



TriState(Plus) Conference on Animal Learning & Behavior April 29 & 30, 2016

Host: Albion College
Dept. of Psychological Science

Albion College is pleased to welcome all participants to the 2016 TriState Conference. This booklet contains the schedule, and abstracts of all presentations. The meeting will occur in Olin Hall Room 112. Housing will be at Marshall's Holiday Inn Express. Friday night's meal will occur at La Casa Mexicana (see attached map).

Welcome to the 2016 TriState Conference on Animal Learning & Behavior! This booklet contains the schedule, abstracts of all presentations, a map providing locations of the Holiday Inn Express (where you will stay) and of La Casa Mexicana (where we will eat on Friday night).

I must thank those who made the meeting possible, starting with the presenters and their collaborators, without whom there would be no reason for us to get together. Generous funding was provided by Albion College's Neuroscience Program. Several faculty in attendance graciously volunteered to moderate sessions. Finally, our department secretary Schara Swan provided indispensable organizational support.

W. Jeffrey Wilson
Professor

Program

Friday, April 29:

- Registration: 2:30–3:00 (Olin 112)
- Welcoming comments: 3:00 – 3:15
- Paper Session 1: 3:15 – 4:15
- Break: 4:15 – 4:30
- Paper Session 2: 4:30 – 6:00
- Dinner (*La Casa*): 6:15 – 8:00
- Check-in to rooms: 8:15
- Friday night entertainment

Saturday, April 30:

- Breakfast at the hotel
- Paper Session 3: 9:30 – 10:40
- Break: 10:40 – 11:00
- Paper Session 4: 11:00 – 12:15
- Group photo: 12:15
- Meeting concludes

We appreciate the financial support provided by the Albion College Neuroscience Program and Department of Psychological Science.

Detailed Program

Each talk in a Paper Session should last 15 min, including time for questions. This leaves 5 min or so for the next presenter to get ready.

Friday

3:00 – *Opening Comments.*

3:15 – 4:15 *Paper Session 1 — Moderator: Steve Fountain.*

- **3:15 – Alex Badour, Nicholas Guilbeault, & Jerome Cohen** (*University of Windsor*) A Test of Spatial and Non-Spatial Working Memory in Mice: Cross-Maze or Open-Field?

- **3:35 – Nicholas Guilbeault, Alex Badour, & Jerome Cohen** (*University of Windsor*) Longitudinal Study of Spatial and Non-Spatial Working Memory in Mice

- **3:55 – Aaron P. Smith, Joshua S. Beckmann, & Thomas R. Zentall** (*University of Kentucky*) Discriminative signaling of outcomes markedly reduces probabilistic discounting in pigeons and rats

4:15 – 4:30 *Break.*

4:30 – 6:00 *Paper Session 2 — Moderator: Tom Zentall.*

- **4:30 – Brandon Johnson** (*Albion College*) Habituation in *Lumbricus terrestris*

- **5:10 – Robert Bowers** (*Indiana University*) Mate-choice copying in humans

- **5:30 – Stephen B. Fountain, Megan E. Miller, and Jessica L. Sharp** (*Kent State University*) Sequential Learning Theory Fails to Predict Rats Interpretation of Rule-Exceptions in Impoverished Serial Patterns: Chunk-Boundary versus Violation Elements

6:15 – 8:00 *Dinner La Casa Mexicana 1510 N Eaton St.*

8:00 – *Room Check-In Holiday Inn Express 329 Sam Hill Dr, Marshall.*

LATE NIGHT Fun Stuff to Do.

- Dark Horse (511 S. Kalamazoo Ave.): Marshall's World-Famous Brewery. Go for the beer, enjoy some food, and marvel at the mug-covered ceiling.
- Zarzuela's (301 E. Michigan Ave.): Marshall's delicious tapas restaurant — snacks and drinks.

- Backroads Saloon (15325 W Michigan Ave.): Michigan's largest dance floor. Line dancing is a staple, but Fridays are usually rock. Tonight: DJ Night: Make requests and dance all night.

- Franke Center for the Arts (214 E. Mansion St.): Live music — *Red Tail Ring*: check them out online! \$16

- Riverside Pub (405 W. Pearl St.): Blue-collar bar, Wilson's favorite hang-out for live music in Marshall. Unfortunately, no live music tonight. \$5

- Pasche's Seafood Kitchen (11081 Michigan Avenue East, Battle Creek - 2 exits west on I-94): great Cajun food, and live music — Jim Dove plays classic rock and blues from 7 to 10; Wilson likes his music and loves this restaurant!

- (A bit farther away) Pasche's Lakeside (315 W Columbia Ave, Battle Creek): Excellent Cajun/American fare, and live music — Gator Boys Blues Band: local favorites.

- (Farther still) The Dock at Bayview (12504 E D Ave, Augusta). Live music — Chameleon, the area's best cover band.

- (Even farther away) Roadhouse Bar & Grill (4112 Lansing Ave, Jackson): Live music — Martha Dumpruk: rock, hard rock, and metal.

Saturday

7:00 – 9:00 *Breakfast at the Hotel & Check-Out.*

9:30 – 10:40 *Paper Session 3 — Moderator: Jerry Cohen.*

- **9:30 – Jonathan J Chow & Joshua S Beckmann** (*University of Kentucky*) Drug versus Food Choice — Shifting Preference

- **9:50 – Jacob Case, Jonathon Berry, and Thomas Zentall** (*University of Kentucky*) The Ephemeral Choice Task: An Inhibition Based Solution

- **10:10 – Amber M. Chenoweth & Brittany L. Jackson** (*Hiram College*) The Effect of Performance-Based Classroom Activities on College Students Understanding of and Openness to Interaction with Individuals with Autism Spectrum Disorders

10:40 – 11:00 *Break.*

11:00 – 12:15 *Paper Session 4 — Moderator: Sally Boysen.*

- **11:00 – Milan Radulj** (*University of Windsor*) Rats' (*Rattus norvegicus*) Hierarchy of Spatial and Non-Spatial Cues in a Missing Object Recognition Foraging Task

- **11:20 – Marisa Vennetilli** (*University of Windsor*) Rats Skilled Walking Performance on an Inclined Elevated Ladder

- **11:40 – 12:15 Thomas Zentall** (*University of Kentucky*) Risk Taking by Pigeons: A Model of Human Gambling

12:15 – *Group Photo.*

Meeting Concludes.

Abstracts

Abstracts appear in chronological order.

- **Alex Badour, Nicholas Guilbeault, & Jerome Cohen** (*University of Windsor*) A Test of Spatial and Non-Spatial Working Memory in Mice: Cross-Maze or Open-Field?

The novel location / novel object recognition (NL/NOR) test was developed to study working memory in rodents. The NL and NOR components are primarily hippocampal-dependent and non-hippocampal-dependent, respectively. Currently, the NL/NOR test has only been conducted in the open-field (OF), however, the OF provokes fear-related behavior. Differences in the NL/NOR test were found when mice were run in either the OF or the restricted cross-maze (XM). The OF increased exploration of the novel location whereas the XM increased exploration of the novel object. This research has implications for developing a test of spatial and non-spatial working memory which are differentially affected during Alzheimers disease.

- **Nicholas Guilbeault, Alex Badour, & Jerome Cohen** (*University of Windsor*) Longitudinal Study of Spatial and Non-Spatial Working Memory in Mice

The novel location / novel object recognition (NL/NOR) test has only been reported as a single-use test. We examined habituation of the NL/NOR task both within a day (across trials) and over successive days (separated by 16 days). Short-term habituation occurred in the open-field (OF) and the cross-maze (XM) across trials. Mice also demonstrated long-term habituation in the OF and XM on successive days. Differences in novel location and novel object exploration were observed between the OF and XM on the first day, however, differences in maze type failed to persist on following days. These results are important for developing a robust test of spatial and non-spatial

working memory capable of detecting progressive cognitive impairments.

- **Aaron P. Smith, Joshua S. Beckmann, & Thomas R. Zentall** (*University of Kentucky*) Discriminative signaling of outcomes markedly reduces probabilistic discounting in pigeons and rats

Recent research in risky choice has found using discriminable conditioned stimuli to signal outcomes (wins vs. losses) rather than ambiguous cues can increase risk taking. This suboptimal choice may reflect the reinforcement predictive nature of the stimuli overshadowing reinforcement rates and has implications for procedures like probability discounting. Two groups were given a choice between 1 and 4 pellets where the probability of receiving 4 pellets declined across blocks to 6.25%. One group received discriminable stimuli for outcomes while the other group received uncertain stimuli. Results showed discriminable outcomes markedly reduced discounting in both species with pigeons showing an increased demand for the 4-pellet alternative despite increasing FRs and rats preference showing resistance to dopaminergic manipulation of its value.

- **Brandon Johnson** (*Albion College*) Habituation in *Lumbricus terrestris*

Habituation, a decrease in response to a repeated stimulus, is a psychological phenomenon that has been used to study many concepts in psychology. While this presentation will provide a cursory look at the work of Erik Kandel on habituation, the primary focus will be experiments done on earthworms in response to light. Beginning with a summary on earthworm biology, this presentation will cover three experiments done to investigate habituation in the earthworm *Lumbricus terrestris*. These experiments involve the specifics of when earthworms can become habituated and how long that habituation lasts.

- **Robert Bowers** (*Indiana University*) Mate-choice copying in humans

Information about the mate choices of others is apparent and abundant in many social settings. Like quail, guppies, and fruit flies, humans learn from observing each others mate choices, preferring mates that are apparently preferred by others (mate-choice copying). This specific manner of social learning affords an opportunity to study learning in a specific ecological context. I describe a sample of experiments that begin to address questions concerning how this odd and oddly studied kind of learning operates.

- **Stephen B. Fountain, Megan E. Miller, and Jessica L. Sharp** (*Kent State University*) Sequential Learn-

ing Theory Fails to Predict Rats Interpretation of Rule-Exceptions in Impoverished Serial Patterns: Chunk-Boundary versus Violation Elements

Rats learned impoverished serial patterns containing one exception to the lower-order rule either at the midpoint — a chunk-boundary element creating symmetrical chunk structure — or nearer the end of the pattern — a violation element. After acquisition, administration of 0.6 mg/kg scopolamine caused nearly complete impairment of performance for both element types, the same effect observed in previous results with putative violation elements under muscarinic cholinergic blockade. Thus, both element types appear to have been interpreted as violation elements. In impoverished patterns, then, current theory fails to predict conditions under which elements will be perceived as higher-order rule transitions, namely, chunk boundaries.

- **Jonathan J Chow & Joshua S Beckmann** (*University of Kentucky*) Drug versus Food Choice — Shifting Preference

Alternative reinforcers (i.e., food or money) have been shown to compete against drug reinforcers. Herein, we examined procedural determinants in drug versus food choice by using a dependent schedule and free choice procedure. Each procedure consisted of 5 blocks, where the dose of drug would increase as a function of block while a food reinforcer was kept constant. Additionally, a series of manipulations were used to determine if the relative preference for drug could be shifted. Overall, the results indicate that drug preference is dose-dependent. Furthermore, food restriction and removal of drug-associated cues shifted preference for drug towards food.

- **Jacob Case, Jonathon Berry, and Thomas Zentall** (*University of Kentucky*) The Ephemeral Choice Task: An Inhibition Based Solution

Sometimes the ability to learn a task challenges traditional notions of species-relative intelligence. In the ephemeral choice task, choice of alternative A provides reinforcement and terminates the trial, whereas choice of alternative B also provides reinforcement, yet it additionally allows access to A and its reinforcement. Optimal performance is to always choose B. Though this task should be easy to learn, pigeons and even presumably more intelligent species like monkeys and many apes fail. When we tested the rats on an operant version of the task, we found that rats too showed little evidence of learning this task. However, fish and grey parrots have been found to solve it, consistently choosing optimally. With pigeons, we then tested the hypothesis that impulsive initial choice might have been responsible for

the failure to acquire the discrimination by forcing the pigeons to make a prior commitment 20 s before they obtained the first of two reinforcements. Now the pigeons showed clear optimal choice. Thus, impulsivity may make it difficult for animals to acquire this task.

- **Amber M. Chenoweth & Brittany L. Jackson** (*Hiram College*) The Effect of Performance-Based Classroom Activities on College Students Understanding of and Openness to Interaction with Individuals with Autism Spectrum Disorders

Instructors of a 12-week interdisciplinary course assessed the effectiveness of performance-based classroom activities on autism knowledge and openness to interaction. Students took a pre-test survey to assess baseline knowledge of Autism Spectrum Disorders (ASD), completed the course involving presentation of and engagement with scientific information about ASD through various creative forms, and then completed a post-test survey to assess any change. Results revealed that overall students either remained the same at the correct end of the scale or improved their knowledge of autism, and indicated an openness to interact with individuals with ASD. Implications and future directions of the research will be discussed.

- **Milan Radulj** (*University of Windsor*) Rats' (*Rattus norvegicus*) Hierarchy of Spatial and Non-Spatial Cues in a Missing Object Recognition Foraging Task

This study looked at rats preference for cues in a foraging context for a missing-object recognition task, which is a test of working memory. Previous research has demonstrated a possible hierarchy when rats are prepared using cues varied over time and tested with a gradual introduction of dissociated cues. This study aimed to replicate previous research and optimize preparation and testing protocol. Although the experimental portion was shortened, no hierarchy was found and previous experiments were not replicated. Interpretation of these results and experimental procedure bring up crucial considerations for future experiments. Finally, the direction of forthcoming foraging experiments is discussed in the context of these changes and with Alzheimers disease.

- **Marisa Vennetilli** (*University of Windsor*) Rats Skilled Walking Performance on an Inclined Elevated Ladder

In developing rat models, we have modified a skilled walking task that required rats to change gait and stepping behaviour to avoid leg slips on various inclines on an elevated ladder. Rather than simply measuring how often a rat exhibits leg slips and misses grasping rungs to avoid faulty, collapsible rung, we measured

the time the rat spent traveling through each zone of the ladder. The faulty rung was located half way up the ladder only during the testing days. There were four zones, two located before the collapsible rung and two located after the collapsible rung. We present research that more directly measures rats speed in which they travel through zones in the ladder apparatus, by comparing them through baseline and testing phases. This experiment serves as a model for future investigations testing Paraquat-induced Parkinsons disease-like neurodegeneration and their ability to complete this ladder experiment at different inclines due to motor deficits.

- **Thomas Zentall** *University of Kentucky* Risk Taking by Pigeons: A Model of Human Gambling
Human gambling generally involves suboptimal choice because the expected return is almost always less than the investment. Animals too choose suboptimally un-

der similar choice conditions. Pigeons, like humans gamblers, show an impaired ability to objectively assess overall probabilities and amounts of reinforcement when a rare, high-value outcome (analogous to a jackpot in human gambling) is presented in the context of more frequently occurring losses. More specifically, pigeons prefer a low probability, high reward outcome over a guaranteed low reward outcome with a higher overall value. Furthermore, manipulations presumed to increase impulsivity (pigeons maintained at higher levels of motivation for food and pigeons housed in individual cages) result in increased suboptimal choice. Like humans, they judge the value of the reward when it occurs and largely ignore the probability of its occurrence.

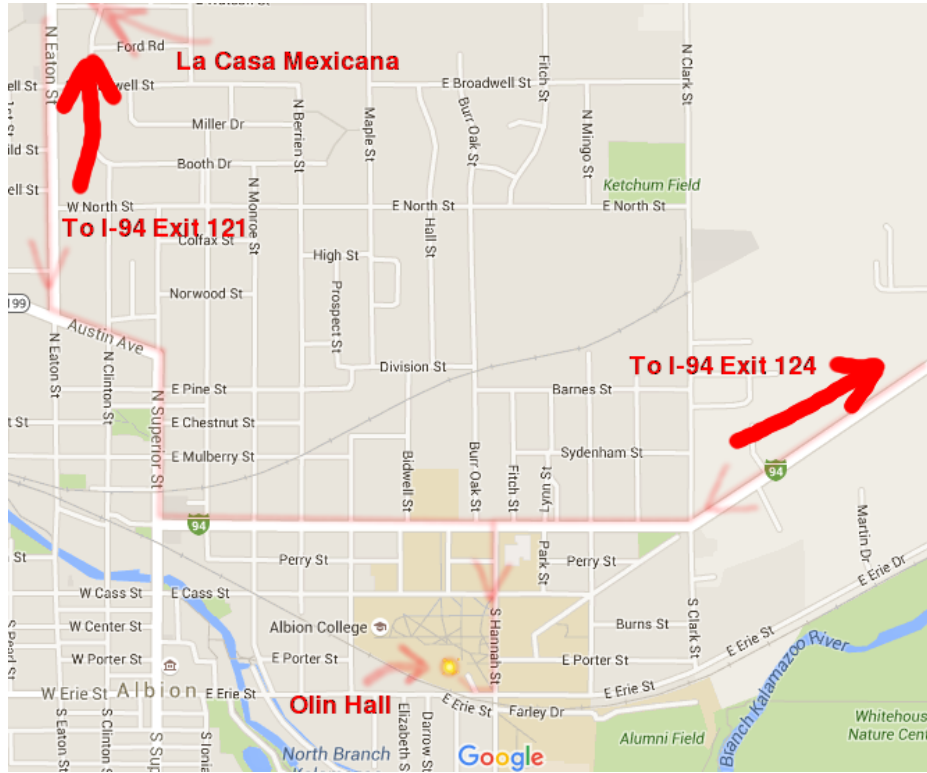


Figure 1. Albion, MI

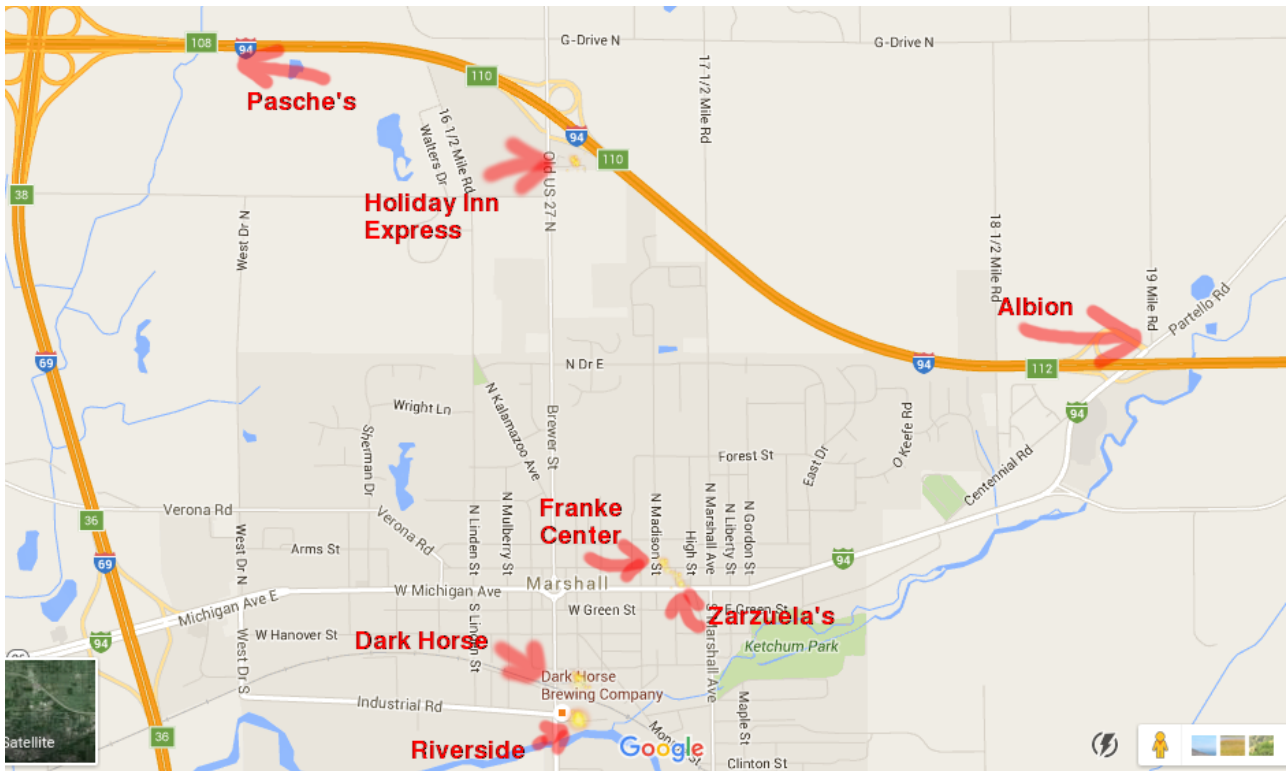


Figure 2. Marshall, MI