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PSYX 560.01: Advanced Learning and Cognition

Allen Szalda-Petree

University of Montana - Missoula, allen.szalda-petree@umontana.edu

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PSYX 560 – Advanced Learning & Cognition

Spring 2019

Instructor Information

Instructor: Dr. Allen Szalda-Petree

Office: Skaggs 143

Phone: 406-243-2093

Email: allen.szalda-petree@umontana.edu

Office Hours: T, W, Th 1 – 2, and by appointment

Dept URL: cas.umt.edu/psychology

Readings

- Cognition, Evolution, and Behavior (2nd Ed) - Shettleworth (2010)
- Adaptive Behavior and Learning (Internet edition 2003) – Staddon (2010)
- Selected readings on Moodle (see reading schedule for full citations)

Purpose

The purpose of the course is to provide a balanced view of the major modern perspectives on animal behavior (human primates included) with an emphasis on learning and cognition. There are three primary goals of this course: 1) develop an understanding of the ways in which the environment and evolution shape behavior, 2) gain an appreciation for the similarities and differences in the ways in which animals communicate, learn and solve the day to day problems of living, and 3) expose students to the logic of carrying out empirical investigations both within and across species. The major topics to be covered include perception, attention, learning, discrimination, concept formation, memory, spatial learning, numerical competency, communication, and language.

Assessment

Class Participation (10% of final grade)

Participation in class discussions will be evaluated informally. I will be looking for contributions to the class discussions that demonstrate familiarity with the readings.

Exams (60% of final grade)

- Take-home Midterm (30% of final grade): The midterm will consist of approximately six questions that you will have approximately 24 hours to answer. You are free to use any library resources. You are NOT allowed to work together or to use human resources (such as others who have taken the class).
- Take-home comprehensive final (30% of final grade): The comprehensive final will use the same format and rules as the midterm.

Term paper (30% of final grade)

One major term paper is required at the end of the semester. I will distribute a list of possible topics for you to choose from or you may choose your own topic (with prior approval). These must be either in-depth papers addressing in detail the research thus far (literature review), an experimental proposal, a theoretical proposal, or any combination thereof.

Grading

Grades will be assigned using the adjacent performance criteria for all exams and final course grade.

Percent Correct	Grade
90 – 100%	A
80 – 89%	B
70 – 79%	C
60 – 69%	D
0 – 59%	F

Course guidelines and policies

General behavior

As a university student, certain behavior is expected of you. Most importantly, it is your responsibility to meet the requirements of this course.

You may expect me to be in the classroom on time, prepared & organized, and open to discussion/questions pertaining to the day's subject material. I will expect you to be in the classroom on time, to be awake and attentive, to participate in demonstrations/discussions, and to be respectful toward the instructor and other students.

I understand there will be circumstances beyond your control that, on occasion, will require you to leave class early. Please plan accordingly by notifying me at the beginning of class and choose seating that will result in minimal disruption.

You should feel free to ask any questions in class. Also, please feel free to see the instructor about any classroom issue during office hours.

Electronic devices (cell phones/tablets/laptops)

No laptops, tablets, phones, or other electronic screen devices are allowed out during lecture. If you need to use these devices as a reasonable modification or you have extenuating circumstances that require the use of an electronic screen device, please see me.

The reasoning behind this policy is twofold. Recent research shows that

- Laptop/screened device use is associated with a greater likelihood of multitasking. Multitasking during lecture has been shown, through both correlational and experimental methods, to result in poorer comprehension and subsequent exam performance.

The extant research on multitasking, more accurately called divided attention, is clear. Humans are poor multitaskers as evidenced by poorer performance on a task when multitasking compared to "singletasking" – equal performance multitasking is a myth.

- Laptop/screened device use is distracting to other students within view of the screen and results in poorer comprehension and subsequent exam performance.

If you are an emergency professional (physician/nurse, counselor/therapist, EMT, etc) or you are expecting an EMERGENCY communication please set your wireless device to silent alarm mode and quietly exit the classroom to respond.

Academic Misconduct and Plagiarism

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at [Student Conduct Code](#).

The Student Conduct Code discusses plagiarism. However, it is a serious offense worth re-mentioning. This course requires students to adhere to APA format when citing, paraphrasing, or referencing sources. If you have plagiarized, either intentionally or accidentally, you will receive a zero on the entire assignment. If you plagiarize a second time, you will fail the course.

Dropping/Adding/Changing grade option

Please refer to the Registrar's [Drop/Add Policy](#) and the [Official Dates & Deadlines Calendar](#) for all questions related to dropping or adding or changing grade option for a course.

Disability modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the office of [Disability Services for Students](#). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or call 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Tentative Class Schedule

Dates	Readings & Assignments
Jan 14	Introduction Natural selection and evolution
Jan 21	MLK day – No Class
Jan 28	Shettleworth, Chapter 1 – Cognition and the study of Behavior Shettleworth, Chapter 2 – Evolution, Behavior, and Cognition: A Primer <u>Additional readings from Moodle</u> <ul style="list-style-type: none">• Beach (1950)• Wynne (2004)• Shettleworth (2009)
Feb 4 Feb 11	Shettleworth, Chapter 4 – Learning: Introduction and Pavlovian conditioning Staddon, Chapter 4 – Operant Behavior Staddon, Chapter 5 – Reward & Punishment <u>Additional readings from Moodle</u> <ul style="list-style-type: none">• Bouton & Moody (2004)• Garcia & Koelling (1966)• Hollis (1997)• Killeen (1995)
Feb 18	Presidents Day – No Class

Dates	Readings & Assignments
Feb 25	Staddon, Chapter 8 – Choice and Decision rules <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Hernstein (1961) • Logue (1998) • Bickel and Marsch (2001)
Mar 4	Shettleworth, Chapter 6 – Discrimination, Classification, and Concepts <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Wasserman et al (2001) • Wright & Katz (2006) <p style="text-align: right;">Midterm available March 7th and DUE Mar 8th at 5 pm</p>
Mar 11	Shettleworth, Chapter 7 – Memory <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Shields et al (1997) • Smith & Washburn (2005)
Mar 18	Shettleworth, Chapter 8 – Getting Around: Spatial Cognition <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Olson et al (1995)
Mar 25	Spring Break
Apr 1	Shettleworth, Chapter 10 – Numerical Competence <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Hauser & Carey (2003) • Pepperberg & Gordon (2005)
Apr 8	Shettleworth, Chapter 11 – Cognition and the Consequences of Behavior <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Evans & Westergaard (2006) • Bateson & Kacelnik (1995)
Apr 15	Shettleworth, Chapter 13 – Social Learning <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Cook & Mineka (1990) • Zentall (2001) <p style="text-align: right;">Apr 19: Term Paper Due</p>
Apr 22	Shettleworth, Chapter 14 – Communication and Language Shettleworth, Chapter 15 – Summing up and looking ahead <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Hauser et al (2002) • Pepperberg (2002) • Hermann et al (2007)
FINAL EXAM	Final exam: Available Monday, Apr 29th at 8 am and DUE Tuesday, Apr 30th at 5 pm

Selected readings

- Bateson, M., & Kacelnik, A. (1995). Preferences for fixed and variable food sources: variability in amount and delay. *Journal of the Experimental Analysis of Behavior*, 63(3), 313-329.
- Beach, F. A. (1950). The snark was a boojum. *American Psychologist*, 5, 115-124.
- Bickel, W. K., & Marsch, L. A. (2001) Toward a behavioral economic understanding of drug dependence: delay discounting processes. *Addiction*, 96: 73-86.
- Bouton, M. E. & Moody, E. W. (2004). Memory processes in classical conditioning. *Neuroscience and Biobehavioral Reviews*, 28, 663-674.
- Church, R. M. (2001). Animal cognition: 1900-2000. *Behavioural Processes*, 54, 53-63.
- Cook, M. & Mineka, S. (1990). Observational conditioning of fear to fear-relevant versus fear-irrelevant stimuli in rhesus monkeys. *Journal of Abnormal Psychology*, 98(4), 448-459.
- Evans, T., & Westergaard, G. (2006) Self-Control and Tool Use in Tufted Capuchin Monkeys (*Cebus Apella*). *Journal of Comparative Psychology*, 120(2), 163–166.
- Garcia, J., & Koelling, R. A. (1966). Relation of cue to consequence in avoidance learning. *Psychonomic Science*, 4, 123-124.
- Hauser, M. & Carey, S. (2003) Spontaneous representations of small numbers of objects by rhesus macaques: Examinations of content and format. *Cognitive Psychology*, 47, 367-401.
- Hauser, M., Chomsky, N., & Fitch, W. (2002). The faculty of language; What is it, Who has it and How did it evolve, *Science*, 1569-1579.
- Herrmann, E., Call, J., Hernández-Lloreda, M., Hare, B., & Tomasello, M. (2007). Humans Have Evolved Specialized Skills of Social Cognition: The Cultural Intelligence Hypothesis. *Science*, 317, 1360-1366.
- Herrnstein, R. J. (1961). Relative and absolute strength of response as a function of frequency of reinforcement. *Journal of the Experimental Analysis of Behavior*, 1961, 4, 267-272.
- Hollis, K. L. (1997). Contemporary research on Pavlovian conditioning. A "new" functional analysis. *American Psychologist*, 52, 956-65.
- Killeen, P. R. (1995). Economics, ecologies, and mechanics: the dynamics of responding under conditions of varying motivation. *Journal of the Experimental Analysis of Behavior*, 64: 405-31.
- Logue, A. W. (1998) Laboratory research on self-control: applications to administration. *Review of General Psychology*, 2, 221-238.
- Olson, D., Kamil, A., Balda, R., & Nims, P (1995). Performance of four-seed caching corvid species in operant tests of nonspatial and spatial memory. *Journal of Comparative Psychology*, 109, 173-181.
- Pepperberg, I. (2002). Cognitive and Communicative abilities in Grey Parrots. *Current Directions in Psychological Science*, 11(3), 83-87.
- Pepperberg, I. & Gordon, J. (2005). Numerical comprehension by a Grey Parrot (*Psittacus erithacus*), including a zero-like concept. *Journal of Comparative Psychology*, 119, 197-209.
- Shettleworth, S. (2009). The evolution of comparative cognition: Is the snark still a boojum? *Behavioural Processes*, 80, 210–217.

- Shields, W. E., Smith, J. D., & Washburn, D. A. (1997). Uncertain responses by humans and rhesus monkeys (*Macaca mulatta*) in a psychophysical same-different task. *Journal of Experimental Psychology: General*, 126, 147-164.
- Smith, J. D. & Washburn, D. A. (2005). Uncertainty monitoring and metacognition by animals. *Current Directions in Psychological Science*, 14, 19-24.
- Wasserman, E., Fagot, J., Young, M. (2001). Same-different conceptualization by baboons (*Papio papio*): The role of entropy. *Journal of Comparative Psychology*, 115, 42-52.
- Wright, A. & Katz, J. (2006). Mechanisms of same/different concept learning in primates and avians. *Behavioural Processes*, 72, 234-254.
- Wynne, C. D. (2004). The perils of anthropomorphism. *Nature* 428, 606.
- Zentall, T. (2001). Imitation in Animals: Evidence, Function, and Mechanisms. *Cybernetics and Systems: An International Journal*, 32, 53-96.