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PSYX 560.01: Advanced Learning and Cognition

Allen D. Szalda-Petree

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

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PSYX 560 – Learning & Cognition

Spring 2016

Instructor Information

Instructor: Dr. Allen Szalda-Petree

Office: Skaggs 201

Phone: 406-243-2091

Email: allen.szalda-petree@umontana.edu

Office Hours: T & Th 10 – 11, W 11 – 12, 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'll 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 in-depth papers addressing in detail either 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

Classroom Behavior

General

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 matter. 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.

Disability Modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [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.

Wireless Communications (cell phones/pagers/computers/PDAs)

For what should be blatantly obvious reasons, the use of wireless communications devices during class is prohibited. This specifically includes such activities as 1) placing or receiving phone calls, 2) sending or receiving text messages, and 3) internet searching, game playing, etc. 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

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

Tentative Class Schedule

Dates	Readings & Assignments
Jan 25 Jan 27	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 1 Feb 3 Feb 8 Feb 10	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 15	Presidents Day – No Class
Feb 17 Feb 22 Feb 24 Feb 29	Staddon, Chapter 8 – Choice and Decision rules <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Herrnstein (1961) • Logue (1998) • Bickel and Marsch (2001)
Mar 2 Mar 7 Mar 9	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 9th and DUE Mar 10th at 5 pm</p>
Mar 14 Mar 16	Shettleworth, Chapter 7 – Memory <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Shields et al (1997) • Smith & Washburn (2005)
Mar 21 Mar 23	Shettleworth, Chapter 8 – Getting Around: Spatial Cognition <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Olson et al (1995)
Mar 28 Mar 30	Shettleworth, Chapter 10 – Numerical Competence <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Hauser & Carey (2003) • Pepperberg & Gordon (2005)
Apr 4 Apr 6	Spring Break

Dates	Readings & Assignments
Apr 11 Apr 13	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 18 Apr 20	Shettleworth, Chapter 13 – Social Learning <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Cook & Mineka (1990) • Zentall (2001)
Apr 25 Apr 27	Shettleworth, Chapter 14 – Communication and Language <u>Additional readings from Moodle</u> <ul style="list-style-type: none"> • Hauser et al (2002) • Pepperberg (2002)
May 2 May 4	Shettleworth, Chapter 15 – Summing up and looking ahead <ul style="list-style-type: none"> • Church (2001) • Hermann et al (2007) <p style="text-align: right;">May 6: Research Paper Due</p>
FINAL EXAM	Final exam: Available Monday, May 9th at 8 am and DUE Tuesday, May 10th 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, ecologics, 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.