2022

¹⁰ https://knowledge4policy.ec.europa.eu/behavioural-insights/about_en

<https://www.bi.team>

<https://fehradvice.com/en/>

<https://busaracenter.org>

¹¹ List of academic publications by the Behavioural Insights Team (consulted 15/09/2022):

<https://www.bi.team/our-work-2/publications/?select-publication-types%5B%5D=academic-publication&hidden-s=&hidden-current-page=1#listing>

¹² <https://busaracenter.org/about-us/#our-story>

bias”. Behavioral interventions identified in the literature suffer from publications biases, and while all nudges are not inefficient, their efficacy seems to vary widely in different domains and across different contexts. Finally, and more importantly, the idea that policy should rely more on behavioral, individual, and libertarian paternalistic interventions might have inadvertently led many political issues to be reduced to only their behavioral aspects. Chater and Loewenstein (2022) conceptualize this issue as a fallacy of focusing on the individual behavior (the i-frame) instead of the system in which individuals operate (the s-frame). While they blame “themselves as much as anyone else” (Harford, 2022), behavioral interventions have been “disappointingly modest” and have deflected attention away from systemic intervention (Chater and Loewenstein, 2022, p.1).

[to be added]

[W]e are more generally behavioral scientists, not just economists, and we have published in first-ranked professional journals in biology, anthropology, psychology, sociology, and political science. Our results do not ‘belong’ to economics, and indeed can be evaluated profitably by psychologists, sociologists, and indeed any professional acquainted with the scientific method. The papers published in Science and Nature are extensions of research published widely in all the behavioral sciences. Rather than attempting to discredit neoclassical economics, we expect our findings to be added to its repertoire. (Gintis, 2011, p.101)

4) Conclusions

[to be written]

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