

Society for the Quantitative Analyses of Behavior
41st Annual Meeting, May 24 - May 25, 2018
Manchester Grand Hyatt, San Diego, CA



sqab



The Society for the Quantitative Analyses of Behavior (SQAB) was founded in 1978 by M. L. Commons and J. A. Nevin to present symposia and publish material which bring a quantitative analysis to bear on the understanding of behavior. This International Society holds its annual meeting in conjunction with the Association for Behavior Analysis International (ABAI). Talks at SQAB focus on the development and use of mathematical formulations to characterize one or more dimensions of an obtained data set, derive predictions to be compared with data, and generate novel data analyses. You can retrieve more information about SQAB at our website, sqab.org

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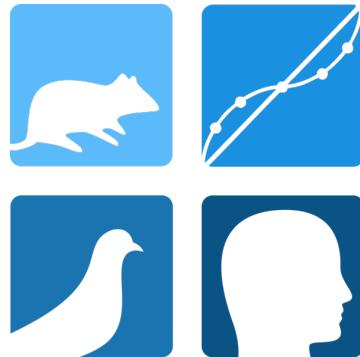
Welcome to *∫*QAB 2018

11 am - 12:45 pm Registration, outside Hyatt Grand Hall B

12:45 pm **President's Introduction**

Lewis Bizo

University of New England (Australia)



*∫*QAB

SQAB thanks the Association for Behavior Analysis International (ABAI) for generous support that helped to make this meeting possible, and encourages SQAB participants to take advantage of the ABAI convention that begins immediately following the SQAB program. The ABAI Program includes many presentations on experimental and applied behavior science. A separate registration fee and badge are required to attend the ABAI meeting.

1 - 1:40 pm

Neuroenergetics

Peter R. Killeen

Arizona State University (USA)

This brief presentation surveys four causes of Attention Deficit Hyperactivity Disorder (ADHD). The brain constitutes 2% of the body's weight but exploits 20% of its energy. Energetic insufficiency in neurons due to inadequate lactate supply is implicated in numerous neuropathologies such as ADHD; this shortfall in energy supply to neurons constitutes (I argue) the material cause of ADHD and its comorbidities. The bottleneck occurs in the transport between blood capillaries through astrocytes to neurons. The formal cause of ADHD – its characterization – is drawn as a diffusion model, which yields response-latency distributions, error rates, and other predictions for typical individuals engaged in focused activities; and for special populations with neurodevelopmental disorders. It predicts the effects of stimulants, trial spacing, and fatigue. The implications of this behavioral neuroenergetics theory are then explored in the wider context of the positive manifold of abilities, disabilities, and psychiatric comorbidities.

1:40 - 2:20 pm

The Need for Research on the Relationship Between Degrees of Behavior and Degrees of Reinforcement

Michael E. Young

Kansas State University (USA)

The environment contains many continuous relationships in which more of a behavior can produce more of a desired outcome. Throwing harder makes something go farther. Eating faster creates greater satiety sooner. Waiting longer to cash in an investment means higher returns. However, most studies examine categorical reinforcement – a behavior is reinforced or it is not – and does not examine within-trial variation in reward magnitude produced by changing behavior. In addition to a plea for more research on these types of relationships, I will present my own recent work on behavioral environments in which there is a continuous within-trial relationship between wait time and the magnitude of a reward.

2:20 - 2:45 pm

Break

2:45 - 3:25 pm

Reward Predictions and Dopamine: What is the Computation?

Angela Langdon

Princeton University (USA)

Anticipating the timing of rewards is as crucial to adaptive behavior as predicting what those rewards will be. Neural and behavioral correlates of reward prediction errors indicate that predictions in the brain can be remarkably temporally precise. How are temporally precise reward predictions dynamically represented and learned in the brain?

Motivated by recent experimental results that demonstrate a dissociation between predictions about the amount and timing of upcoming rewards in dopaminergic prediction error signals, I will present a computational framework for reward prediction and learning in which both the value and duration of hidden task states are learned concurrently. This model demonstrates how prediction errors emerge from an inference process that evolves in time over the true underlying state of the task. Our model suggests that reward timing ‘gates’ the broadcast of prediction errors, providing a testable neural mechanism for the computation of error signals during reward prediction and learning.

3:25 - 4:05 pm

**Beyond the "Conceptual Nervous System":
Promises and Pitfalls of Computational Cognitive Neuroscience**

Fabian A. Soto

Florida International University (USA)

Model mimicry and lack of identifiability are pervasive problems in cognitive modeling. That is, models implementing two very different cognitive processes often make the exact same behavioral predictions. Computational cognitive neuroscience (CCN) offers a solution to this problem, by including neurobiological constraints in computational models of behavior and cognition. Skinner famously criticized the use of hypothetical neural structures for the explanation of behavior (the “Conceptual Nervous System”), a criticism that is still valid regarding some network models of cognition. However, many CCN models are built to reflect as much as possible about the actual neural structures thought to underlie a behavior. I give examples of these models, which go beyond the “Conceptual Nervous System” and offer a true integration of behavioral and neural levels of analysis. I also show that the CCN approach is not without pitfalls, and warn against modeling focused merely on “proofs of concept” and neurobiological “plausibility”.

4:05 - 4:30 pm

Break

4:30 - 5:10 pm

A Likelihood Ratio Model of Recognition Memory in the Real World

John T. Wixted

University of California, San Diego (USA)

Estimator variables are factors that can affect the accuracy of eyewitness identifications but that are outside of the control of the criminal justice system. Examples include (1) the duration of exposure to the perpetrator, (2) the distance between the witness and the perpetrator at the time of the crime, and (3) the passage of time between the crime and the identification. Suboptimal estimator variables have long been thought to reduce the reliability of eyewitness identifications (IDs), but recent evidence suggests that this is not true of initial IDs made with high confidence. The evidence suggests that while suboptimal estimator variables decrease discriminability (i.e., the ability to distinguish innocent from guilty suspects), they do not decrease the reliability of IDs made with high confidence. A signal-detection-based likelihood ratio account – which has long been a mainstay of basic theories of recognition memory – naturally accounts for these findings.

5:10 - 5:50 pm

Evolutionary economics: Value-based decision-making in chimpanzees, bonobos, and humans

Alexandra G. Rosati

University of Michigan (USA)

What are the origins of human economic behavior? Comparative studies of decision-making in our closest living relatives – chimpanzees (*Pan troglodytes*) and bonobos (*Pan paniscus*) – are critical to disentangle the biological foundations of human choice. I will present evidence that humans and nonhuman apes share similar patterns of decision-making in several contexts, including preferences for risk (variability in payoffs), ambiguity (when lacking information), and framing effects (choices presented as a loss or a gain). However, reward currency also modulates human decision-making: people respond differently to choices about evolutionarily-novel rewards such as money, compared to choices about biologically-central rewards such as food. Together, this evidence indicates that human economic behaviors have evolutionary roots as far back as the last common ancestor with nonhuman apes, but humans may also have derived psychological skills for making decisions about novel types of abstract rewards.

7 - 9:30 pm

First Poster Session & Cash Bar, Hyatt Grand Hall B

7:45 - 9 am

Registration, Hyatt Grand Hall B

9 - 9:40 am

**Elasticity of Demand and Preference for Cocaine in Rats:
Individual Differences and Effects of Economy Type**

David N. Kearns

American University (USA)

Three experiments investigated 1) the relationship between elasticity of demand and choice in rats working for cocaine and non-drug reinforcers, and 2) the effect of economy type (open vs. closed) on demand and preference. Cocaine-preferring rats' demand for cocaine was less elastic, and their demand for non-drug alternatives was more elastic, than that of non-cocaine preferring rats.

Opening the economy for saccharin, by giving rats post-session access to unlimited saccharin, caused its demand to become more elastic. In contrast, opening the cocaine economy had no effect on demand for cocaine, but instead caused demand for saccharin to become more elastic. Rats were most likely to choose saccharin over cocaine when the economies for both of these reinforcers were closed. These results suggest that appreciation of individual differences in drug and non-drug reinforcer value, plus the conditions of availability that affect those values, could help understand choices made in addiction.

9:40 - 10:20 am

**Working for the Better Option:
Neural Mediators of Effortful Choice Behavior**

Alicia Izquierdo, Evan E. Hart

University of California, Los Angeles (USA)

Cost-benefit decision-making involves the evaluation of time, risk, and effort. We have recently probed the mechanisms of effortful choices using a paradigm where rats select between a high effort, preferred option (PR lever pressing for sucrose pellets) versus a low effort, less preferred option (freely-available lab chow). First, I review results using traditional interference methods that reveal involvement of anterior cingulate cortex (ACC) and basolateral amygdala (BLA) in these choices. I then discuss our DREADDs experiments suggesting a more nuanced involvement of these regions in decision making. Lastly, I highlight our recent study of rats that underwent prolonged methamphetamine (meth) intravenous self-administration on later choices involving food rewards. We found increased cost sensitivity in meth-experienced rats, accompanied by decreased activation in ventral striatum (expectedly), as well as in ACC and BLA. These results suggest a common underlying mechanism in support of the evaluation of an effort cost for drug and food reward.

10:20 - 10:45 pm

Break

10:45 - 11:25 am **On the Behavioral Economics of Medication Choice**

David P. Jarmolowicz

University of Kansas (USA)

Effective medications are available for many conditions, yet patients frequently fail to take them as recommended. Although the variables that support medication adherence are complex, many reduce to patient choice. The current talk will focus on a behavioral economic analysis of multiple sclerosis (MS) patients' choices to take their disease modifying therapies (DMTs). DMTs are medications which slow the progression of MS symptoms. These disease progressions, however, are erratic and DMTs consistently bear a risk of mild to severe side effects. Given that the risks and benefits of taking DMTs are probabilistic, insights from probability discounting were leveraged to describe patient choice across a wide range of DMT efficacies, side effect severities, and side effect severities. Parameters from our behavioral economic model were significant predictors of DMT adherence and related to the success of behavioral interventions aimed at improving DMT adherence.

11:25 – 12:05 pm **Behavioral Processes Underlying Sexual Risk Behavior: The Importance of Domain Specificity in Clinically Relevant Discounting Research**

Matthew W. Johnson

Johns Hopkins University School of Medicine (USA)

Greater delay discounting of money is often observed in clinical populations. The Sexual Discounting Task was developed to determine the effect of delay in hypothetical condom use decisions in casual sex scenarios. Results show delay discounting of condom-protected sex is hyperbolic in form, sensitive to partner characteristics, and related to self-reported sexual risk behavior. Despite thousands of studies examining drug use and sexual risk, few studies have administered drugs to people to examine sexual risk behavior. Our research shows that cocaine and alcohol increase delay discounting of condom-protected sex under certain conditions, and, using a related task, increase sexual probability discounting (the effect of infection acquisition uncertainty on unprotected sex). Drug administration caused no change in delay and probability discounting of money. These data suggest sexual risk behavior depends on discounting processes. The role of behavioral processes in pathological behavior may go unrecognized if only investigating monetary outcomes.

12:05 - 1:35 pm **Lunch - SQAB Executive Committee Meeting**

1:35 - 2:15 pm

Stimulus Learning in Zebrafish

Ruth M. Colwill

Brown University (USA)

Within a week of fertilization, a zebrafish larva has developed a robust behavioral repertoire that includes the ability to learn about visual and auditory-vibrational stimuli. In this talk, I will describe several experiments from my laboratory using an assay we devised to study stimulus learning. Our basic procedure involves presenting in phase 1, either a moving visual stimulus or an identical but stationary visual stimulus; and then, in phase 2, presenting all larvae with the moving visual stimulus. Differential responding is evident between larvae in phase 2, with those that were familiarized with the moving stimulus in phase 1 exhibiting significantly less freezing or avoidance. I will present the results of our research using this assay to examine the conditions, content and expression of stimulus learning. I will briefly discuss how this assay may be used to leverage the zebrafish to address clinically pressing issues including developmental disorders and Alzheimer's.

2:15 – 2:55 pm

Rats! Quantitative Behavioral Genetics

Abraham A. Palmer

University of California, San Diego (USA)

I will discuss two quantitative behavioral genetics projects that my lab is working on. In the first half of my talk, I will describe a genome wide association study that we performed for delay discounting using 23,271 human subjects. We identified one genome-wide significant association and also used the data to explore genetic correlations between delay discounting and behavioral, psychiatric and physiological endpoints. I will also describe a large, ongoing effort to perform GWAS in an outbred rat population; this effort involves about 10,000 rats. We are studying a wide-range of phenotypes including Pavlovian conditioned approach, nicotine-, cocaine- and oxycodone-self administration, cocaine avoidance learning, sensation seeking, inattention, impulsivity/delay discounting, habituation and others. While I will not describe the behavioral paradigms or results of this study in detail, I will discuss the overall strategy and the ways in which our data, which is publically available, can be used for creative secondary analyses.

2:55 - 3:20 pm

Break

3:20 - 4:00 pm

Modeling the Dynamics of Choice with the Generalized Matching Equation

Brian K. Martens

Syracuse University (USA)

The generalized matching equation provides an excellent description of choice in both humans and non-humans following extended exposure to concurrent reinforcement schedules. A growing body of research has also begun using the generalized matching equation to model the dynamics of choice in transition. This paper describes common elements for modeling steady state and dynamic choice (e.g., log2 behavior ratios as measures of choice, estimates of sensitivity and bias), as well as experimental arrangements (e.g., alternating schedule pairs) and analytic strategies (e.g., use of programmed versus obtained reinforcer ratios, calculation of interreinforcer preference) specific to modeling dynamic choice. Examples from basic and translational studies are provided supporting cross-species generality in the dynamics of choice by showing that; (a) choice from a previous component carries over to the next component, (b) sensitivity values increase steadily with continued exposure to components, and (c) each reinforcer delivery pushes behavior toward the just reinforced alternative.

Student Presenter Series

4:00 – 4:07 pm

The Effects of Serotonergic Hallucinogens on Interval Timing Behavior of Mice

Basak Akdogan, Sophie Dewil, Brian Cotten, Amita Wanar,

Jay Gingrich, Peter Balsam

Columbia University (USA)

To investigate the effects of serotonergic hallucinogens on timing behavior, we administered 2,5-dimethoxy-4-iodoamphetamine (DOI; 0.3, 1.0, 3.0 mg/kg), a 5-HT2 receptor agonist, to mice while they performed a duration discrimination task. We found that DOI administration decreased the accuracy and precision of duration discriminations without changing the number of trials completed on drug days. Specifically, higher doses of DOI administration flattened and shifted the response functions to the right, indicating that mice were more variable in their temporal choices and had a higher tendency to categorize experienced durations as short. These findings have implications regarding the neural basis of interval timing and the cognitive dysfunction observed in neuropsychiatric disorders linked with impaired serotonergic signaling.

4:07 - 4:14 pm

Candidates for the Contemporary Quantitative Model of Punishment

Bryan Klapes, Steven Riley, J. J McDowell

Emory University (USA)

Klapes, Riley, & McDowell (2018) showed that no previously developed matching law-based models of punishment quantitatively outperformed the generalized matching law (GML; Baum, 1974) when fitted to a set of schedules of VI reinforcement with superimposed VI punishment schedules. They argued that the reason these models were not robustly superior to the GML was due to theoretical shortcomings in their development. Here, we present new models based on the competitive-suppression theory (Deluty, 1976), direct-suppression theory (de Villiers, 1977; Farley & Fantino, 1978), and concatenated generalized matching law (Rachlin, 1971; Killeen, 1972). We also present a prospective study design that would allow us to compare both the qualitative predictions made by these models and their quantitative ability to explain the data.

4:14 - 4:21 pm

The Effects of Time in Extinction on Resurgence of Destructive Behavior in Children with ASD

Billie J. Retzlaff, Andrew R. Craig, Wayne W. Fisher,

Brian D. Greer, Ashley M. Fuhrman

University of Nebraska Medical Center, Munroe-Meyer Institute (USA)

Applied researchers have become increasingly interested in examining variables that contribute to the resurgence of destructive behavior. Behavioral Momentum Theory suggests time in extinction predicts obtained levels of resurgence, with higher levels of resurgence being observed following briefer exposures to extinction (Nevin & Shahan, 2011). Using a three-phase procedure, we examined resurgence of destructive behavior following relatively long and short exposures to functional communication training (i.e., differential reinforcement with extinction) for three children with autism spectrum disorder (ASD). Reliable differences in resurgence were not observed for any of the three participants. We discuss these findings in relation to Behavioral Momentum Theory and other available theories of resurgence (e.g., Resurgence as Choice).

4:21 - 4:28 pm

Observing for, and Control by, FR 1 Correlated Stimuli

Eric J. French, Mark P. Reilly

Central Michigan University (USA)

The purpose of the current experiment was to investigate both the reinforcing and discriminative functions of stimuli predictive of a fixed-ratio (FR) 1 reinforcement contingency. In Phase 1, four rats lever pressed under a multiple schedule FR 1, extinction schedule, where the FR 1 was signaled with a light stimulus. The duration of the FR 1 and extinction components was 30 s and 120 s, respectively. In Phase 2, a mixed schedule where the stimulus light flashed during both components and a lever press on an observing lever produced the multiple schedule stimuli for 10 s was implemented. Observing was not maintained despite the discriminative function of the light. Furthermore, inferring stimulus control required novel metrics that will be discussed.

4:28 - 4:35 pm

Mice Can Learn a Complex Instrumental Olfactory Patterning Task

Carter W. Daniels, Jorge I. Espinoza, Tanya A. Gupta,
Brian H. Smith, Federico Sanabria
Arizona State University (USA)

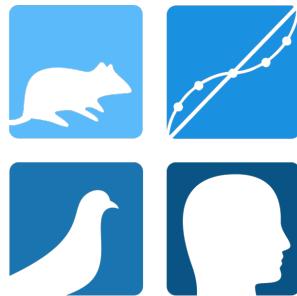
Olfactory stimuli are volatile, changing in both quality and quantity over time and space. This intrinsic variability of olfactory stimuli suggest that they are configurally represented in learned associations. It is currently unclear, however, whether the Rescorla & Wagner (1972) model or the Pearce (1987) model better account for the acquisition of these configurations. To test these models, 12 mice were trained either with or without odors in a novel instrumental olfactory patterning task. Mice trained with odors mastered the task; the Pearce model appears to describe their performance better than the Rescorla-Wagner model. Thus, mice appear to master a complex odor patterning task by acquiring a distinct configurational representation of odor mixtures.

4:35 - 4:39 pm

Soft Commitment as a Mechanism to Prevent Preference Reversals

Juhan Lee¹, Ricarda K. Pritschmann¹, Hannah Milhorn², Richard Yi¹
¹*The University of Florida (USA)*, ²*University of Pennsylvania (USA)*

Siegel and Rachlin (1995) proposed that dynamic inconsistency (i.e., preference reversals) may be prevented by the establishment of repeated larger-later (LL) choices over time. We examined this hypothesis amongst 90 college students, randomized into one of two conditions for a 28-day, daily text-messaging commitment phase: one designed to establish commitment to the LL, and one designed to establish no commitment. Preference between the LL and smaller-sooner (SS) outcome was assessed over a subsequent, 8-day choice phase. No differences were observed between groups in the choice phase ($p = 0.599$). However, patterns of choice consistent with commitment during the choice phase was associated with lower DD at follow-up ($p < 0.001$) despite no differences at baseline.



fQAB

4:40 - 4:45 pm

Joseph V. Brady Impactful Research Award
Presented by Amy Odum, *JEAB* Editor
Utah State University (USA)

Closing Remarks

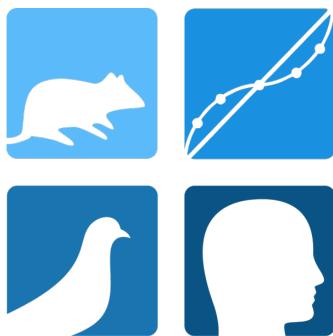
Lewis Bizo
University of New England (Australia)

4:45 – 5:15 pm

Business Meeting
All SQAB members welcome – Hyatt Grand Hall B

7 - 9:30 pm

Second Poster Session & Cash Bar, Hyatt Grand Hall B



*s*QAB

fQAB Invited Preeminent Tutorials: From Basics to Contemporary Paradigms

SQAB Preeminent Tutorials will be held in the San Diego Ballroom D, Marriott Marquis as part of the annual meeting of the Association for Behavior Analysis International

10 - 10:50 am

Relational Frame Theory: Past, Present, and Future

Dermot Barnes-Holmes

Ghent University (Belgium)

Chair: Michael J. Dougher

The University of New Mexico (USA)

The seminal research on equivalence relations by Sidman (1994) and colleagues, which commenced in the early 1970s, led in the mid-1980s to the development of relational frame theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001). The tutorial will present an overview of this 30 year-old unfolding research story and will consider some empirical and conceptual issues that appear to require focused attention as the story continues to unfold across the coming decades. In particular, the tutorial will commence by focusing on the historical and intellectual roots of RFT, identifying the work of Darwin, Wittgenstein, Skinner, and particularly Sidman as critically important. The basic units of analysis proposed by RFT, as a behavior-analytic account of human language and cognition, will then be considered. The impact these analytic units have had, and still have, on RFT research will also be reviewed. A relatively new RFT concept, known as the multi-dimensional multi-level (MDML) framework will be presented. A recent model of specific properties of relational framing, the differential arbitrarily applicable relational responding effects (DAARRE) model, will also be considered. Finally, a case will be made to integrate the MDML and the DAARRE model into a hyper-dimensional, multi-level (HDML) framework.

11 - 11:50 am

Contextual Behaviorism: A Panel with Discussion

Chair: Yvonne Barnes-Holmes

Ghent University (Belgium)

Caio Miguel

California State University – Sacramento (USA)

Ruth Anne Rehfeldt

Southern Illinois University – Carbondale (USA)

Jonathan Tarbox

University of Southern California (USA)

12 - 12:50 pm

Open-Sourcing Behavior Analysis: Technology for Enhancing Research and Practice

Shawn P. Gilroy

National University of Ireland, Galway (Ireland)

Chair: Donald A. Hantula

Temple University (USA)

This tutorial provides a primer on open-source software designed for behavior analysts and behavioral scientists. The review includes an overview of existing works and highlights software designed to extend the range and precision of behavior analytic work. This tutorial also discusses the emerging role of open-source software and software repositories as necessary adjuncts to peer-reviewed works and evidence-based tools. For researchers, open-source repositories provide an additional means for increasing the transparency, replicability, and extendibility of existing approaches. For practitioners specifically, several open-source tools provide applied behavior analysts with additional clinical information that was previously unavailable without substantial time, complicated data collection, and statistical training. Topics covered will include delay discounting, applied behavioral economics, and severe behavior and the tutorial provides examples of how such software can be applied in both clinical work and research. The specific operations performed by these tools include non-linear curve fitting, model selection, inter-rater reliability, and time-based lag sequential analyses.

3 - 3:50 pm

Selection by Scientific Consequences in the Ecology of Behavior Analysis

Elizabeth G. E. Kyonka

University of New England (Australia)

Chair: Adam E. Fox

St. Lawrence University (USA)

Ecology is the study of how organisms relate to one another and to their physical environment. This tutorial presents three insights from an ecological approach to investigating the scientific behavior of behavior analysts. First, longstanding discussions of "foxes" and "hedgehogs" have divided us into behavior analysts who use a broad range of skills and those who rely on a more specialized skillset, but additional categories may be valuable as well. Second, we are all products of the training we receive. From an ecological perspective, behavior analysis training programs can be K-selective or r-selective, either investing heavily in a small number of students or training as many students as possible, with less time and resources invested in each one. Finally, organizing behavior analysis research into a taxonomy, as ecologists have organized life on earth, may help to identify knowledge gaps and emerging areas of future research. One system classifies the spectrum of empirical behavior analysis research into tiers based on the research subjects, target behavior, relevant stimuli and setting used. Viewing behavior analysts, training programs, and research output as an ecosystem can enable us to apply the enormously successful methods of science to our own affairs.

4 - 4:50 pm

Behavioral Economics and Public Policy

Steve R. Hursh

*Institutes for Behavior Resources, Inc. &
Johns Hopkins University School of Medicine (USA)*

Chair: Derek D. Reed

Kansas University (USA)

Much of public policy has to do with how to formulate policy to either directly influence human behavior toward some common goal or consider the indirect effects of public policy on human behavior. From a behavior analytic point of view, public policy designed to influence behavior can manipulate discriminative control of behavior through advertising and education, offer reinforcers as incentives to shift behavior toward more productive or healthy choices, or introduce costs or penalties to discourage destructive or unhealthy choices. Underlying nearly all public policy decisions is a need to understand what sorts of things people want—what do people desire and how much will they pay for the things that they desire. Effective public policy harnesses our natural desires and directs them toward more healthy and productive outcomes by offering new and better alternatives, lowering the perceived costs of desired alternatives, and discouraging less desirable alternatives. Framed in this way, we can see that public policy is all about behavioral economics—the science that quantifies the essential value of commodities and defines the cost/benefit relationships associated with those commodities. In this tutorial I will explain scientific principles and methods for quantifying essential value and demand for alternative goods. I will draw on animal studies using drugs as reinforcers, human studies of drugs as reinforcers and other commodities, and studies of both isolated demand for single goods and competing demand between several goods. I will show extrapolations of these principles to public policy to stimulate future research and application beyond the bulk of prior research. I will conclude by demonstrating that impulsive behavior that is also a focus of behavioral economics and public policy is, at its core, another way to look at the relative essential value of goods, with time as the dimension of cost.

5 - 5:50 pm

Behavioral Economics and Public Policy: A Panel with Discussion

Chair: Matthew Johnson

Johns Hopkins University School of Medicine (USA)

Mikhail Koffarnus

Virginia Tech Carilion Research Institute (USA)

Suzanne Mitchell

Oregon Health & Science University (USA)

Bethany Raiff

Rowan University (USA)

SQAB Invited Preeminent Tutorials are recorded and made available on iTunes and YouTube:
youtube.com/c/SocietyfortheQuantitativeAnalysesofBehavior

7 - 9:30 pm

First Poster Session & Cash Bar

Improving Punishment Model Selection Power by Blending Individual and Group Data

Steven Riley, Bryan Klapes, J. J McDowell (Emory University)

Androids Based on the Behavioral Developmental and Evolutionary Model of Hierarchical Complicity

Anisha Shrestha Baidya (Dare Association)

The First Three Developmental and Evolutionary Behavioral Stages

Mansi Jitendra Shah (Dare Association)

Respondent Conditioning Adaptive Neural Networks

Simran Trisal Malhotra, Michael Lamport Commons (Dare Association)

The Role Of Hippocampal Field CA1 In Controlling Stimulus Generalization: A Neurocomputational Model

Sanjay Narasiwodeyar, Fabian A. Soto (Florida International University)

Acquisition and Maintenance of Fixed-Minimum Interval Performance is Impaired in Cortical GABAergic Neuron Deficient Mice

Denise Inguito, Tanya A. Gupta, Carter W. Daniels, Abraham Coury, Kenji Nishimura, Jason Newbern, Federico Sanabria (Arizona State University)

Fixed Interval Performance of Rats: A Comparison of VPA Autism Model and Neurotypical-Developing Rats

Alexis Sotelo, Jessica Parkinson, Rodney D. Clark (Allegheny College)

The Preliminary Effects of Nicotine on Maladaptive Alcohol Drinking

Isabella Stuart, Amy L. Odum, Charles C. J. Frye (Utah State University)

Retrospective Self-Reports Underestimate Alcohol Use Following Successful Contingency Management Treatment

Brent A. Kaplan, Mikhail N. Koffarnus (Virginia Tech Carilion Research Institute)

Cue-Motivated Reward Seeking and Response Inhibition in Adolescent and Adult Rats

Andrew T. Marshall, Christy N. Munson, Sean B. Ostlund (University of California, Irvine)

The Effects of the CB1 Receptor Antagonist Rimonabant on Sucrose Consumption and Pavlovian-to-Instrumental Transfer

Christy N. Munson, Andrew T. Marshall, Sean B. Ostlund (University of California, Irvine)

Twin Peaks: Effects of d-Amphetamine on Mixed Peak-Interval Schedules in Pigeons

Jeremy M. Haynes, Amy L. Odum (Utah State University)

Electronic Cigarette Smoking Topography as a Function of Flavor Preference and E-liquid Nicotine Concentration

Elizabeth A. Hogan, Allison N. Tegge, Mikhail N. Koffarnus
(Virginia Tech Carilion Research Institute)

Effects of Sub-chronic Delta-9-Tetrahydrocannabinol Administration on Schedule-Induced Drinking in Rats

Esmeralda Fuentes-Verdugo, Gabriela E. López-Tolsa, Ricardo Pellón, Miguel Miguéns
(Universidad Nacional de Educación a Distancia)

Episodic-like Memory: Effects of Aging, Behavioral Interventions, and Cholinergic Activity
Brynn T. Critcher, Anne Mains, Sarah L. Stuebing, Kimberly Kirkpatrick (Kansas State University)**Bupropion Reverses Impulsive Behavior in Female Rats Treated with Nicotine**

Javier Ibias Martin, Arbi Nazarian (Western University of Health Sciences)

Hypothetical Purchase Task Assessing the Reinforcing Properties of Prescription Stimulant Abuse Among Non-Using College Students

Matthew J. Dwyer, Jovanna Beardsworth, Alicia Burke, Connor Burrows, Bethany Raiff, Claudia Drossel, & Kimberly C. Kirby (Rowan University)

Quantifying Antiretroviral Medication Adherence in Adults Living with HIV

Shrinidhi Subramaniam, August F. Holtyn, Kenneth Silverman
(Johns Hopkins University School of Medicine)

A Behavioral Economic Analysis of Demand for Gym Membership

J. Brown, K. Davis, W. Donlin Washington (University of North Carolina - Wilmington)

Evaluating Demand for Safe Sex in an Undergraduate Population Using a Condom Purchase Task

Joshua D. Harsin, Brett W. Gelino, Derek D. Reed (University of Kansas), Matthew W. Johnson, Meredith S. Berry (Johns Hopkins University)

Quantifying Demand for Fake IDs in College Students - Predictors and Outcomes

Rachel N.S. Foster, Londonne O. Ayers, Derek D. Reed (University of Kansas), Margaret P. Martinetti, Melissa Bartley (The College of New Jersey)

Measuring Loss Aversion with a Mixed-Gamble Task: Effects of Magnitude and Ease of Divisibility

Ryan J. Becker, Elias Robles (Arizona State University)

Two Types of Impulsivity in Two Rat Models of ADHD

Emma J. Visser, Alycia M. Nicholson, Adam E. Fox (St. Lawrence University)

Social and Delay Discounting: Similarities, Differences and Interactions
Vasiliy Safin, Howard Rachlin (Stony Brook University)

Gain-Loss Sequence Effects and Asymmetry in Delay and Probability Discounting
Gideon P. Naudé, Allyson R. Salzer, Derek D. Reed (University of Kansas)

**Progressive Delay of Reinforcement: Effects on Response Rate,
Post-Reinforcement Pause, and Response Induction**

Robert S. LeComte, Shea M. Lemley (University of Kansas), Alicia S. Brown (Haskell Indian Nations University), Logan L. Strasburger, David P. Jarmolowicz (University of Kansas)

Effects of Time and Discounting Task Type on Retest Reliability of Delay Discounting for Food
Luis R. Rodriguez, Yaeun Lee, Erin B. Rasmussen (Idaho State University), Stephen H. Robertson (University of Michigan)

The Effect of Disrupted Insulin Signaling on Impulsive Choice
Jesseca R. A. Pirkle, Catherine C. Steele, Brynn T. Critcher, Kimberly Kirkpatrick (Kansas State University)

Attentional Processing: Replication and Extension of Selection Bias as a Predictor of Intertemporal Choice Behavior
Dylan Rutter, Erin Townsend, Daniel Holt (James Madison University)

Delay Aversion Reduction as a Potential Mechanism of Delay-Exposure Training
Sara Peck, Nya Harper, Kyle Swanson, Kailey Morrissey, Greg Madden (Utah State University)

Food-Secure and Food-Insecure Women Differ Across Magnitudes of Delay Discounting for Food and Money
D. Kyne-Rucker, L. R. Rodriguez, B. Perschon, E. B. Rasmussen (Idaho State University)

Sex Differences in the Efficacy of Time-based Interventions to Promote Self-control
Kelsey Panfil, Carrie Bailey, Annie Mains, Ian Davis, Aaron Schnegelsiepen, Kimberly Kirkpatrick (Kansas State University)

Tagging Constituents of Fixed- and Peak-Interval Performance in Rats Reveals Dissociable Components of Interval Timing
Carter W. Daniels, Federico Sanabria (Arizona State University)

An Automated Task for Evaluating the Discriminative Effects of Reinforcers with Children
Corina Jimenez-Gomez, Adam T. Brewer, Christopher A. Podlesnik (Florida Institute of Technology)

7 - 9:30 pm

Second Poster Session & Cash Bar**The Effects of Near-Win Rate on the Choice between Two Gambling Situations in Rats**

Paola López-García (Universidad de Xalapa), Ara Varsovia Hernández Eslava (Universidad Veracruzana), Jorge A. Ruiz (Universidad Autónoma de Baja California)

Rats are Optimal in a Procedure Analogue to Human Gambling Behavior

Rodrigo Alba, Daniel Maldonado, Emmanuel Caballero, Vladimir Orduña (Universidad Nacional Autónoma de México)

Time as the Main Dependent Variable in Situations of Choice and Decision-Making

Bruna M B. S. França, Yuri S. Andrade, João C. Todorov (University of Brasília)

Soft Commitment as a Mechanism to Prevent Preference Reversals

Juhan Lee, Ricarda K. Pritschmann (University of Florida), Hannah Milhorn (University of Pennsylvania), Richard Yi (University of Florida)

Effect of STI Treatment Messaging on Individuals' Sexual Risk-Taking Behavior

Neo Gebru, Richard Yi (University of Florida)

Schedule-Induced Behaviours Minimize Differences Between SHR and WKY Rats in a Delay Discounting Task

Sergio Ramos, Gabriela E. López-Tolsa (Universidad Nacional de Educación a Distancia), Espen A. Sjoberg (Oslo Metropolitan University), Ricardo Pellón (Universidad Nacional de Educación a Distancia), Espen B. Johansen (Oslo Metropolitan University)

Effects of Activity-Based Anorexia in Female Rats as Measured on a Progressive Ratio Schedule

Ana de Paz, Pedro Vidal, Ricardo Pellón (National Distance Education University)

Effects of Non-Contingent Aversive Stimulation on Self-Control in Rats

Camilo Hurtado-Parrado, Angélica Gómez, Julián Cifuentes (Fundación Universitaria Konrad Lorenz), Alejandro Segura (Universidad de Guadalajara)

Effects of Different Probabilities of Aversive Stimuli on Resistance to Extinction

Paulo S. D. Soares-Filho, Diana M. Cortés-Patiño, Juan C. Forigua (Fundación Universitaria Konrad Lorenz), Nicole Fresneda (Universidad de San Buenaventura Bogotá), Julián Cifuentes, Daniela Tovar, Milena Amortegui, Sarai Quintana, Camilo Hurtado-Parrado (Fundación Universitaria Konrad Lorenz)

Effects of Frequency and Magnitude of Reinforcement on Resistance to Change

Beatriz Elena Arroyo Antúnez, Ricardo Silvestre Campos Rivera, Carlos Javier Flores Aguirre (Universidad de Guadalajara)

Spontaneous Recovery of Operant Variability

Kyle W. Swanson, Ann Galizio, Jeremy M. Haynes, Charles C. J. Frye, Amy L. Odum (Utah State University)

Effects of the Number of Extinction Sessions on Resurgence Using a Successive Procedure

Kenneth Madrigal, Cinthia Hernández and Carlos Flores (Universidad de Guadalajara)

Resurgence of Cocaine Seeking in Rats Following Suppression by Negative Consequences

Rusty W. Nall, Timothy A. Shahan (Utah State University)

The Effects of Time in Extinction on Resurgence of Destructive Behavior in Children with ASD

Billie J. Retzlaff, Andrew R. Craig, Wayne W. Fisher, Brian D. Greer, Ashley M. Fuhrman (University of Nebraska Medical Center)

A Laboratory Model for Evaluating Relapse of Undesirable Caregiver Behavior

Daniel R. Mitteer, Brian D. Greer, Wayne W. Fisher, Adam M. Briggs, Ryan T. Kimball, Kayla R. Randall (University of Nebraska Medical Center), David P. Wacker (University of Iowa)

Pavlovian-to-Instrumental Transfer with Contextual Cues as Conditioned Stimulus

Brenda Espinosa-Esteban, Livia Sánchez-Carrasco (Universidad Nacional Autónoma de México)

On the Role of Responses in Pavlovian Acquisition

Stefano Ghirlanda (Brooklyn College, Stockholm University), Magnus Enquist (Stockholm University)

Evolutionary and Q-Learning Grid World Agents: A Comparison

Steven Riley, J. J McDowell (Emory University)

Alternative Conceptualization of Learning

William Palya, Amanda K. Miles (Jacksonville State University)

Survey of Local Behavior Dependence in IRI Distribution in Static and Dynamic Environment

Amanda Miles, William Palya (Jacksonville State University), Robert Kessel (NRL)

Conditioned Reinforcement is Sensitive to Reinforcer Devaluation

Paul J. Cunningham, Timothy A. Shahan (Utah State University)

Observing for, and Control by, FR 1 Correlated Stimuli

Eric J. French, Mark P. Reilly (Central Michigan University)

Candidates for the Contemporary Quantitative Model of Punishment

Bryan Klapes, Steven Riley, J. J McDowell (Emory University)

Categorizing Bias and Discriminability Errors During Conditional Discriminations

Courtney Hannula, Adam T. Brewer, Weizhi Wu, Blake A. Hutsell (East Carolina University), Corina Jimenez-Gomez, Christopher A. Podlesnik (Florida Institute of Technology)

Mice Can Learn a Complex Instrumental Olfactory Patterning Task

Carter W. Daniels, Jorge I. Espinoza, Tanya A. Gupta, Brian H. Smith, Federico Sanabria (Arizona State University)

Intermediate Probe Distribution Affects Temporal Bisection Performance in Rats

Tanya A. Gupta, Carter W. Daniels, Federico Sanabria (Arizona State University)

The Effect of Reinforcement Probabilities on Time Perception in the Midsession Reversal Task

Cristina Dos Santos, Armando Machado (University of Minho), Marco Vasconcelos (University of Aveiro)

The Effects of Serotonergic Hallucinogens on Interval Timing Behavior of Mice

Basak Akdogan, Sophie Dewil, Brian Cotten, Amita Wanar, Jay Gingrich, Peter Balsam (Columbia University)

Comparison of Successive Approximation and Percentile Schedule on Shaping Long Interresponse Times

Tomotaka Orihara, Takayuki Tanno (Meisei University)

Effects of Differential Rewards on Timing

Renata Cambraia, Armando Machado (University of Minho), Marco Vasconcelos (University of Aveiro)

Effects of Fixed Ratio Size on Rat's Cooperative Behavior

Lucas Couto de Carvalho, Deisy das Graças de Souza, Letícia dos Santos, Alceu Regaço (Universidade Federal de São Carlos)

Environmental Enrichment Effects on Schedule-Induced Drinking Acquisition in Rats

Raquel Pascual-Beato, Felizdania Hernández, Esmeralda Fuentes-Verdugo, Gabriela E. López-Tolsa, Ricardo Pellón (Universidad Nacional de Educación a Distancia)

A System for Real-Time 3D Tracking of Operant Behavior

Toshikazu Kuroda (Aichi Bunkyo University)

A Review of Affordable Custom-Built Devices for Contemporary Operant Research

Harley Lang (Vancouver, BC), Chris V. Varnon (Converse College), Todd L. McKerchar (Jacksonville State University), Benjamin N. Witts (St. Cloud State University)

Notes

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Experimental Analysis of Behavior

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Volume 109, Issue 3

Theoretical Article

Don Li, Michael J. Hautus, and Douglas Elliffe. The natural mathematics of behavior analysis.

Research Articles

Stephanie L. Kincaid and Kennon A. Lattal. Beyond the breakpoint: Reinstatement, resurgence, and renewal of ratio-strained behavior.

Andrew R. Craig, Paul J. Cunningham, Mary M. Sweeney, Timothy A. Shahan, and John A. Nevin. Delivering alternative reinforcement in a distinct context reduces its counter-therapeutic effects on relapse.

Gideon P. Naudé, Brent A. Kaplan, Derek D. Reed, Amy J. Henley, and Florence D. DiGennaro Reed. Temporal framing and the hidden-zero effect: Rate-dependent outcomes on delay discounting.

Toshikazu Kuroda and Yuto Mizutani. Response acquisition by zebrafish (*Danio rerio*) with delayed reinforcement.

Charisse A. Lantaya, Caio F. Miguel, Timothy G. Howland, Danielle L. LaFrance, and Scott V. Page. An evaluation of a visual-visual successive matching-to-sample procedure to establish equivalence classes in adults.

Vikki J. Bland, Sarah Cowie, Douglas Elliffe, and Christopher A. Podlesnik. Melioration revisited: A systematic replication of Vaughan (1981).

Erik Arntzen, Richard K. Nartey, and Lanny Fields. Reorganization of equivalence classes: Effects of preliminary training and meaningful stimuli.

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♦ Scheduled Speakers ♦

James Diller (Eastern Connecticut State University)

Jeanne Donaldson (Louisiana State University)

Dana Gadaire (Florida Institute of Technology - Scott Center For Autism Treatment)

James Johnston (Auburn University - retired)

Kimberly Kirkpatrick (Kansas State University)

Meghan McDevitt-Murphy (University of Memphis)

Melissa Nosik (Behavior Analyst Certification Board)

Tim Shahan (Utah State University)

Cristina Whitehouse (University of Florida - Florida Autism Center)

*∫*QAB 2018 at a Glance

Thursday, May 24

Hyatt Grand Hall B

11:00 *Registration*

12:45 Lewis Bizo

President's Introduction

Quantitative and Comparative Analyses of Behavior

1:00 Peter R. Killeen

1:40 Michael E. Young

2:20 *Break*

2:45 Angela Langdon

3:25 Fabian A. Soto

4:05 *Break*

4:30 John T. Wixted

5:10 Alexandra G. Rosati

7:00 *1st Poster Session & Cash Bar*

Friday, May 25

Hyatt Grand Hall B

7:45 *Registration*

9:00 David N. Kearns

9:40 Alicia Izquierdo

10:20 *Break*

10:45 David P. Jarmolowicz

11:25 Matthew W. Johnson

12:05 *Lunch, Executive Committee Meeting*

1:35 Ruth M. Colwill

2:15 Abraham A. Palmer

2:55 *Break*

3:20 Brian K. Martens

4:00 *Student Presenter Series*

7:00 *2nd Poster Session & Cash Bar*

SQAB Invited Preeminent Tutorials

Saturday, May 26

San Diego Ballroom D, Marriott Marquis

10:00 Dermot Barnes-Holmes

11:00 *Panel Discussion*

12:00 Shawn P. Gilroy

3:00 Elizabeth Kyonka

4:00 Steve R. Hursh

5:00 *Panel Discussion*



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