Editorial[1]

This issue includes four research papers, two with animal and two with human subjects, on Experimental Behavior Analysis. First, an article by Carlos Aparicio, describes a study on delay discounting in which the experimental subjects (Lewis and Fisher 344 rats) chose between a small (one pellet) immediate (0.1 s) reinforcer, and a larger (four pellet) delayed (0.1 to 80 s) reinforcer. Then, five existing behavior analytic models were compared on their efficacy to describe the obtained delay discounting performance data. In addition to a careful description of the theoretical underpinnings and most important findings in delay discounting in relation to the models, these were compared on the basis of fit to the delay discounting function. The five models evaluated were hyperbolic decay, exponential decay, hyperboloid, power function, and constant sensitivity. The models' qualitywas assessed using AIC (Akaike Information Criterion) methodology in order to simplify interpretation of the individual models' adequacy. Comparison between models is made difficult by the number of free parameters in each model. As expected, the models with the highest number of free parameters (hyperboloid, power, and constant sensitivity, each with two) yielded the highest R^2. However, evidence on the amount of explained variance is not sufficient to identify the most parsimonious model. In determining the quality of a model AIC takes into account both the number of free parameters and the proportion of the variance accounted for. The main finding of this paper is that AIC identified the hyperbolic discounting model as the most parsimonious in explaining both group and individual delay discounting data obtained with Lewis and Fisher 344 rats.

In turn, Luis Alfaro and Rosalva Cabrera describe an experimental study with albino rats in a situation of collective foraging. In such context, using an arena with several food sources, the subjects were required to locate and open doors in various places to obtain food. Distance traveled by the rats in the platform was used as measure of energetic expenditure. The study suggests that animals that forage in groups tend to follow one of two possible strategies to feed: either producer or scrounger. In the firstcategory, are subjects that find food patches by visiting new places, in the second, are those that take advantage of the discoveries made by others to get their food. Moreover, the authors found that producers made shorter, perhaps more efficient, trips than scroungers. Thus, although each strategy has potential benefits, these depend on the amount of food that is found as well as the energetic expenditure involved in traveling. Energetic expenditure is directly related to the distance traveled in search for food, and it is an important variable that was found to be related to the type of food obtained. Fewer scroungers animals can use the larger pieces of food (1.33 g pellets) because each animal can only take one piece. However, when the pieces are small, like sunflower seeds, animals can remain eating longer at a single patch. Interestingly, the distance traveled is related to what the authors call *food protection trips* because in the case of pellets, producers tended to carry the food further away from the patch, far from the scroungers that consumed the rest of the food in the patch. Finally, with an exponential model, the authors describe the importance of considering the learning curve to estimate distance traveled as a function of amount of exposure to the task. This yields parameters needed to estimate energetic expenditure based on the type of food and the strategy used by producers and scroungers subjects.

Elias Robles describes a study with human participants in which a functional analysis of several parameters of the balloon analogue task was performed. The task has been used to measure impulsivity and risk taking in a way comparable to the Iowa Gambling Task and others. In the balloon task, participants earn one point for each pump response that inflates a balloon on the computer screen, but the points are lost if the balloon explodes. Simultaneously, participants have the option of saving the

[1] Reference for this editorial on Web is: http://conductual.com/content/editorial-vol-3-no-2-0

points earned before an explosion occurs, but if such avoidance responseis emitted, the trial ends and, with it, the opportunity to earn more points on that balloon. The mean number of responses on unexploded balloons is the estimated measure of risk taking. A large number of studies support the task's validity, and the relation between total scores and characteristics of the participants (e.g., gender, drug use, etc.); but few studies have looked into the characteristics of the task and performed the molecular analysis of trial-by-trial decision making that this article offers. The paper claimsthat the points earned in the task function as reinforcers for the pumping response on a schedule of continuous reinforcement while, concurrently, explosions function as punishers delivered on a random ratio schedule. The participants were assigned to three groups, and the local probability of explosions was manipulated. For the first group (control), the probability of explosion remained constant throughout the 30 trials, while for the second group the probability washigher during the first 10 trials and decreased during the last 20; the inverse procedure wasused with the third group. The results show that points without extrinsic value sustained pump responding, at least in a sample of college student with prior experience playing for points. In addition, results show that explosions effectively decrease responding in a nonlinear fashion, and that pumping is sensitive to local changes in the probability of explosions. The author concludes that the molecular analysis of the effects of wins and losses may help to better understand individual differences observed in the task, as well as risk taking behavior generally.

Also in this issue is a study by Idania Zepeda and Héctor Martínez that is similar to Aparicio's in the sense that it is a detailed secondary analysis of data from an earlier experiment. These authors first reported on variability and stereotypy, and now present an analysis of sequences of both tasks performed by children and college students. The paper begins with a review of the most relevant research in the area, focusing specifically on a schedule of reinforcement known as *lag-n*; in these schedules, the reinforcer is delivered only when a response is different from the previous *n* responses. A problem with this schedule is that it is difficult to determine if the observed changes are due to response variability or just to response change. Although some results obtained with animals are similar to humans', there are discrepancies due to density of reinforcement, procedural variations, and differences between the species. A related question is whether similar/different behavior sequences occur more or less frequently during extinction after a task has been previously reinforced. The participants in Zepeda and Martínez study were exposed to a first order matching to sample schedule, and assigned to a group in which only some responses were reinforced, either stereotypical, variable, or permutations of both: stereotypical-variable and variable-stereotypical. During the transference test the predominant effect named by the authors was the *recency effect*, in that almost all participants in both groups responded in a way similar to the previous phase, either stereotypical or variable. The new sequence analysis, as both percentage and response frequency distributions, shows that behavior was indeed under control of the programed contingencies. In addition, after training in stereotypy, the participants continued responding with low variability, and the variability training produced a flat response distribution with low variability. Grouping response sequences as homogenous (two of the same) and heterogeneous (two different) allowed the authors to show that during the variability training a uniform pattern of responses occurred in which both types of sequences had low frequency. Another important finding was that variation in the sequences was not based on simple alternation, given the existence of an identified response pattern. In the discussion section the authors describe the advantages of the matching to sample procedure, and discuss why the commonly reported U value was not used in this study.

On a final note, we are pleased to report that starting with this issue our editorial will also be published in English, in an effort to enhance the reachof the published articles. We want to express our gratitude to Elias Robles for kindly volunteering to assist with the English translation. You will also note that, starting now, page numbering will be continuous within annual numbers. Finally, as always, we thank all authors, reviewers, and invited reviewers who make it possible to sustain the academic level the journal has had from the start. We also want to thank our readers who visited us from 61 countries in the last month alone, many of whom have now added this journal as a regular source.

July 31, 2015.