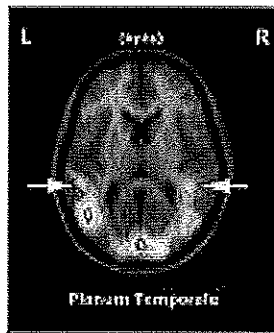
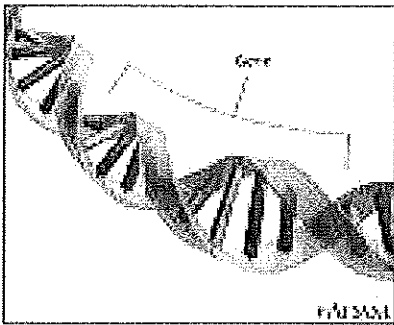


Syllabus  
"Genes, Brain, and The Evolution of Mind in Human Development"  
Current Topics in Developmental Psychology  
PSYD20H3

Spring 2008  
Professor Laura-Ann Petitto  
Tuesdays 1:00-3:00  
Room AC 334

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**Office Hours:** Tuesdays 3:00-4:00



## COURSE DESCRIPTION

In this advanced seminar we will explore a revolutionary new approach to the study of human development and the development of human higher cognitive capacities. This ground-breaking approach builds on the advent of innovative DNA Genotyping analyses of genes that have been linked with aspects of higher cognition. The approach joins 3 disciplines: *DNA genotyping* with the most advanced *Brain Imaging* technology from cognitive neuroscience and the leading *Behavioral psycholinguistic* and developmental methods from psychology. Together, the unification of these three disciplines affords the most stunning new lens into the evolution and nature of the human mind to date, including human cognition, aspects of emotion and social behavior, language, reading and language disorders, math and numeracy, and creativity. Through exciting discussion, critical evaluation, and lively debate, the course will lay bare this significant modern scientific advancement of thought and methods. It will further consider seriously its greater ethical and moral impact on society and the conduct of scientific inquiry.



## REQUIRED READINGS

All of the required course readings can be found on Blackboard (for downloading and printing).

## BLACKBOARD

Blackboard will be your course "life line." It is where you will find most of the class readings to download, my general communications (e.g., my announcements), as well as other course materials that were given out in class (e.g., syllabus, and handouts).

This is where you (and I) will post class Questions that will be used to guide important class Discussions. This will be done using the "Discussion Board" feature. *Questions for student-led class Discussions must be posted no later than Thursday night (midnight) the week before you present.* It will also be a vital "virtual classroom" where class members can ask and answer each other's questions.

Recommendation: Immediately familiarize yourself with Blackboard and get in the habit of checking it regularly. If you are registered in the course, simply go to [portal.utoronto.ca](http://portal.utoronto.ca). Enter your UTOR ID and click on the course.

## COURSE STRUCTURE

This course is designed with the most cutting-edge understanding of psychological principles of human learning and memory, involving, for example, how we learn best, how we remember best, and how we learn for life. Lecturing will be kept at a minimum. On most days, the class will consist of student-led discussions with the goal of promoting meaningful understanding, critical thinking, and deep learning of the material.

## OBJECTIVES

The primary objectives of this course are to *think* deeply about the material, to *develop critical reasoning skills*, and to *learn* it in a way that stays with you. Why? Because the present course material is fundamentally about all of us—the complex factors that impact all human development—and it will reveal developments that we will witness in all young people of our species (be they our own children, children in our extended families, or children in the greater community). Indeed, the contents of this course will help us discover some of the secrets of what it means to be human—to be alive.

## RESPONSIBILITIES

Your primary responsibility in this course will be to think, engage in serious critical reasoning, and to learn about the material at hand. I have a genuine passion for teaching and, as such, I try to think up ways to convey key course material so that you will remember it for always. To this end, I've discovered some key ways to present our course material. To benefit fully from these techniques it is your responsibility to (i) read every assigned reading precisely on time (that is, before you enter each class), (ii) attend classes and fully participate in the activities and discussions, (iii) hand in Reaction Papers at the beginning of each class (save the class in which you present; do monitor Blackboard for class questions/announcements/developments), (iv) lead a class, (v) write a final paper (Research Proposal), and (vi) present a Poster based on your final paper.

## GRADING POLICY (See below for details)

(i)	Reaction Papers	20%
(ii)	Class Attendance	5%
(iii)	Class Participation	10%
(iv)	Discussion Leadership	15%
(v)	Poster Presentation	20%
(vi)	Research Proposal	30%



### (i) Reaction Papers (Do not hand in for week that you are leading the class)

- Goal: To promote exciting discussion and to convince me that you read and understood the paper(s)
- How: Possible content includes critiquing the findings and/or critiquing the author(s)' interpretation(s) of findings; and, presenting an alternative idea or an alternative study/design. Note: Do not waste much space summarizing the article. Focus instead on your important critique and analysis of the material.
- Format: One (or two) pages maximum, double-spaced, 1" margins, 12 point "normal" font (such as, Arial, Times). Strict adherence to this is obligatory.

### (ii) and (iii) Class Attendance and Class Participation

- Goal: To ensure rich individual learning and rich group discussion
- How: I will keep a log throughout the term. Possible indices of good participation include coming to class (and coming on time), general willingness to participate in discussion and/or class activities, respect and kind manner towards the contributions of others, offering constructive comments, feedback, and questions. Beware: We cannot have a situation where only a handful of people talk for the semester.

### (iv) Discussion Leadership

- Goal: To promote exciting discussion and more in-depth learning of specific course topics.
- How: Approximately 4 students will be selected by lottery to be the Discussion Leaders for each of the 5 classes listed below as a Student-Led Class/Discussion. The Discussion Leaders will (a) present a brief summary of the weekly readings, with the addition of at least ONE outside related readings that your group completed, and (b) lead a creative and exciting class discussion. Please be sure to identify the outside reading to the class/me, making connections and supporting the additional insights gained by its inclusion. Recall that your class discussion questions must be posted by Thursday night (midnight) of the preceding week. Be careful to meet, plan, and make certain that each group member is actively (and equally) involved.
- Format: Excellent presentation of ideas (and not just the idea itself) counts in science. Design your presentation such that the ideas are conveyed in a fascinating way that *promotes learning*. For example, use PowerPoint creatively, design class activities that push class members to new conceptual understanding. Break the class into smaller groups to gain new perspectives on the same issue. Be creative, but be careful not to be silly. TV show contests, and the like, should be avoided unless the ideas conveyed are absolutely riveting, apt, and presented in a sophisticated and thought-provoking way.

(v) and (vi) Poster Presentation and Research Proposal

• Goal: To apply all that you learned throughout the course in designing a Research Proposal that joins the 3 disciplines of *Genes, Brain, and Behavior* regarding a topic of your choice. No data are to be collected as this is only a proposal. The Poster Presentation will be solely a presentation of the key ideas presented in your Research Proposal paper.

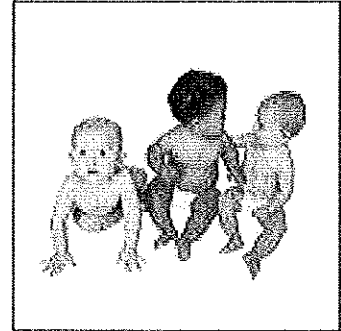
NOTE: You will join another person to form a group of two. With 24 people in the class, I will receive a total of 12 Research Proposals and there will be 12 Poster Presentations (one Proposal and one Poster per pair). CONTENT: The content of your Poster/Research Proposal may not be the same content as your student-led Discussion Leadership presentation.

Both the Poster and Research Proposal paper will contain an "Expected Results" and an "Expected Data Analyses" section (as applicable) in lieu of a real Results section and a real Data

Analyses section. To be clear, you will provide at least two expected/possible research outcomes, given your hypotheses, (with associated data analyses, as applicable). Finally, in the Discussion section, you will briefly articulate what each of the possible "Expected Results" would imply, should they be found.

- How: See below for date of our group discussion of each pair's planned Research Proposal, as well as the date for the Poster presentation.
- Format: Poster and Research Proposal paper must adhere to APA format (both text and references).

For Research Proposal: 10 pages maximum of text, double-spaced, no smaller than 12 point font. Separately, provide a References page, which must contain no less than 10 outside readings (primary sources highly recommended).



### LATENESS POLICY

Lateness is not acceptable unless there is an officially documented medical or personal emergency. Late Research Proposals (which are due April 4 at 3:00pm) will be docked 10% for each late day. Thank you for your understanding.

### EMAIL POLICY

I do my best to answer email promptly but, alas, my daily volume is painfully high. I welcome you to stop by my office hours Tuesdays from 3:00-4:00pm. Should a question come up, I encourage you first to read the syllabus and our Blackboard site, try asking a classmate, and/or to post your question on the class Discussion Board. You'd be surprised to see how many times our questions are shared by other classmates. If the above doesn't work, come to my office hours or send an email.

## CLASS TOPICS & READINGS

\* = Student-Led Discussion

Week	Class Date	Topic of Class	Actions
1	January 8	Introduction & Welcome to Class!	
2	January 15	Human Higher Cognition, Genes, Brain & Behavior <ul style="list-style-type: none"> <li>• Know the basic goals/methods of the 3 different disciplines and the challenges of bridging different disciplines</li> </ul> Read also to know... <ul style="list-style-type: none"> <li>• Know Basic Genetics (What is a gene☺?)</li> <li>• Know Basic Genetic Approaches</li> <li>• (If you still don't understand after reading the articles then <u>you</u> must look this up on your own and come to class prepared to discuss very intelligently.)</li> <li>• Know basic Cognitive Neuroscience/Brain Imaging Approaches</li> <li>• Know basic Behavioral measures</li> </ul>	<u>Hand in:</u> Reaction Paper <u>Read:</u> (i) Goldberg & Weinberger (ii) Kamiloff-Smith (iii) Fossella & Casey
*3	January 22	Human Higher Cognition, Genes, Brain & Behavior <ul style="list-style-type: none"> <li>• Attention, Memory, and Higher Cognition</li> </ul>	<u>Hand in:</u> Reaction Paper <u>Read:</u> (i) Posner, et al (ii) Espeseth, et al. (iii) Egan, Kojima, et al. +(iv) For presenters only: Plomin, et al.
*4	January 29	Language, Genes, Brain & Behavior -I <ul style="list-style-type: none"> <li>• The great debate! Could there be a genetic basis for human language?</li> </ul>	<u>Hand in:</u> Reaction Paper <u>Read:</u> (i) Fisher (ii) Liégeois, et al. (iii) Rujescu, et al. +(iv) For presenters only: Vargha-Khadem, et al.
*5	February 5	Language, Genes, Brain & Behavior -II <ul style="list-style-type: none"> <li>• Language and Reading Disorders – Dyslexia</li> <li>• Language Disability, Transient &amp; Persistent Language Difficulties</li> </ul>	<u>Hand in:</u> Reaction Paper <u>Read:</u> (i) Fisher & Francks (ii) Spinath, et al. (iii) Bishop, et al. +(iv) For presenters only: van der Lely & Ullman
*6	February 12	Emotion & Social Behavior, Genes, Brain & Behavior <ul style="list-style-type: none"> <li>• ADHD</li> <li>• Depression in Children</li> <li>• Cognitive/Emotional attention deficits</li> </ul>	<u>Hand in:</u> Reaction Paper  <u>Read:</u> (i) Waldman, et al. (ii) Kaufman, et al. (iii) Canli, et al. +(vi) For presenters only: Raz, et al.

7	February 19	Reading Week: No classes	
*8	February 26	<p>Math &amp; Numeracy, and Human Creativity Genes, Brain, Behavior</p> <ul style="list-style-type: none"> <li>• Math, Numeracy, Dyscalculia</li> <li>• Creativity Genes</li> <li>• Polymorphisms associated with Creative Dance</li> </ul>	<p><u>Hand in:</u> Reaction Paper</p> <p><u>Read:</u></p> <p>(i) Ansari &amp; Kamiloff-Smith</p> <p>(ii) Reuter, et al.</p> <p>(iii) Bachner-Melman, et al.</p> <p>+ (iv) For presenters only: Add one</p>
9	March 4	<p>RESEARCH PROPOSAL CLASS</p> <p>DISCUSSION/EVALUATION: 12 Pairs present planned Research Proposal ideas at 4 minutes per pair to present (TIME YOURSELVES), with 4 minutes for class questions &amp; answers (T=8 minutes per pair x 12 pairs). Please come on time to begin promptly at 1:00 and to end at 3:00. Out of respect for your peers, please plan on keeping to this timetable. Thank you.</p>	<p>(i) <u>Hand in:</u> Each pair to hand in today a 1-page description of research topic with (separately) a list of the 10 references to be read.</p> <p>(ii) <u>Hand in:</u> Research Proposals Feedback/ Evaluation forms</p>
10	March 11	<p>RESEARCH PROPOSAL MEETINGS (obligatory)</p> <p>To be discussed</p>	
11	March 18	<p>Ethical &amp; Moral Consideration, Genes, Brain, Behavior</p> <ul style="list-style-type: none"> <li>• What are the ethical and moral considerations?</li> <li>• Are they insurmountable?</li> </ul>	<p><u>Hand in:</u> Reaction Paper</p> <p><u>Read:</u> Nusslein-Volhard</p>
12	March 25	<p>POSTER PRESENTATIONS of your Research Proposals. 12 pairs will present (in turn) for 4 minutes (TIME YOURSELVES), with 4 minutes for class questions &amp; answers (T=8 minutes per pair x 12 pairs). Come several minutes before 1:00pm to set up so as to begin precisely on time. Polished, articulate oral presentations are expected of visually compelling posters. Do not read from poster. Professionalism always. This will be your last chance to get feedback before you hand in your final Research Proposal, so take all feedback seriously.</p>	<p><u>Hand in:</u> Poster Presentation Feedback/ Evaluation forms</p>
13	April 1	<p>Summary &amp; Integration:</p> <ul style="list-style-type: none"> <li>• Question: Utility of scientific revolution for Society?</li> </ul>	<p><u>Hand in:</u> Final Research Proposal Paper due by Friday, April 4 @ 3:00 pm (no exceptions)</p>

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