The Evolution of Behavior

Fall 2011
Tuesdays 4:10 – 6:00 PM
Room: Schermerhorn 200C

Michele Wan
msw2111@columbia.edu
Office Hours: Tuesdays, 6-7 PM or by appointment
Office: 360 Engineering Terrace

Course description:
Evolutionary theory provides us with a coherent theoretical framework to investigate and explain behavior. In this seminar for advanced undergraduate students, students will learn the principles of evolutionary theory and how to use them to explain various behaviors, such as mating, group formation, and communication in humans and other animals. The course will take an interdisciplinary approach. Starting with evolutionary theory, it will incorporate concepts and findings from genetics, behavioral ecology, neuroscience, and psychology. Students will learn how natural selection has produced a variety of mechanisms that allow humans and other animals to survive and reproduce in their particular environments.

Prerequisite:
- At least two psychology courses and instructor's permission.

Learning objectives:
- Students will be able to apply evolutionary concepts and findings to real-world questions.
- Students will be able to give an effective oral presentation that clearly communicates theories, hypotheses, research methods, and research findings.
- Students will be able to research a topic for a written report, locating appropriate sources and evaluating them for quality and potential bias.
- Students will be able to write a scientific review paper that clearly communicates theories, research methods, research findings, and critical interpretations of results.

Course requirements:
- Attendance is mandatory. You must arrive on time and must not depart early. If you must miss a class due to a family emergency or religious holiday, you must contact the instructor prior to the absence.
- Participation is mandatory. While some course material will be presented in lectures, this course is interactive and requires your participation. Examples of interactive class activities that you may be asked to participate in include discussion, peer review of assignments, and short written reflections.
- Your grade will be determined as follows:

Item	Due date	Percent of total grade
On-time attendance, participation, and professionalism and courtesy towards students and instructor	Every class	10%
There will be **five short in-class assessments** over the duration of the course. Each will be designed to assess your understanding and application of course material up to and including the date of the assessment.	Sept. 20, Oct. 4, Oct. 25, Nov. 15, Nov. 29	25%
Two journal article presentations You will present and lead discussion of two empirical papers over the course of the semester.	Sign up on first day	30%
Paper proposal (a paragraph-long overview, an outline, and a list of 10 references). See below for description of paper.	Due in class Oct. 11	10%
Review Paper You will be writing a critical review paper that addresses a specific question related to a topic of your choice from the course. The paper should include a discussion of relevant evolutionary concepts, methods, and findings from primary sources (scientific studies), followed by your own critical assessment of the literature. Include at least 10 sources not read for class (at least 7 should be journal articles; others can be books). Questions to consider in your critical assessment could include: What is your interpretation of the literature? Are there additional critiques that can be made of the literature? What future work is needed on this topic? The paper should be in APA style. The body should be 10-12 pages, double-spaced, Times 12 pt font with 1" margins. References, title page, figures (if any), and other miscellaneous sections do not count towards the page minimum.	Due in class Dec. 6	25%

Required readings:

- Book (available on reserve in the Science and Engineering Library in the Northwest Corner Building)
    - Cartwright, J. (2008). *Evolution and Human Behavior* (2nd ed.). Cambridge, MA: MIT Press.
- Articles (downloadable from Courseworks or Columbia University Libraries website)
    - Anderson, K. G., Kaplan, H., & Lancaster, J. B. (2007). Confidence of paternity, divorce, and investment in children by Albuquerque men. *Evolution and Human Behavior, 28*(1), 1-10.
    - Baker, M. C., & Gammon, D. E. (2008). Vocal memes in natural populations of chickadees: Why do some memes persist and others go extinct? *Animal Behaviour, 75*(1), 279-289.
    - Bloom, G., & Sherman, P. W. (2005). Dairying barriers affect the distribution of lactose malabsorption. *Evolution and Human Behavior, 26*(4), 301-312.
    - Burgdorf, J., & Panksepp, J. (2001). Tickling induces reward in adolescent rats. *Physiology & Behavior, 72*(1-2), 167-173.
    - Buss, D. M., Larsen, R. J., Westen, D., & Semmelroth, J. (1992). Sex differences in jealousy: Evolution, physiology, and psychology. *Psychological Science, 3*(4), 251-255.
    - Chiao, J. Y., & Blizinsky, K. D. (2010). Culture–gene coevolution of individualism–collectivism and the serotonin transporter gene. *Proceedings of the Royal Society B: Biological Sciences, 277*(1681), 529-537.
    - Gangestad, S. W., Thornhill, R., & Garver-Apgar, C. E. (2005). Women's sexual interests across the ovulatory cycle depend on primary partner developmental instability. *Proceedings of the Royal Society B: Biological Sciences, 272*(1576), 2023-2027.
    - Gibson, M. A., & Mace, R. (2007). Polygyny, reproductive success and child health in rural Ethiopia: Why marry a married man? . *Journal of Biosocial Science, 39*(2), 287-300.
    - Hare, B., Plyusnina, I., Ignacio, N., Schepina, O., Stepika, A., Wrangham, R., et al. (2005). Social cognitive evolution in captive foxes is a correlated by-product of experimental domestication. *Current Biology, 15*(3), 226-230.
    - Johnson, D. D. P., McDermott, R., Barrett, E. S., Cowden, J., Wrangham, R., McIntyre, M. H., et al. (2006). Overconfidence in wargames: Experimental evidence on expectations, aggression, gender and testosterone. *Proceedings of the Royal Society B: Biological Sciences, 273*(1600), 2513-2520.
    - Melis, A. P., Hare, B., & Tomasello, M. (2006). Chimpanzees recruit the best collaborators. *Science, 311*(5765), 1297-1300.
    - Miklósi, Á., Kubinyi, E., Topál, J., Gácsi, M., Virányi, Z., & Csányi, V. (2003). A simple reason for a big difference: Wolves do not look back at humans, but dogs do. *Current Biology, 13*(9), 763-766.
    - Milinski, M., Semmann, D., & Krambeck, H. (2002). Donors to charity gain in both indirect reciprocity and political reputation. *Proceedings of the Royal Society of London. Series B: Biological Sciences, 269*(1494), 881-883.

- Nettle, D., & Clegg, H. (2006). Schizotypy, creativity and mating success in humans. *Proceedings of the Royal Society B: Biological Sciences, 273*(1586), 611-615.
- O'Steen, S., Cullum, A. J., & Bennett, A. F. (2002). Rapid evolution of escape ability in Trinidiadian guppies (Poecilia reticulata) *Evolution, 56*(4), 776-784.
- Ouattara, K., Lemasson, A., & Zuberbühler, K. (2009). Campbell's monkeys concatenate vocalizations into context-specific call sequences. *Proceedings of the National Academy of Sciences, 106*(51), 22026-22031.
- Perrett, D. I., Lee, K. J., Penton-Voak, I., Rowland, D., Yoshikawa, S., Burt, D. M., et al. (1998). Effects of sexual dimorphism on facial attractiveness. *Nature, 394*(6696), 884-887.
- Renninger, L. A., Wade, T. J., & Grammer, K. (2004). Getting that female glance: Patterns and consequences of male nonverbal behavior in courtship contexts. *Evolution and Human Behavior, 25*(6), 416-431.
- Sapolsky, R. M., & Share, L. J. (2004). A pacific culture among wild baboons: Its emergence and transmission. *PLoS Biology, 2*(4), e106.
- Schneider, J. M., & Lesmono, K. (2009). Courtship raises male fertilization success through post-mating sexual selection in a spider. *Proceedings of the Royal Society B: Biological Sciences, 276*(1670), 3105-3111.
- Spoon, T. R., Millam, J. R., & Owings, D. H. (2006). The importance of mate behavioural compatibility in parenting and reproductive success by cockatiels, Nymphicus hollandicus. *Animal Behaviour, 71*(2), 315-326.
- Steele, M. A., Halkin, S. L., Smallwood, P. D., McKenna, T. J., Mitsopoulos, K., & Beam, M. (2008). Cache protection strategies of a scatter-hoarding rodent: Do tree squirrels engage in behavioural deception? *Animal Behaviour, 75*(2), 705-714.
- Stewart-Williams, S. (2007). Altruism among kin vs. nonkin: Effects of cost of help and reciprocal exchange. *Evolution and Human Behavior, 28*(3), 193-198.
- Suddendorf, T., & Collier-Baker, E. (2009). The evolution of primate visual self-recognition: Evidence of absence in lesser apes. *Proceedings of the Royal Society B: Biological Sciences, 276*(1662), 1671-1677.
- Todd, P. M., Penke, L., Fasolo, B., & Lenton, A. P. (2007). Different cognitive processes underlie human mate choices and mate preferences. *Proceedings of the National Academy of Sciences, 104*(38), 15011-15016.
- White, P. (2008). Maternal response to neonatal sibling conflict in the spotted hyena, *Crocuta crocuta*. *Behavioral Ecology and Sociobiology, 62*(3), 353-361.
- Wroblewski, E. E., Murray, C. M., Keele, B. F., Schumacher-Stankey, J. C., Hahn, B. H., & Pusey, A. E. (2009). Male dominance rank and reproductive success in chimpanzees, Pan troglodytes schweinfurthii. *Animal Behaviour, 77*(4), 873-885.
- Zerjal, T., Xue, Y., Bertorelle, G., Wells, R. S., Bao, W., Zhu, S., et al. (2003). The genetic legacy of the Mongols. *The American Journal of Human Genetics, 72*(3), 717-721.

Schedule:

Date	Readings Due	Assignments/Assessments	Topic
Tues., Sept. 6	n/a	n/a	Introduction • Who am I? • Who are you? • The syllabus Scientific presentations • Elements of a good scientific presentation • Sign up to present two articles How to lead a discussion Finding journal articles
Tues., Sept. 13	• Cartwright, pp. 3-11. • Gangestad et al. (2005) • Spoon et al. (2006)	n/a	Studying behavior • Tinbergen's four questions • Methods in evolutionary psych
Tues., Sept. 20	• Cartwright, pp. 30-42 • O'Steen et al. (2002) • Zerjal et al. (2003) • Bloom & Sherman (2005)	In-class assessment	Principles of evolutionary theory
Tues., Sept. 27	• Cartwright, pp. 42-48, 191-201 • Melis et al. (2006) • Milinski et al. (2002) • Stewart-Williams (2007)	n/a	Kin selection and cooperation
Tues., Oct. 4	• Cartwright, pp. 51-69 • Perrett et al. (1998) • Schneider & Lesmono (2009) • Todd et al. (2007)	In-class assessment	Sexual selection
Tues., Oct. 11	n/a	Paper proposal due in class (see description under Course Requirements)	Discussion of paper proposals Writing a review paper • APA style • Elements of a good paper
Tues., Oct. 18	• Cartwright, pp.	n/a	Evolution of mating systems

	231-234, 247-269 • Anderson et al. (2007) • Gibson & Mace (2007)		and parental care
Tues., Oct. 25	• Cartwright, pp. 211-226 • Johnson et al. (2006) • White (2008) • Wroblewski et al. (2009)	In-class assessment	Evolution of group living and conflict
Tues., Nov. 1	• Cartwright, pp. 171-186, 291-303 • Burgdorf & Panksepp (2001) • Buss et al. (1992) • Nettle & Clegg (2006)	n/a	Evolution of emotion and mental illness
Tues., Nov. 8	Election day (no class)	n/a	n/a
Tues., Nov. 15	• Cartwright, pp. 134-142 • Miklósi et al. (2003) • Ouattara et al. (2009) • Renninger et al. (2004)	In-class assessment	Evolution of communication
Tues., Nov. 22	• Cartwright, pp. 115-134 • Hare et al. (2005) • Steele et al. (2008) • Suddendorf & Collier-Baker (2009)	n/a	Evolution of cognition
Tues., Nov. 29	• Cartwright, pp. 327-341 • Baker et al. (2008) • Chiao & Blizinsky (2010) • Sapolsky et al. (2004)	In-class assessment	Evolution of culture
Tues., Dec. 6	n/a	Paper due in class	Wrap-up

Policies:

- **Drafts:** You are encouraged to use your instructor, your classmates, and University resources, such as the Writing Center, for the review of drafts of your work. I will provide comments on drafts if I receive them at least a week in advance of the due date. Do-overs of assignments are *not* permitted after the due date.
- **No extra credit:** There will be no opportunities for extra credit.
- **Late assignments:** Ten points (or equivalent of one letter grade) will be deducted for each day that an assignment is late. Assignments must be submitted in-person and in class.
- **Academic honesty:** All work must be your own. In case of cheating or plagiarism, the penalty will be a grade of "F" in the course. For written work, keep your preparation materials, and be prepared to explain your writing. Any unacknowledged use of the words, ideas, insights, or the original research of another is strictly prohibited. Cheating includes, but is not confined to passing off someone else's work as your own, failing to use proper citations, and failing to use quotation marks around others' verbatim remarks. As a condition of taking this course, all required papers may be subject to submission for textual similarity review to turnitin.com or a similar service for the detection of plagiarism. All submitted papers will be included as source documents in the turnitin.com reference database solely for the purpose of detecting plagiarism of such papers.
- **Accommodations for students with disabilities:** Students requesting an accommodation must contact the instructor at the beginning of the semester. Under Columbia University policy, only students who are registered with the Office of Disability Services may request academic accommodations.
- **Cell phones and laptops:** Cell phones are a significant distraction and must be placed on vibrate or turned off prior to coming to class. If you are expecting an emergency call, you must make arrangements with the instructor prior to class. Laptops may only be used for taking notes. *Please do not answer phones, send text messages or email, or browse the Internet during class.* Students who repeatedly violate this policy will be dropped from the class.
- **Disruptive behavior:** Any behavior that adversely affects the normal educational functioning or the professional standards of the class will result in failure of the course.

Tips on Achieving Success in This Course:

- Come to class, and be on time.
- Complete the assigned reading before class starts.
- Take notes on and highlight important points and difficult concepts in the course reading.
- Plan ahead. Don't wait until the last minute to do your reading and assignments.
- Start thinking about your paper topic and working on your paper proposal as soon as possible. Plan out your writing; the paper should pose a question and answer it (see Course Requirements). Make sure that the references you ultimately include in your paper are relevant to your topic.

Resources:

- **Google Scholar** (http://scholar.google.com)

- **QuickSearch: Articles** on homepage of Columbia University Libraries (http://library.columbia.edu)

- **Books on reserve:**
  John Alcock (2005) *Animal Behavior*.
  Barrett, Dunbar & Lycett (2002) *Human Evolutionary Psychology*.
  David M. Buss (2004) *Evolutionary Psychology*.
  John Cartwright (2008) *Evolution and Human Behavior*.

- **Other books listed in CLIO:** http://library.columbia.edu
  T.H. Clutton-Brock (1991) *The Evolution of Parental Care*.
  Charles Darwin (1859) *The Origin of Species*.
  Richard Dawkins (1976) *The Selfish Gene*, (1986) *The Blind Watchmaker*.
  Paul Ehrlich (2000) *Human Natures*.
  Douglas J. Futuyama (2005) *Evolutionary Biology*.
  John R. Krebs & Nick B. Davies (1997) *Behavioural Ecology: An Evolutionary Approach*.
  Mark Ridley (1996) *Evolution*.
  Edward O. Wilson (1974) *Sociobiology*.

- **Journals:** http://library.columbia.edu
  American Journal of Human Biology
  Animal Behaviour
  Behavioral Ecology
  Behavioral Ecology and Sociobiology
  Behaviour
  Brain, Behavior, and Evolution
  Ethology
  Ethology and Sociobiology
  Evolution
  Evolution and Human Behavior
  Evolutionary Anthropology
  Evolutionary Psychology
  Human Nature
  Journal of Evolutionary Biology
  Journal of Human Evolution
  Primates
  Trends in Ecology and Evolution

- **Databases:** http://library.columbia.edu
  Animal Behavior Abstracts
  Biological Abstracts (BIOSIS)
  Pubmed
  PsycINFO
  ScienceDirect

Support services:

- Columbia University Writing Center
  - http://uwp.columbia.edu/writing-center/
- Barnard College Writing Center
  - http://www.barnard.edu/writing/for_students.php?id=working_fellows_writing
- Tutoring Service
  - http://www.studentaffairs.columbia.edu/asp/tutoring/
- Health Services
  - http://www.columbia.edu/cu/health
- Go Ask Alice! (answers to health questions)
  - http://www.goaskalice.columbia.edu
- Counseling and Psychological Services (CPS)
  - http://www.health.columbia.edu/docs/about_us/cps.html
  - For appointments, call 212-854-2878. For after-hours assistance, call 212-854-9797 or contact Public Safety at 212-854-5555.
- Office of Disability Services
  - http://www.health.columbia.edu/ods
- Office of the University Chaplain
  - http://www.columbia.edu/cu/earl/ouc.html