PSYC4850A
Human Biology, Behaviour & Evolution
15:05-17:45, Tuesday, B543

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Objective:
Humans are biologically evolved organisms, just like all other life on earth. This is, of course, very easy to say, but this simple statement has far-reaching implications, and requires careful consideration. How should we study our own species from an evolutionary perspective? What aspects of our biology and behaviour are amenable to evolutionary analysis? Our physiology? Our anatomy? Our behaviour and psychology? All of these? Only some? In particular, can we study our psychology through an evolutionary lens in the same way that we tackle other aspects of our being? What does this require of us, and how does this differ

from the way we study other species?

In this course, we will consider the study of human biology, psychology and behaviour from an evolutionary perspective, identifying the various schools of thought that exist, assessing the validity of the claims that are made, and the strength of the evidence on which such claims are based. Along the way, we will consider such questions as: should studies of humans be held to a higher standard than those of other animals? Does an evolutionary perspective lead to inappropriate reductionism? Does evolution deny human agency and purpose? Does natural selection still operate on contemporary humans? Does evolution continue to have relevance to our lives?

In addition to these theoretical issues, we'll also be taking an empirical approach, and conducting three studies of our own, in which we'll attempt to replicate some of the research we'll discuss in class. This will give you a feel for handling data and the kinds of inferences that it is possible to draw from different kinds of data.

Structure of the course:

The course is seminar-based, and will (obviously) work best if you come to class fully prepared (i.e., having read the assigned papers for that particular week; collected the data required; prepared answers to any questions that have been set...whatever is required for any given week). You need to be able to participate fully in class discussions and debates. This isn't a course where you can just sit back, snooze and wing it at the end through a bit of judicious cramming and rote memorization. If you have the right attitude, and understand that you are responsible for your own learning, then it will all work extremely well. Basically, to get the most out of the course and, more importantly, enjoy it, you will need curiosity, generosity, stamina, an ability to retain your sense of humour and a willingness to occasionally look stupid. (These are also some of the attributes you need to teach a class like this, so I'm not asking you any more of you than I demand of myself.) Also: no whining.

For the first few weeks of class, we will use the example of human height as a means to examine the scope and limits of an evolutionary approach to human biology and behaviour. Height is an immensely informative trait that allows us to deal with everything from anatomy to physiology to behaviour and psychology. This might sound like an odd trait to select, but if you are not converted by the time we're done then, quite frankly, you are dead inside. Alongside a consideration of evolutionarily-informed work on human height, we'll also consider the relevant evolutionary theory that forms the background to such work, and its application to humans. Once we've covered the groundwork in this way, we'll then be in a position to pursue those topics you find most relevant, contentious or interesting, and wish to cover in more depth (NB: this will, in general, exclude those topics that are covered by other courses in the psychology department; the aim here is to do something different, not more of the same).

During these first few weeks of term, we will also discuss the empirical studies we'll be attempting to replicate, and plan how to carry them out. Again, these will focus on height for practical reasons, as well as interest: height is an easy trait to study, and one that lends itself to a variety of empirical questions that we can collect data on for ourselves. Specifically, we will, over the course of the semester, collect and analyse data on the following three topics that deal with aspects of our physiology, social cognition and visual perception respectively:

1. **Height and season of birth**:

Is there any relationship between the month in which someone was born, and their adult height?

Banegas, J. R., Rodríguez-Artalejo, F., Graciani, A., la Cruz, de, J. J., & Gutiérrez-Fisac, J. L. (2001). Month of birth and height of Spanish middle-aged men. *Annals of human biology*, 28(1), 15–20.

2. **Height and dominance**:
Do people defer to those who are taller than themselves in everyday non-verbal social situations? Does this apply to both sexes?
Stulp, G., Buunk, A.P., Verhulst, S. & Pollet, T.V. Human height is positively related to interpersonal dominance in both verbal and non-verbal dyadic interactions.

3. **Height and visual perception**:
Does height influence, quite literally, how someone perceives the world? More specifically, can we demonstrate that people's perceptions of everyday objects, like a flight of stairs, depends on the particular nature of their embodiment, specifically their height?
Warren, W. H. (1984). Perceiving affordances: visual guidance of stair climbing. *Journal of experimental psychology. Human perception and performance*, *10*(5), 683–703.

These topics also lend themselves to different kinds of data collection (questionnaires, naturalistic observations and controlled experiments) giving you some experience with each of these, as well as experience with data handling and analysis (It is worth nothing here that, in at least one case, it is unlikely that we will find the same effects as published studies; the reasons for this are part of the rationale for attempting such a study). In each case, we will spend approximately 3 weeks collecting data, collating it, analysing it and discussing it together as a class. You will then be responsible for writing up your own individual report for each study, and these will constitute part of your overall grade for the class. The main point of this exercise is not to discover anything ground-breaking or win a Nobel Prize, but to make you think about the nature of data and data analysis, and so look at the published work you're reading from a more informed perspective. In other words, it's not about following a recipe and simply getting things right, but has much more to do with thinking about how one tackles an issue empirically, and what this tells you about the nature of scientific research.

Readings:
There is no set text for this course, and the intention is to allow the course to develop "organically" with respect to subject matter after the first few weeks. To kick off with, I'm supplying you with a reading list that covers the first few weeks of class (see below). From this, I expect you to select papers and do the relevant research; we'll discuss these expectations in more detail in the first class. As the semester progresses, and we discover which topics hold most interest for you, you will be able (and expected) to find your own readings and articles, construct your own reading lists to share with the class, and present and discuss articles with your classmates during our weekly seminars. Each week, we'll divide our time between working on our practical endeavours, and discussing articles and evolutionarily relevant issues more broadly.

Course Web Site:
The class website is on Moodle. Here you'll find the course outline, announcements, links and any other relevant material.

Evaluation:
The course will be assessed on the basis of the three individual write-ups for each of the empirical studies we conduct (3 x 25%) and one paper (3-5 pages, 1000 words max.) (1 x 25%) that answers one of the following questions:
1. Why hasn't myopia been selected out of modern human populations?
2. If there has been sexual selection for averageness and symmetry in faces as some researchers suggest, why isn't everyone highly symmetrical and average (put differently, why are we still so funny looking)?
3. Is it possible to bring human agency into evolutionary perspective?
4. Should standards of scientific evidence be higher for studies of our own species compared to those of other animals?

5. Can modularity work as an explanation of human's evolved cognitive architecture?
6. How much can be inferred about evolutionary processes from a study of mate preferences (in both humans and other species)?
7. If people control their fertility does this undermine an evolutionary approach to human behaviour?
8. Is there a universal human nature?
9. How does an understanding of development and plasticity complicate explanations of human psychology based on an evolved cognitive architecture?
10. Should psychology be the study of mechanism or function?
11. Are we really 99% bacteria?

Empirical write-ups will be due in the week following the completion of a given study (see time-table below). Papers will be due in week 9. You will be able to revise your papers in order to potentially improve your grade.

Grading:

Your final letter grade will be based on your percentage score as given in the table below:

A+	91–100	C+	67–69
A	86–90	C	63–66
A–	81–85	C–	60 – 62
B+	77–80	D+	55 – 59
B	73–76	D	50 – 54
B–	70–72	F	< 50

(Rough) Syllabus:

Date	Theory	Practical
Sept 10th	Introduction	Introduction
Sept 17th	Evolution, humans & human evolution	Study#1: Height & Season of birth
Sept 24th	Height & life history	
Oct 1st	Height & psychology	
Oct 8th	Choice of new topic	hand-in date for Study #1
Oct 15th	Discussion of relevant readings	Study #2: Height & dominance
Oct 22nd	Choice of new topic	
Oct 29th	Discussion of relevant readings	
Nov 5th	Choice of new topic	hand in date for Study #2
Nov 12th	Discussion of relevant readings	Study #3: Height & visual perception
Nov 19th	Choice of new topic	
Nov 26th	Discussion of relevant readings	
Dec 3rd	Summary & Conclusion	hand in date for Study #3

Reading List:

General Evolutionary Psychology & Behavioural Ecology:

Barrett, H.C. & Kurzban, R. (2006) Modularity in cognition: framing the debate. *Psychological Review* 113: 628-647.
Barrett, L., Dunbar, R.I.M., & Lycett, J.E.L. (2000) *Human Evolutionary Psychology*. Palgrave, London.
Barrett, L. & Dunbar, R.I.M. (2007) *Oxford Handbook of Evolutionary Psychology*. Oxford University Press, Oxford.
Barrett, L. & Stulp, G. (2013) The pleasures and pitfalls of studying humans from a behavioural ecological perspective. *Behavioral Ecology* 24: 1045-1046
Bolhuis, J.J., Brown, G.R., Richardson, R.C. & Laland, K.N. (2011) Darwin in mind: new opportunities for evolutionary psychology. *PLoS Biology* 9: e1001109
Borgerhoff Mulder, M & Schacht, R. (2012) Human Behavioural Ecology. In: *eLS*. John Wiley Sons, Ltd: Chichester. DOI: 10.1002/9780470015902.a0003671.pub2
Buss, D. M. (1995). Evolutionary Psychology: a new paradigm for psychological science. *Psychological Inquiry* 6: 1-30.
Buss, D.M. (2011) Evolutionary Psychology: the new science of the mind. Pearson,
Confer, J.C., Easton, J.A., Fleischman, D. et al. Evolutionary psychology: controversies, questions, prospects, limitations. *American Psychologist* 65: 110-126.
Daly, M. and Wilson, M. (1999). Human evolutionary psychology and human behaviour. *Animal Behaviour* 57: 509-519.
Davies, N. B., Krebs, J. R., & West, S. A. (2012). *An introduction to behavioural ecology*. (4th, Ed.). Blackwell Science Ltd.
Irons, W. (1998). Adaptively relevant environments versus the environment of evolutionary adaptedness. *Evolutionary Anthropology* 6: 194-204.
Nettle, D., M.A. Gibson, D.W. Lawson and R. Sear (2013). Human behavioral ecology: Current research and future prospects. *Behavioral Ecology* 24: 1031-40
Schmitt, D.P. & Pilcher, J.J. (2004) Evaluating evidence for psychological adaptation: how do we know one when we see one? *Psychological Science* 15: 643-649.
Smith, E.A., Borgerhoff-Mulder, M. and Hill, K. (2000). Evolutionary analyses and human behaviour: a commentary on Daly and Wilson. *Animal Behaviour* 60: F21-F26
Smith, E.A., Borgerhoff-Mulder, M. and Hill, K. (2001). Controversies in the evolutionary social sciences: a guide for the perplexed. T*rends in Ecology and Evolution* 16: 128-134.
Tooby, J. and Cosmides, L. (1990). The past explains the present. *Ethology and Sociobiology* 11: 375-424.
Tooby, J. and Cosmides, L. (1992). The psychological foundations of culture. In: J. Barkow, L. Cosmides and J. Tooby (eds) *The Adapted Mind: Evolutionary Psychology and the Generation of Culture*, pp 19-136. New York: Oxford University Press.

Height and human behaviour - a selective list:

Allal, N., Sear, R., Prentice, A. M., & Mace, R. (2004). An evolutionary model of stature, age at first birth and reproductive success in Gambian women. *Proceedings of the Royal Society B: Biological Sciences*, 271: 465–470.
Bielicki, T., & Charzewski, J. (1983). Body height and upward social mobility. *Annals of Human Biology*, 10: 403–408.
Bogin, B. (1999). Evolutionary perspective on human growth. *Annual Review of Anthropology*, *28*, 109–153. doi:10.1080/00988157.1999.9978223
Bogin, B., Smith, P., Orden, A. B., Varela Silva, M. I., & Loucky, J. (2002). Rapid change in height and body proportions of Maya American children. *American Journal of Human Biology*, 14: 753–761.
Cavelaars, A. E. J. M., Kunst, A. E., Geurts, J. J. M., Crialesi, R., Grotvedt, L., Helmert, U., Lahelma, E., et al. (2000). Persistent variations in average height between countries and

between socio-economic groups: an overview of 10 European countries. *Annals of Human Biology*, 27: 407–421.
Courtiol, A., Raymond, M., Godelle, B., & Ferdy, J.-B. (2010b). Mate choice and human stature: homogamy as a unified framework for understanding mating preferences. *Evolution*, 64: 2189–2203
Deaton, A. (2007). Height, health, and development. *Proceedings of the National Academy of Sciences of the USA*, 104: 13232–13237.
Gallagher, A. (2013) Stature, body mass, and brain size: A two-million-year odyssey *Economics & Human Biology*: http://dx.doi.org/10.1016/j.ehb.2012.12.003
Judge, T. A., & Cable, D. M. (2004). The effect of physical height on workplace success and income: Preliminary test of a theoretical model. *Journal of Applied Psychology*, 89: 428–441.
Komlos, J., & Baur, M. (2004). From the tallest to (one of) the fattest: the enigmatic fate of the American population in the 20th century. *Economics & Human Biology*, 2: 57–74.
Lawson, D. W., & Mace, R. (2008). Sibling configuration and childhood growth in contemporary British families. *International Journal of Epidemiology*, 37: 1408–1421.
Migliano, A. B., Vinicius, L., & Lahr, M. M. (2007). Life history trade-offs explain the evolution of human pygmies. *Proceedings of the National Academy of Sciences of the USA*, 104: 20216–20219.
Monden, C. W. S., & Smits, J. (2009). Maternal height and child mortality in 42 developing countries. *American Journal of Human Biology*, 21: 305–311.
Nettle, D. (2002). Women's height, reproductive success and the evolution of sexual dimorphism in modern humans. *Proceedings of The Royal Society*, Ser B. *269*(1503), 1919–1923. doi:10.1098/rspb.2002.2111.
Nettle, D. (2002) Height and reproductive success in a cohort of British men. Human Nature 13: 473-491.
Pollet, T. & Nettle, D. (2008) Taller women do better in a stressed environment: height and reproductive success in rural Guatemalan women. American Journal of Human Biology 20: 254-259.
Sear, R. (2006) Height and reproductive success. Human Nature 17: 405-418.
Sear, R. & Marlowe, F. (2009) How universal are human mate choices? Size does not matter when Hadza foragers are choosing mates. Biology Letters 5: 606-609.
Sear, R. (2010). Height and reproductive success: is bigger always better? In U. J. Frey, C. Störmer, & K. P. Willführ (Eds.), *Homo novus – a human without illusions* (pp. 127–143). Springer Berlin, Heidelberg.
Stulp, G, Buunk, AP, Kurzban, R & Verhulst, S (2013). The height of choosiness: mutual mate choice for stature results in sub-optimal pair formation for both sexes. Animal Behaviour 86(1): 1045-1046.
Stulp, G, Buunk, AP & Pollet, TV (2013). Women want taller men more than men want shorter women. Personality and Individual Differences 54(8): 877-883.
Stulp, G, Buunk, AP, Pollet, TV, Nettle, D & Verhulst, S (2013). Are human mating preferences with respect to height reflected in actual pairings? PLoS ONE 8(1): e54186.
Stulp, G, Buunk, AP, Verhulst, S & Pollet, TV (2013). Tall claims? Sense and nonsense about the importance of height in US presidents. The Leadership Quarterly 24(1): 159-171.
Stulp, G, Buunk, AP, Kuijper, B, Pollet, TV & Verhulst, S (2012). Intralocus sexual conflict over human height. Biology Letters 8 (6): 976-978. (recommended by the Faculty of 1000)
Stulp, G, Verhulst, S, Pollet, TV & Buunk, AP (2012). The effect of female height on reproductive success is negative in Western populations, but more variable in non-Western populations. American Journal of Human Biology 24 (4): 486-494.
Stulp, G, Pollet, TV, Verhulst, S & Buunk, AP (2012). A curvilinear effect of height on reproductive success in human males. Behavioral Ecology and Sociobiology 66 (3): 375-384.
Stulp, G, Verhulst, S, Pollet, TV, Nettle, D & Buunk, AP (2011). Parental height differences predict the need for an emergency Caesarean section. PLoS ONE 6 (6): e20497.
Walker, R., Gurven, M., Hill, K., Migliano, A., Chagnon, N., De Souza, R., Djurovic, G., et al. (2006). Growth rates and life histories in twenty-two small-scale societies. *American Journal of Human Biology*, 18: 295–311.
Wells, J. C. K., DeSilva, J. M., & Stock, J. T. (2012). The obstetric dilemma: An ancient game of Russian roulette, or a variable dilemma sensitive to ecology? *American Journal of Physical Anthropology*, *149*(S55), 40–71.