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# The behavior analysis of consumer choice: An introduction to the special issue

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## Abstract

Consumer behavior analysis combines theories and findings from marketing science, consumer research, and behavior analysis/behavioral economics. Research in this field covers the whole gamut of experimental and quasi-experimental designs from traditional laboratory formulations to more open investigations of consumer behavior in simulated and natural environments. A problem that arises is that of interpreting real-world consumer behavior in terms of experimental and survey research. This special issue contains papers that examine consumer choice over a range of laboratory and naturalistic settings, which demonstrates the progress that is being made in this new sub-discipline and exemplifies the variety of interpretations of consumer choice it makes available.

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## 1. Introduction

Consumer behavior has generally been surveyed through cognitive lenses whether the underlying discipline of its students has been psychology or economics. Both ascribe rationality to the consumer, though the word can have rather different meanings in each instance; both generally assume that the consumer *knows* what he or she

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wants, and is capable of obtaining, processing and using the information required to make sensible choices in light of his or her objectives. Choice itself has been viewed as a cognitive activity. On this view, it is usual to distinguish choice from other forms of behavior by pointing out that it involves a multiplicity of possible outcomes, the arousal of conflict as a result of the individual's perception that mutually exclusive outcomes are open to him or her, and an attempt to reduce this conflict by means of cognitive activity (Foxall, 2004).

But there is another view of choice, one which relates it to its consequences, which has proved useful in unifying psychology and economics, and which has practical outcomes for social policy and marketing. It arises from the intersection of a particular school of psychology, behavior analysis, and experimental economics, which together form a field known to its practitioners as *behavioral economics*. This is a rather more restricted use of the term than is usual and requires some explanation.

This behavior analysis which provided one input to behavioral economics derives ultimately though probably increasingly remotely from *radical* or 'Skinnerian' behaviorism which involves the analysis of behavior in terms of its contingent relationships with the consequences it produces. Thus, 'A behavioral contingency consists of a stimulus, a response, and the outcome the response produces in the presence of that stimulus' (Malott, 1986, p. 208). We can summarize the basic paradigm, the 'three-term contingency,' as  $S^D \rightarrow R \rightarrow S^R$  where  $S^D$  is a cue or 'discriminative stimulus,'  $R$  is a response, and  $S^R$  is a reward or 'reinforcing stimulus.' In view of the barrage of criticism aimed at this paradigm as the cognitive revolution entered its ascendancy from the 1960s onwards, this may seem an unpromising basis for a discipline that attempts to analyze and explain modern economic behavior and even to provide managerial and policy advice. But behavior analysts have produced two research programs in recent decades that have profound implications for the study of economic choice.

First, behavior analysis has come to treat subject areas that lie at the very heart of cognitive psychology, among them thinking, decision making and language. The distinction between behavior that is simply the result of the individual's direct contact with the environment ('contingency shaped' behavior) and that which is the result of verbal interventions from others or from the individual him/herself ('rule-governed' behavior) is particularly relevant here. The advent of investigations of stimulus equivalence, and naming, to give two examples, have transformed behavior analysis from a school of psychology that was once easily disparaged to an exciting intellectual and practical exploration of human complexity.

Second, the development of behavioral economics itself has led the analysis of behavior into new areas of application. The realization that the elements of the classic behavioral experiment matched so well the features of the market place opened up a means of testing economic theories not otherwise available. Subjects' responses were an analogue of money or labor, the rewards of their responding were analogous to goods and services bought or wages earned, and the schedule requirements provided an analogue of price or wage rate. Early experiments, conducted with rats and pigeons as subjects, proved valuable not only for demonstrating the basic relationships between behavior and reward that economic theory posited but as a forum for dis-

cussing, if not resolving, policy issues. Both labor and consumer theory have been empirically demonstrated by these means (Kagel, Battalio, & Green, 1995).

But, while investigations that involve animals as subjects are nothing out of the ordinary in experimental psychology, they are a world apart from the kinds of research usually undertaken by marketing scientists. They are pertinent nonetheless to the goal of consumer behaviour analysis: the establishment of an approach to (human) consumer behaviour that relates it to its situational influences, its environmental determinants, its context. Nevertheless, work involving human subjects – usually the inmates of prisons, schools or hospitals taking part in token economy experiments – have allowed these basic findings to be replicated in a quasi-experimental context that bore close resemblance to the market place.

The resulting synthesis of economics and psychology is an impressive case of social science collaboration but it does not go far enough in light of the effects of the marketing-oriented economy on consumer choice. The need to incorporate marketing variables has led to the development of *consumer behavior analysis* (Foxall, 2001, 2002) which brings together the theories and findings of marketing science and behavior analysis/behavioral economics. Recent research in this field has included the whole gamut of experimental and quasi-experimental work from tight laboratory formulations of the traditional kind to more open investigations of consumer behavior in simulated and natural environments.

Consumer behavior analysis is a broadly conceived framework of analysis that draws on economic psychology, behavioral economics and marketing and whose content ranges from the experimental studies we have noted to philosophical, theoretical and non-experimental empirical studies of consumer choice in relation to its situational determinants.

## 2. Science and interpretation

The experimental analysis of non-humans' economic behavior, which has historically dominated the field, is primarily a laboratory-based research that examines basic propositions with respect to the influence of cost and benefit manipulations on relative responding. Although the findings of such research can be valuable in suggesting interpretations of complex human economic behavior that may not be amenable to experimental analysis, the multiple causation of human economic consumption often renders such interpretative accounts piecemeal or suspect because they fail to handle the whole range of influences on consumer choice in naturally occurring situations that have their sources in product characteristics, advertising and other promotional campaigns, competitive pricing strategies, and distribution policies. These characteristics of marketing-oriented economic systems exert a global influence on consumer choice that is potentially within the control of firms – the 'marketing mix'. In addition, non-marketer influences derive from interpersonal (e.g., word-of-mouth) communications among consumers themselves, governmental interventions, the prior experience of customers, and situational influences on purchase and consumption such as temporary stock-outs.

Although a plausible operant interpretation of consumers' product and brand choices necessarily involves the search for naturally occurring analogues of the setting and consequential stimuli that can be shown to influence relative responding in the laboratory, it requires also some recognition of the role of the complex of both price and non-price influences on consumer behavior beyond the laboratory.

Studies of token economies have in some degree bridged the gap between laboratory and everyday life by providing more realistic analogues of naturalistic consumer behavior (a useful review is provided by Winkler, 1980). In addition, laboratory experiments with human subjects have enabled propositions about matching to be examined empirically in a simulated shopping mall context (Hantula, DiClemente, & Rajala, 2001; Rajala & Hantula, 2000), and other experiments have allowed propositions with regard for instance to unit pricing to be examined with human consumers (e.g., Madden, Bickel, & Jacobs, 2000). However, there remain problems of interpreting the behavior of consumers acting in situ and subject to the multiple influences of modern marketing management and the societal influences that shape consumption. Psychology has long attempted to formulate *rules of correspondence* by which the theoretical constructs it employs to denote unobservable operations can be related to observed behavior. The aim of radical behaviorists has generally been to avoid theoretical terms of this kind but we need rules of correspondence of a different sort: rules that relate the findings of laboratory research to the interpretation of everyday life to which we address ourselves.

Operant interpretations of complex behavior also invite, and may benefit from, comparison with other sources of interpretation, notably those derived within the prevailing cognitive paradigm. In cognitive portrayals of choice, the goal-oriented behavior of the decision-taker is influenced by his or her motives, perceptions, beliefs, attitudes, and intentions which are the means and outputs of information reception and processing. Choice is among options whose probabilities differ not only according to their distribution in the external environment but by their portrayal in mental space. Considered behaviorally, however, choice is the rate at which a particular behavior is performed, usually in the context of other competing behaviors (Herrnstein, 1997). On this view, choice is not a single event but the distribution of behavior over time, the proportion of times that A is chosen over B or B over C. The behavioral explanation for choice is sought not in mental deliberations but in the environmental events that accompany the behaviors in question, the pattern of reward and punishment that increases or decreases the probability of those behaviors being repeated. The analysis of any one choice (i.e., any one sequence of behavior) requires the analysis of other behavioral choices that might have been enacted instead and the configurations of reward and punishment that maintain or inhibit them.

Choice has typically been studied experimentally by behavior analysts and behavioral economists as the allocation of behavior between competing alternatives, i.e., between two manipulanda which deliver qualitatively identical reinforcement on unique schedules. The food-deprived non-human participants in most experiments of this kind allocate their behavior by matching relative response rate to relative reinforcement rate, a pattern that suggests an interpretation of more complex allocative

behavior such as brand selection by human consumers on a sequence of shopping trips. While some attempt has been made by behavior analysts and behavioral economists to extrapolate from the laboratory setting in order to provide an interpretation of human choice (e.g., the allocation of limited funds among brands), the complexity of this human activity compared with even the most sophisticated experimental contingencies casts doubt on the adequacy of experimental analogues as means of depicting this aspect of consumer behavior.

### 3. The special issue

This special issue contains both theoretical/methodological, and empirical papers. The paper by Diane DiClemente and Donald Hantula, 'Applied Behavioral Economics and Consumer Choice,' belongs to the first category. It considers the nature of a behavioral perspective on consumer psychology as one founded upon direct observation and measurement of consumer behavior, longitudinal analyses which may employ a small number of participants, and a reliance on the basic theory of behavior analysis for explanatory purposes. The paper provides a useful historical view of the relationship between behavior analysis and consumer psychology from the time of Watson onwards and discusses the two contemporary paradigms for a behavior analysis of consumer psychology, the Behavioral Perspective Model and the Behavioral Ecology of Consumption approaches. The paper concludes by suggesting further development of the two strands (both of which tie consumer behavior to evolutionary theory, an inspiration for Watson's early work) in conjunction with Relational Frame Theory, with the intention of providing a complete account of consumer psychology.

The empirical papers describe a range of experimental styles from those approximating traditional laboratory-based investigation to those involving computer simulation of shopping experiences to quasi-experimental studies of consumers' discounting behaviors, observed consumer behavior in supermarkets, and the analysis of consumers' real-time brand choices. In other words, from the relatively closed behavior setting of the laboratory to the relatively open consumer behavior setting of the ongoing marketplace of everyday transactions. All have their place in the development of consumer behavior analysis, since they argue persuasively against the conventional wisdom that behavior analysis has little to contribute to the study of choice by bringing to the attention of a broader audience of behavioral economists new work in the conceptualization and empirical investigation of consumer behavior.

Paul Smeets and Dermot Barnes-Holmes ('Children's emergent preferences for soft drinks stimulus-equivalence and transfer') discuss the phenomenon of stimulus equivalence in the context of choosing an everyday consumer product. They discuss details of their own and other experimenters' results, considering the different designs employed and candidly admitting the difficulties of designing experiments to provide reliable comparisons with previous empirical work. This open approach enables them to make some illuminating suggestions for further research, based on their own discussion of the inevitable differences between scientifically rigorous laboratory

experimentation and situations arising in the real world. This paper is important for its use of Relational Frame Theory in understanding consumer choice for products that are ordinarily subject to considerable marketing activity and open to aggressive marketplace competition.

Carter Smith and Donald Hantula's paper, 'Pricing effects on foraging in a simulated internet shopping mall,' investigates the effects of price increases upon the percentage of CDs bought in different stores within a simulated internet mall, in the context of foraging experiments. Post-experimental electronic questionnaires established participants' perceptions of selection, price, overall quality of service and so on, making it possible to show the relationship between the cost of the CDs and their later recall of the convenience (or otherwise) of the shopping experience. This paper makes a double contribution, since the theoretical and methodological approaches adopted are wide-ranging and innovative, giving a high degree of environmental control to the investigators, without invalidating the data, so combining results valuable in their own right with a useful way forward for others designing experiments in the future. Once again, the behavioral economics of consumer choice is addressed to the analysis of economic behavior with close real-world analogues.

In 'Discounting delayed and probabilistic rewards: Processes and traits,' Joel Myerson, Leonard Green, Scott Hanson, Daniel Holt, and Sara Estle investigate the relationship between two key phenomena in the field of behavioural economics: temporal and probability discounting (i.e., an individual's tendency to discount delayed or probabilistic rewards). This work is part of a programme of research by these authors on the temporal distribution of economic rewards and the role of consumers' discounting in their decision making. The review by Rachlin (2000), one of the undoubted leaders in the field, is instructive not only as an overview of this approach but for its integration of this kind of research into the wider behavioural analysis of self-control. The reported study aims to determine which equation provides the best fit for probability discounting. Identification of the nature of the relationship between these phenomena is used to speculate on whether temporal and probability discounting reflect the operation of one or more psychological processes or personality traits. For example, if both types of discounting reflect impulsiveness, then it might be that an impulsive individual would engage in steep discounting of delayed rewards (i.e., impatience) but shallow discounting of probabilistic rewards (risk taking), resulting in a strong negative correlation.

Jorge Oliveira-Castro ('Effects of base price upon search behavior of consumers in a supermarket: An operant analysis,') investigated the effects of product base price upon the duration of search behavior of consumers in a supermarket using an operant framework. Two field experiments were conducted to investigate the possible effects of product base price on the duration of search. The results demonstrate systematic effects of base price on search duration, corroborating those found in the literature using laboratory simulations and surveys. No record of consumers' verbal reports about their search patterns was obtained. This type of field study may be useful in investigating the level of correspondence between what consumers say about what they do (in the widely used techniques of interviews and questionnaires) and what they actually do. Here is work that brings the investigation of consumer

decision making in naturalistic settings a stage closer to the marketplace of everyday shopping.

'The behavioral economics of consumer brand choice: Establishing a methodology' by Gordon Foxall and Teresa Schrezenmaier reports an investigation of the economic behavior of individual consumers in naturally occurring settings. Emanating from the fact that most previous work on economic behavior has been conducted with non-human animals or in non-naturalistic settings, the paper is part of a series in a new area of research examining to what extent economic principles apply to brand choice in consumer markets. The authors demonstrate that economic behavior of individual consumers when buying fast-moving consumer goods exhibits both matching and maximization. Most consumers practice multi-brand purchasing and the brands purchased tend to be substitutes. The apparently random purchasing of different, though almost identical, products is explained by slight price differences. Maximization was found but not in an 'absolute' sense, as consumers bought the cheapest product in their set of consideration, rather than the cheapest available to them. These authors' work suggests that both marketing researchers and behavioral economists need to recognize that the findings show some significant variations from their traditional theories, and the paper concludes with an attempt to formulate the kinds of 'rules of correspondence' that will facilitate the required integration.

The final paper is the second of the non-empirical contributions. 'Putting a Radical Socialness into Consumer Behavior,' by Bernard Guerin, discusses the importance of studying consumer behavior in terms of the context in which consumption behavior occurs. The discussion regarding the effects of money on social behavior shows clearly how economic considerations become an important contextual issue when examining consumption decisions. The author encourages the utilization of various intensive methods of research in the study of consumer behavior. While some of the qualitative methods mentioned in the paper are both laborious and time consuming, it is imperative to promote the use of these methods in order to further our understanding of consumption behavior. This is the most wide-ranging paper of all; its ideas could be expanded into several papers. Guerin has long been concerned to integrate the behavior analysis of social interaction with the theories and findings of the broader social sciences (see, for instance, Guerin, 1994), and here he paints a broad picture of possible futures for consumer behavior analysis.

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## References

- Foxall, G. R. (2001). Foundations of consumer behavior analysis. *Marketing Theory, 1*, 165–199.
- Foxall, G. R. (2002). *Consumer behavior analysis: Critical perspectives*. London and New York: Routledge.
- Foxall, G. R. (2004). *Consumer choice: An essay in marketing theory*. London and New York: Palgrave Macmillan.
- Guerin, B. (1994). *Analyzing social behavior: Behavior analysis and the social sciences*. Reno, NV: Context Press.
- Hantula, D. A., DiClemente, D. F., & Rajala, A. K. (2001). Outside the box: The analysis of consumer behavior. In L. Hayes, J. Austin, & R. Flemming (Eds.), *Organizational change* (pp. 203–233). Reno, NV: Context Press.
- Herrnstein, R. J. (1997). In H. Rachlin, & D. I. Laibson (Eds.), *The matching law: Papers in psychology and economics*. Cambridge, MA: Harvard University Press.
- Kagel, J. H., Battalio, R. C., & Green, L. (1995). *Economic choice theory: An experimental analysis of animal behavior*. Cambridge: Cambridge University Press.
- Madden, G. W., Bickel, W. K., & Jacobs, E. A. (2000). Three predictions of the economic concept of unit price in a choice context. *Journal of the Experimental Analysis of Behavior, 73*, 45–64.
- Malott, R. W. (1986). Self-management, rule-governed behavior, and everyday life. In H. W. Reese, & L. J. Parrott (Eds.), *Behavior science: Philosophical, methodological and empirical advances* (pp. 207–228). Hillsdale, NJ: Lawrence Erlbaum.
- Rachlin, H. (2000). *The science of self-control*. Cambridge, MA: Harvard University Press.
- Rajala, A. K., & Hantula, D. A. (2000). Towards a behavioral ecology of consumption: Delay-reduction effects on foraging in a simulated internet mall. *Managerial and Decision Economics, 21*, 145–158.
- Winkler, R. C. (1980). Behavioral economics, token economies, and applied behavior analysis. In J. E. R. Staddon (Ed.), *Limits to action: The allocation of individual behavior* (pp. 269–297). New York: Academic Press.