



University of Waterloo
Department of Psychology
Waterloo, ON, N2L 3G1

Psychology 394 (Section 002)—Research in Cognition Winter 2014

Class Location: PAS 4032 **Time:** 12:30-2:20, Mon. & Wed.

Instructor: Gordon Pennycook
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The purpose of this course is to expose you to cognitive research in such a way that you will be able to gain *practical* (read: useful) skills. Both the content and the structure of the course have been designed with this in mind. In short, the course is centered on student presentations and discussions of research that challenges common conceptions about thought and reason.

Course Content/Readings

There is no textbook for this course. Readings for the course will consist of primary source material (i.e., journal articles). The reason for the use of journal articles rather than a textbook is that textbooks tend to gloss over many of the important details. Keep in mind that reading primary source material is typically much more challenging than textbooks so you should be prepared to read papers more than once. I have chosen journal articles that challenge common conceptions about humans thinking, reasoning, and consciousness. In addition, some of the articles are paired in such a way to highlight the import of academic debate.

Course Structure and Grading Scheme

Quizzes (50%) There will be 9 quizzes on Wednesdays (at the beginning of the class) throughout the term. The best 8 of these will constitute 50% of your grade (6.25% each). You will be tested on in class material and required readings. Note that with this testing format there will be no cumulative tests or final exam. However, the last quiz of the term will be based on the idea presentations (discussed below) and will therefore cover more material than the other quizzes. For this reason, the final quiz does not qualify for exclusion from the 50% grade.

Summary Presentation (15%) As mentioned, the course is centered on presentations and discussion. We will examine, in class, a number of published journal articles. Each student will present (summarize) one such article to the class. You are expected to give a considerable amount of care and attention to the preparation of your presentation. It must be relatively concise, but you are the resource expert for the paper that you are presenting. In other words, you should have a lot of the details of the paper at your fingertips (i.e., in memory) in the event that a question is asked (e.g., how many subjects were tested? were the conditions blocked or randomized? was factor Y significant in the analysis as a main effect? was there feedback after every trial? etc).

There should be enough detail that your audience can understand (if applicable):

- (1) what question was investigated
- (2) what the experiment consisted of (i.e., explain what was actually manipulated, and how the experiment was done)
- (3) what the specific predictions were
- (4) what the data are (please SHOW us the data in the presentation)
- (5) what the analysis of this data said (without specifying the size of the F, or the degrees of freedom)
- (6) how the data fit or undermine the theoretical hypotheses.

You will be expected to submit your slides to me the day before your presentation so that they can be distributed to the other students in the class. Also, I strongly encourage you to meet with the instructor or TA (or at least send us your slides) a day or two prior to the presentation so that we can review the slides and make suggestions/recommendations if needed.

Written Component (15%) – Due March 12th You will each choose one article taken from a journal. I have supplied a list of interesting papers, but you may find a different paper if you'd like. Just send the article to me so that I can ensure that it is appropriate.

You will then write a 4 page research paper based on your article. These papers will consist of two components:

- a) **Summary.** You should write a summary of your article, indicating the goal of the research, the design of the experiments, the principal results, and how these results were interpreted theoretically. This should be two typed, double-spaced pages (i.e., not an abstract). It should be clearly written in normal prose (i.e., not "point form").
- b) **Extension.** Using your own ideas, you should suggest one way in which the research in your article might be extended in a meaningful way. Provide sufficient methodological and theoretical detail for a good understanding of the experiment you propose. This should be a principled and substantive proposal, taking two pages. You are most welcome (and encouraged) to consult with me about your ideas.

The final product will be a 4-page paper (not longer), with 1-inch margins and *double*-spaced in 12 font Times New Roman. You may not use either of the Summary pages for Extension (or vice versa). Note that this paper is meant to be a self-contained task, so use of reference material

is not required. A title page with a brief descriptive title of your own creation should be the first page of your submission. You are also responsible for keeping a copy of the final version of your paper.

Idea Presentation (15%) In the last three weeks of class you will each give a (approx. 25 min.) presentation based on your paper. The first half will be dedicated to providing an overview of the article you selected (Summary) and then you will describe the idea you outlined in your paper (Extension). We will discuss more details later on in class.

Participation (5%) Presenting in front of peers is not a small task. As such, class participation is absolutely critical to the success of this class. The presentations will be easier for everyone if the class is open to discussion. We all know how to talk, so the less the presentation feels formal and the more it feels like a conversation the more enjoyable it will be for everyone. 5% of your grade will be based on the extent to which you are actively engaged throughout the term.

Additional Notes

The Official Version of the Course Outline

If there is a discrepancy between the hard copy outline and the outline posted on D2L, the outline on D2L will be deemed the official version. Outlines on D2L may change as instructors develop a course, but they become final as of the first class meeting for the term.

Accommodation for Students with Disabilities:

Note for students with disabilities: The [AccessAbility](#) Services office, located in Needles Hall Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the AS office at the beginning of each academic term.

Concerns About the Course or Instructor (Informal Stage)

We in the Psychology Department take great pride in the high quality of our program and our instructors. Though infrequent, we know that students occasionally find themselves in situations of conflict with their instructors over course policies or grade assessments. If such a conflict arises, the Associate Chair for Undergraduate Affairs (Dr. Myra Fernandez) is available for consultation and to mediate a resolution between the student and instructor. Dr. Fernandez's contact information is as follows:

Email: mafernan@uwaterloo.ca

Ph 519-888- 4567 ext 36852

A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. See Policy 70 and 71 below for further details.

Academic Integrity, Academic Offenses, Grievance, and Appeals

To protect course integrity, as well as to provide appropriate guidance to students, course outlines in the Faculty of Arts incorporate the following note on avoidance of academic offenses:

Academic Integrity: in order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4.

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offenses, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about 'rules' for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 - Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline.

Appeals: A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals

For further advice from the Faculty of Arts on the avoidance of academic offenses, see the following website: [Academic responsibility](#)

Schedule of Readings

Week 1 January 6 & 8

Organizational Meeting (Mon.)

Fundamental work: Humans are irrational (Wed.)

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, 185, 1124-1131.

Week 2 January 13 & 15

Explaining irrationality via dual processes (Mon.)

Wason, P. C., & Evans, J. St. B. T. (1975). Dual processes in reasoning? *Cognition*, 3, 141-154.

Evans, J. St. B. T., & Stanovich, K. E. (2013). Dual-process theories of higher cognition: Advancing the debate. *Perspectives on Psychological Science*, 8, 223-241.

Quiz 1 (Wed.)

Why this research matters (Wed.)

Lilienfeld, S. O., Ammirati, R., & Landfield, K. (2009). Giving debiasing away: Can psychological research on correcting cognitive errors promote human welfare? *Perspectives in Psychological Science*, 4, 390-398.

Week 3 January 20 & 22

Automaticity and belief (Mon.)

Gilbert, D. T., Tafarodi, R. W., & Malone, P. S. (1993). You can't not believe everything you read. *Journal of Personality and Social Psychology*, 65, 221-233.

Hasson, U., Simmons, J. P., & Todorov, A. (2005). Believe it or not: On the possibility of suspending belief. *Psychological Science*, 16, 566-571.

Quiz 2 (Wed.)

Unconscious thought 1 (Wed.)

Dijksterhuis, A., Bos, M. W., Nordgren, L. F., & van Baaren, R. B. (2006) On making the right choice: The deliberation-without-attention effect. *Science*, 311, 1005-1007.

Week 4 January 27 & 29

Unconscious thought 2 (Mon.)

Rey, A., Goldstein, R. M., & Perruchet (2009). Does unconscious thought improve complex decision making? *Psychological Research*, 73, 372-379.

Mamede, S., et al. (2010) Conscious thought beats deliberation without attention in diagnostic decision making: At least when you are an expert. *Psychological Research*, 74, 586-592.

Quiz 3 (Wed.)

Biases in action 1 (Wed.)

Stanovich, K. E., West, R. F., & Toplak, M. E. (2013). Myside bias, rational thinking, and intelligence. *Current Directions in Psychological Science*, 22, 259-264.

Week 5 February 3 & February 5

Biases in action 2 (Mon.)

Taber, C. S. & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science*, 50, 755-769.

Kahan, D. M., et al. (2012). The polarizing impact of science literacy and numeracy on perceived climate change risks. *Nature Climate Change*.

Quiz 4 (Wed.)

Knowledge and scientific reasoning 1 (Wed.)

Birch, S. A. J. & Bloom, P. (2007). The curse of knowledge in reasoning about false beliefs. *Psychological Science*, 18, 382–386.

Week 6

February 10 & 12

Knowledge and scientific reasoning 2 (Mon.)

Shtulman, A. & Valcarcel, J. (2012). Scientific knowledge suppresses but does not supplant earlier intuitions. *Cognition*, 124, 209–215.

McCabe, D. P. & Castel, A. D. (2008). Seeing is believing: The effect of brain images on judgments of scientific reasoning. *Cognition*, 107, 343-352.

Quiz 5 (Wed.)

And now for a discussion about psychology (Wed.)

Lilienfeld, S. O. (2010). Can psychology become a science? *Personality and Individual Differences*, 49, 281-288.

Reading Week

Week 7

February 24 & 26

Creativity (Mon.)

Jarosz, A. F., Colflesh, G. J. H., & Wiley, J. (2012). Uncorking the muse: Alcohol intoxication facilitates creative problem solving. *Consciousness and Cognition*, 21, 487–493.

Barr, N., et al. (under review). Reasoned connections: A dual-process perspective on the role of analytic processing in creative thought.

Quiz 6 (Wed.)

Morality 1 (Wed.)

Haidt, J. (2007). The new synthesis in moral psychology. *Science*, 316, 998-1002.

Week 8

March 3 & 5

Morality 2 (Mon.)

Greene, J. D., et al. (2008). Cognitive load selectively interferes with utilitarian moral judgment. *Cognition*, 107, 1144-1154.

Pennycook, G., et al. (2014). The role of analytic thinking in moral judgements and values. *Thinking & Reasoning*.

Quiz 7 (Wed.)

Religious belief 1 (Wed.)

Boyer, P. (2003). Religious thought and behaviour as by-product of brain function. *Trends in Cognitive Sciences*, 3, 119-124.

Week 9 **March 10 & 12**

Religious belief 2 (Mon.)

Gervais, W. M. & Norenzayan, A. (2012). Analytic thinking promotes religious disbelief. *Science*, 336, 493–496.

Preston, J. & Epley, N. (2009). Science and God: An automatic opposition between ultimate explanations. *Journal of Experimental Social Psychology*, 45, 238–241.

Quiz 8 (Wed.)

PAPER DUE (Wed.)

Short discussion of idea presentation format (Wed.)

Week 10 **March 17 & 19**

Idea Presentations

Week 11 **March 24 & 26**

Idea Presentations

Week 12 **March 31 & April 2**

Idea Presentations

Quiz 9 (Wed.)

Important Dates

Quizzes: Jan. 15, 22, 29; Feb. 5, 12, 26; March 5, 12; April 2

Paper due: March 12

Summary Presentations: Will vary by individual. Here is a place to write a reminder of when you are presenting:

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