

PERCEPTUAL & COGNITIVE EXPERTISE (PSYC372)

Tuesdays & Thursdays 3:10-4:55pm - Olin 103 - Winter 2014

Professor: Julia Strand - jstrand@carleton.edu - Olin 119

Office Hours: Tuesdays & Fridays 1-2pm, and by appointment at <http://juliastrand.youcanbook.me>

“Experts certainly know more, but they also know differently.”

- Feltovich, Prietula, & Ericsson (2005)

COURSE DESCRIPTION

Some people are able to play (and win!) a dozen games of chess simultaneously or remember thousands of digits of pi. Most people can effortlessly recognize thousands of faces and easily discriminate between similar speech sounds. How do people develop these levels of expertise? This course will explore the processes underlying perceptual and cognitive expertise. Topics include the development of expertise in music perception and performance, memory, sports, visual processing, and taste perception. As part of the course, you will learn first-hand what it takes to acquire expertise by practicing a skill of your choice and documenting your progress.

COURSE LOGISTICS

Goals. The goals of the course are to enable students to:

1. become familiar with the changes in psychological processes that occur with increased experience
2. deepen and apply knowledge about basic processes in human cognition and perception
3. gain an appreciation for the methods necessary to develop expertise
4. refine skills including critically evaluating scientific research, analyzing claims, and presenting ideas in oral and written form

Moodle. This syllabus and other important course materials including readings, topics schedule, forums, and assignment details are available on Moodle. Powerpoint slides, videos, handouts, and other material will be posted on Moodle after the class in which they are presented.

Office hours. Office hours are a great opportunity to discuss the material outside class time. Feel free to use these times to review concepts that are unclear, ask for additional information on a topic you found interesting, clarify concerns, or just talk about how neat the material is.

Classroom atmosphere. Seminars are most successful when everyone feels comfortable. Let's work together to make this a respectful and positive classroom atmosphere. This includes silencing and putting away cellphones and using laptops for class-related purposes only. During class discussions, be respectful of other people's opinions, backgrounds, preferences, and learning styles.

Extension and Absence Policy. It isn't possible to make up discussions after the fact so please try to avoid missing class. If life happens and you must be absent, let Julia know as early as possible. If you aren't in class, you can't participate, and there is no way to "make-up" discussions after the fact. Thus, missing three or more classes (for any reason) will result in failing the class. Please do not do this. Late moodle posts, journal entries, and assignments will be penalized.

COURSE EXPECTATIONS & GRADING

Participating in discussions (20%)

Productive discussions require that everyone is willing and able to participate. This includes offering thoughtful opinions, comments, and analysis, and listening carefully and responding constructively to the comments offered by your peers. You should not only be familiar with the readings, but also have thought deeply about the implications of the readings and be able to make connections between individual papers and other material.

High marks for participation are given for **excellent preparation** (thoroughly and thoughtfully evaluating the reading, bringing notes & questions on the reading), **insightful analysis, synthesis, and evaluation of the material** (putting together pieces of the discussion, making connections across topics, identifying the major issues the papers address and putting them in a larger theoretical context), **advancing the level and depth of the discussion** (keeping the discussion focused, responding to others' comments, suggesting alternate approaches), **active involvement** (listening thoughtfully and responding to others' comments) and **good classroom citizenship** (not dominating the discussion, respecting others' opinions, engaging other students).

Moodle discussion questions (15%)

Before each class (beginning in week 3), contribute to the online discussion forum on Moodle. This has three purposes: to deter procrastination, to encourage you to think deeply and form opinions about the reading rather than just skimming over it, and to give the discussion leaders an opportunity to see what others are thinking about. Your posts should not be summaries of the reading; rather, they should be evaluations or reactions to it. Feel free to include connections between topics, analysis of the methods, objections to the conclusions drawn, suggestions for follow-up studies, and inflammatory opinions you have (provided they pertain to the readings). You are welcome to link to websites, news articles, or videos that are relevant. Use the postings as evidence that you are engaging with the reading and that you have thought carefully and critically about the topics.

The deadline for posting to Moodle will be _____ the evening before the discussion (to give the discussion leader an opportunity to review what you've contributed). You do not need to post prior to the discussion that you lead.

Leading discussion (20%)

Each student will lead discussion once, either individually or with a partner. This requires a close reading of the assigned materials and additional reading or research. In addition, you should consider the online postings that your colleagues will have made on Moodle and develop a variety of question types to stimulate thought and critical evaluation of the topic. The discussion leader(s) will be responsible for allocating class time, and (in addition to discussion) may include lectures, demonstrations, case studies, activities, debates, etc. See "Tips for leading effective discussions" (page 6).

You must meet with Julia *at least* 24 hours before you are due to lead the discussion and at that time turn in a written plan, including basic time allotments for each section of the class and a draft of a handout for class that includes key concepts, take-home messages, or discussion questions.

High marks for leading discussion are given for **being well prepared and organized** (structuring class time, generating discussion questions or activities), **maintaining a supportive atmosphere** (encouraging the whole class to participate, responding to others' comments, affirming contributions), **keeping focused** (keeping the discussion relevant and on-track), and **contributing to the course as a whole** (making connections with other topics and major themes of the course).

Personal project, term paper, and presentation (40%)

As part of the course requirements, you will work to acquire a skill by practicing that activity 3 hours/week at minimum. The purpose of this assignment is for you to be able to apply what we learn in class to the personal experience of developing a skill. Choose something you're excited to learn! Assignments associated with the personal project include a project proposal, presentation, and final paper (see next page).

Personal project components:

1.) Meet with Julia in Week 1.

- This will serve as a get-to-know-each-other meeting and a time to start brainstorming about your personal project. Bring some ideas to the meeting (but don't feel that you have to come with a complete, fully fleshed-out plan).

2.) Project proposal (due 1/14 before class, 5% of project grade)

- A summary of at least one empirical article that studies expertise in your chosen domain (or a similar one) and citations for at least two others. This step is to ensure that there is some research on your topic from which you can draw. Use APA formatting for your references (see page 4).
- A brief description of the skill you plan to develop.
- A statement of how/when/where you will practice, including any materials you will need.
- A plan of how you will assess your progress. You need some measure for monitoring your development. Be creative! Consider the following (or others!)
 - o Recording a screencast of you observing something (e.g., a chess game) and talking aloud about why each move might have happened. Do this as a pre-test and a post-test.
 - o Do a "quizlet" quiz on your topic of study (e.g., types of birds) and record your score before and after. Also analyze the types of errors you make before and after.
 - o Ask someone to select two comparable sets of stimuli for you to evaluate. Write your reactions to one as a pre-test and the other as a post-test. Consider using the buddy system with a classmate so you can generate stimuli for each other.

3.) Pre-test (due 1/16 before class, 5% of project grade)

- Upload whatever you have selected to serve as your pre-test. This may include written notes, an audio recording, a video, etc.

4.) Journaling (weekly entries, beginning week 3, 20% of project grade)

- You have a private moodle forum that is only visible to you and Julia. At least once a week (starting in week 3, with each week ending Sunday at midnight), log the time you spent on the activity (actual hours), how you practiced, and your own personal reflections about how you feel you are improving. Make links with theoretical issues raised by class material or outside reading.

5.) Outline (due 2/27 before class, 5% of project grade)

- Organize your thoughts from journaling and outside reading into a coherent outline of your final paper. This should include the main sections of the paper, citations for relevant articles, and the themes of your personal practice. The purpose of this assignment is for you to organize your ideas and identify areas of weakness that you can remedy to prepare for your presentation and final paper.

6.) Presentations (3/6 and 3/11, 10% of project grade)

- In class, share with your classmates the story of your progress in your skill. You should complete your post-test so you can show both the pre- and post-test as part of your presentation. Situate your skill in a review of the literature surrounding this domain of study.

7.) Final papers (due by the end of exam period – 3/17 at 9:30pm, 55% of project grade)

- Your final paper should include a review of the literature on your domain of study and a description of your own journey through the skill (see grading rubric on page 5).

How do I choose a topic?

- Choose something you don't already know how to do well.
- Focus on a small element of a skill. "Chess" is too big – "openings for white" is appropriate.
- Choose a skill that you can practice regularly. Although you may really want to learn to discriminate between fine wines, if you aren't 21 or can't afford fine wines, it won't work (there are not funds available to help support projects, so plan accordingly).
- Look at the topics for the rest of the term, and the readings for the first several days for inspiration about domains that have already been studied (so have research to reference).
- Domains to consider:
 - o Discriminating between perceptual stimuli. *E.g.*, types of birds, trees, textiles, paintings, teas, styles of music, geological formations, sports performance, architectural styles, livestock judging
 - o Completing a cognitive task. *E.g.*, chess openings, "go," bridge, mathematical word problems, rubiks cube solving, learning Morse code, increasing WM span.
 - o Completing a motor task. *E.g.*, juggling, playing the piano, shooting free-throws.

TOPICS [see moodle for readings and related links]

Week	Day	Topic
1	1/7	Introduction to expertise & the course
	1/9	Themes in expertise <i>Meet with Julia outside class in week 1 to discuss personal project</i>
2	1/14	Methods of training and studying expertise <i>Personal project proposal due before class</i>
	1/16	Current debates on the importance of hereditary and environmental factors <i>Personal project pre-test due before class</i>
3	1/21	Chess
	1/23	Memory
4	1/28	Math & calendar calculation
	1/30	Physics & computer programming
5	2/4	Face recognition
	2/6	Visual categorization (dogs, cars, etc.)
6	2/11	Medicine
	2/13	Law
7	2/18	Sports perception
	2/20	Sports performance
8	2/25	Music
	2/27	Wine <i>Paper outline due before class</i>
9	3/4	TBA
	3/6	<i>Student presentations in class</i>
10	3/11	<i>Student presentations in class</i>
	3/17	<i>Final papers due by 5pm</i>