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FROM DEMAND CURVES TO PUBLIC POLICY: INTRODUCTION TO THE SPECIAL ISSUE ON BEHAVIORAL ECONOMICS

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The papers comprising this issue were first presented as part of a meeting sponsored by the Science Board of the *Association for Behavior Analysis, International*, in Chicago, 2011. The conference, entitled "Behavioral Economics: From Demand Curves to Public Policy," was so named to capture a breadth of topics covered by the papers at the meeting, and well represented in the present issue.

The coupling of behavioral economics and behavior analysis is not new. Productive interactions span four decades, with some of the seminal papers appearing in this journal (Hursh, 1980, 1984; Rachlin & Krasnoff, 1983). As a tangible indicator of the growth of the field (or at least the part of the field intersecting most directly with behavior analysis), a 1995 issue of the journal featured 10 papers on behavioral economics, on topics ranging from choice and discounting to behavioral pharmacology and behavioral ecology. The productive trends between behavioral economics and behavior analysis, apparent in the 1995 issue, have continued to the present day. In addition to the sustained development of some branches with strong empirical roots in behavior analysis (e.g., discounting, demand functions), the field has sprouted some new branches, most notably promising new interfaces with the brain, with genetics, and with social behavior.

This productive mix of old and new is on display in the current issue. Several of the papers cluster around the topic of delay discounting. This emphasis is appropriate given the deep roots of discounting phenomena in behavior analysis. Indeed, among the initial violations of classical economic theory were the preference reversals demonstrated in early self-control experiments with pigeons (Rachlin & Green, 1972), ushering in more nuanced discounting methods and models. These methods and models have found their way into a diverse range of populations, including substance abuse, gambling, ADHD, and obesity, across various domains and levels of analysis, including behavioral pharmacology, behavioral neuroscience, and behavioral genetics (see Odum, 2011, for a recent review).

The remarkable consistency in discounting across procedures and populations has suggested to some the possibility of common mechanisms with the potential to unite seemingly disparate domains of research and analysis. James MacKillop, for example, cites the consistencies over time as an important attribute of endophenotypes—heritable mechanisms that may contribute to enduring patterns of addictive behavior. Similarly, Mikhail Koffarnus, David Jarmolowicz, Terry Mueller, and Warren Bickel take the consistency across time and domains as an important component in a trans-disease model—the notion that excessive discounting underlies a range of impulsive-choice problems. Wouter van den Bos and Samuel McClure use the consistency in discounting rates as a point of departure for identifying some important neural substrates of impulsive choice patterns.

While these conceptualizations imply at least some stability in behavior patterns over time and situations, there are also clear exceptions. Following a careful analysis of the evidence across species, procedures, and domains, Leonard Green and Joel Myerson urge caution in interpreting discounting data in relation to enduring trait-like qualities, suggesting instead functional subtypes of impulsive and risky choice. And indeed, even for the conceptualizations based in part on stable behavior patterns, it is often the exceptions that are most useful in pointing the way forward. Koffarnus and colleagues review evidence showing that even trait-like choice patterns can be molded by experience. van den Bos and McClure present a

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brain-inspired model of discounting that may be able to account for findings about which present models are silent. And the behavioral-genetic framework proposed by MacKillop is especially well suited to addressing the strengths and limitations of trait-like concepts.

However these issues are resolved in the coming years, there is little question that they will be better understood through a multidisciplinary approach. Indeed, one of the objectives of the conference was to recruit work from neighboring compatible disciplines to stimulate productive dialogue with behavior analysis. In addition to the aforementioned papers by MacKillop on behavioral genetics and van den Bos and McClure on behavioral neuroscience, John Pearson and Michael Platt combine computational models of reinforcement with risky choice. This is an exciting new area with roots in machine learning and intelligent systems that is developing apace with advances in neuroscience and quantitative analysis of behavior. Because some of these topics may be new to readers of the journal, this and several other papers include additional general background and references, thereby serving as useful tutorials for those wishing to learn more about these areas and how they intersect with behavior analysis.

Another new area ripe for investigation is social behavior. Matthew Locey, Vasiliy Safin, and Howard Rachlin extend discounting methods and models to social contexts, providing new data and building on their recent work on social behavior, showing how social behavior can be conceptualized and understood in cost-benefit terms. Steven Hursh and Peter Roma also approach social behavior from a cost-benefit perspective, using demand-function concepts and methods to quantify the relation between individual and social goods. Together, these two papers serve to illustrate how a broad experimental analysis of social economics might proceed.

In addition to social behavior, Hursh and Roma's far-ranging paper explores some of the implications of an economic analysis of demand and preference for empirical public policy, using transportation and substance abuse treatment for illustration. The emphasis on demand-function analysis is appropriate, given that it was the area first profitably explored in behavior analysis laboratories. The paper thus brings us full circle, showing once again how old concepts are being profitably extended to new arenas.

Collectively, the papers also relate to a broader theme of the conference, that of translational science. Translational research is traditionally defined in terms of application of basic laboratory principles to socially significant problems, and indeed there are many examples of this type of translation in the present issue. But translational science can also be defined more broadly as translation of concepts and methods from one interpretive tradition to another. The papers in the present issue represent this type of translation as well, showing how a relatively small but general set of concepts and models can be applied to an impressive and increasingly diverse range of phenomena—from the neural and genetic basis of addiction to social behavior and public policy.

The Introduction to the 1995 special issue ended with the hope of continued productive interchanges between behavioral economics and behavior analysis (Bickel, Green, & Vuchinich, 1995). There is little question that such productive work has continued, as evidenced by the present articles. While the work presented here does not represent the whole of behavioral economics, it provides a current snapshot of the particular branch that has developed from the cross-fertilization of economic and reinforcement principles. The indisputable success of this approach to these diverse areas of application is promising, but these branches need to be continually nurtured by collaborative efforts. The present issue is an example of but one of many tangible benefits of such cross-disciplinary collaboration.

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