PSYC23: Developmental Psychobiology

Meetings: Room SW128, Wednesdays, 1 to 3PM
Webcast: 24 hours/7 days a week

Professor
Dr. David W. Haley
Office: Science Wing (SW) 564
Office hours: Fridays, 3:00–4:00 pm

Course Website
Blackboard, U of T Portal
(http://portal.utoronto.ca/)

Course texts
The course readings are available on the course website.

Overview

The study of developmental psychobiology uses multiple perspectives to study the development, psychology, biology, and evolution of human behavior. The research discussed in this course will highlight and compare human and animal models to shed light on how social relationships and biological mechanisms interact and contribute to mental health.

Basic and Applied Science

Although much of the course content and many of the assignments are concerned with basic science, it is important to consider questions about how this work applies to everyday life. Are some individuals more sensitive to their environments than others? Can individuals exposed to early adversity or chronic stress "catch up," or are they scarred for life? Can the practices and institutions of society (policies, laws, schools, parenting, etc.) be used more effectively to optimize human development?

Evaluation

Applied science assignment	(Weekly)	20%
Mini research proposal draft due October 7	(Week 5)	5%
Mini research proposal final due Nov 18	(Week 10)	15%
Term exam (TBD)		25%
Final exam (TBD)		35%
Extra credit		2%
Total		**102%**

Applied Science Assignment (weekly)

For this short weekly written assignment, I ask you to think more broadly about the course material. Each week, please identify a question or problem in society that relates to the weekly reading and that illustrates how the course content can be applied. Describe

what the question or problem is and how it relates to the course content in one to two sentences. In addition, provide a source or reference for it that highlights or provides insight into the problem or question raised. A source or reference can be a web link or an attachment containing a newspaper, magazine, or journal article. This assignment should be submitted through Blackboard and is due each week on Mondays at 10:00 p.m.

Your total weekly applied science assignment grade will be averaged from your nine best scores out of the ten weekly assignment scores.

For example, if the week's reading is on the topic of child abuse, you might raise the question of spanking and whether spanking is abusive. You then could search for a relevant source or reference on the web or in the library. For example, you might have seen a recent news story about a Wisconsin man charged with felony child abuse after spanking his 8-year-old son. You could use this story as your source, providing a link or including it as an attachment. Please note, for the first two weeks that have multiple readings you may focus on one of the readings for your assignment.

Examples of Reading Topics and Applied Questions:

- Child Abuse: Should spanking be criminalized?
- Stress: Are schools doing enough to reduce stress?
- Support for Parents: Should parents be given more generous parental leave? Why?
- Fetal Alcohol Exposure: Should pregnant women be criminalized for performing actions (such as drinking alcohol) that have the potential to harm the fetus?

An Example of the Applied Science Assignment

Course name: Developmental Psychobiology
Weekly topic: Child abuse
Your Name: Example Student
Your student ID #: 00000000

Question: Is spanking abusive?

Discussion: In the weekly course reading, Teicher (2002) discusses the effects of physical and sexual abuse but does not address the question of whether spanking is a form of physical abuse, which has received attention in the news. The following story describes a Wisconsin father charged with felony child abuse for spanking his young son.

Source: http://fox11online.com/2014/12/10/wisconsin-father-charged-with-felony-child-abuse/

Mini Research Proposals

The mini research proposal is designed to help you explore and consolidate course material into a meaningful written narrative and to improve your scientific thinking and writing. More specifically, the objective is to produce a research proposal that you write up as a 250-word abstract. Every word counts! During the semester we will spend time discussing each concrete step you need to take and each question you need to answer to write this research proposal: What is a research topic? What is a literature

review? What is a hypothesis? What are methods and measures? How does one test a hypothesis?

*Rough Draft***:** You will have an opportunity to submit a complete draft of your mini research proposal so that you can get substantial feedback before being submitting your final draft.

Final Draft: Based on earlier feedback, complete and submit your final mini research proposal.

Instructions for how to submit your mini research proposals on time and correctly via Blackboard will be made available several days before the assignment is due.

An Example of the Mini Research Proposal Assignment

Course name: Developmental Psychobiology
Title: Racism Leaves Epigenetic Marks on Infant Stress Receptor Genes
Your Name: Example Student
Your student ID #: oooooooo

*Background and rationale***.** Racial discrimination is linked to racial health disparities in adults and children [1]. Although the impact of racism on biological systems engaged in the stress response has been demonstrated in pregnant women and their infants [2], it is unclear how maternal stress produced by racism is transmitted to the infant. One possibility is that infants mirror the mother's stress by means of emotional contagion, a phenomenon that has been demonstrated in the context of negative social evaluations [3]. A second possibility is that early adversity reduces the quality of parenting and alters the epigenetic programming of the infant stress receptor gene [4], both of which may be exacerbated by exposure to racism.

Hypothesis. We hypothesized that infants of mothers exposed to greater racism would show greater epigenetic marks on their stress receptor genes.

Methods. Mother-infant dyads (N = 300) were recruited from a community centre when infants were six months of age. To measure racial discrimination in mothers, the Experiences of Discrimination (EOD) questionnaire [5] was administered. To measure epigenetic marks, saliva samples were obtained from the infant using a saliva kit and shipped to a lab for analysis [4]. An ANOVA was conducted on infant epigenetic marks with maternal group (high and low discrimination) as the between subjects factor. Socioeconomic status (SES) was statistically controlled for in our analysis.

Significance and implications. If we find that epigenetic mechanisms in the infant are affected by the stress of racism on the parent, our understanding of the subtle intergenerational effects of racism will be enhanced.

References

[1] Williams, D. R., & Mohammed, S. A. (2009). Discrimination and racial disparities in health: evidence and needed research. *Journal of Behavioral Medicine, 32,* 20-47.
[2] Thayer, Z. M., & Kuzawa, C. W. (2015). Ethnic discrimination predicts poor self-rated health and cortisol in pregnancy: Insights from New Zealand. *Social Science & Medicine, 128,* 36–42.
[3] Waters, S. F., West, T. V., & Mende, W., B. (2014). Stress Contagion: Physiological Covariation Between Mothers and Infants. *Psychological Science, 25,* 934–942.
[4] Oberlander TF, Weinberg J, Papsdorf M, Grunau R, Misri S, et al. (2008) Prenatal exposure to maternal depression, neonatal methylation of human glucocorticoid receptor gene (NR3C1) and infant cortisol stress responses. *Epigenetics 3,* 97–106.
[5] Krieger, N. Smith, K., Naishadham, D., Hartman, C., Barbeau, E. M. (2005). Experiences of discrimination: validity and reliability of a self-report measure for population health research on racism and health. *Social Science & Medicine, 61,* 1576–1596.

Term and Final Exams

The term and final exams will consist of true/false questions (30%), multiple-choice questions (40%), and figure-labeling questions (30%). The exams are based on both the readings and lecture material. A brief review session will be held in class before each exam.

Missed Term Exam: Since the final exam is cumulative, if you miss the term exam, the final will be reweighted automatically from 35% to 60%. There are no make-up exams—no exceptions!

Missed Final Exams: Professors and TAs are not authorized to negotiate changes to the final exam schedule. Please consult the university calendar for more information.

Extra Credit

Generating your own exam questions and preparing answers for them is a good way to learn the course material. Accordingly, from anyone who would like extra credit, I will accept four exam questions, each of which should be accompanied by a ¼- to ½-page answer; these questions must be received by me no later than one week prior to the midterm or final exam. For more information about this option, please speak to a TA. I will grant up to (and a maximum of) 2% extra credit to students who complete these assignments for both the midterm (1%) and final (1%) exams.

Instructions for how to submit your weekly assignments on time and correctly via Blackboard will be made available several days before the assignment is due. If you have any questions about assignments, please e-mail your TAs.

Late Assignments

Weekly Applied Science Assignments. One of the main purposes of the Applied Science Assignment is to help students keep up with their weekly readings. For this reason, the TAs will NOT accept any late weekly assignments. Please note that technical problems, last-minute errors with the online submission process (allow yourself plenty of time!), and any unfortunate lapses in memory will NOT be entertained as excuses for lateness. (Bear in mind, however, that (as mentioned above) your total weekly applied science assignment grade will be averaged from your nine best scores out of the ten weekly assignment scores.)

Instructions for how to submit your weekly assignments on time and correctly via Blackboard will be made available several days before the assignment is due. If you have any questions about assignments, please e-mail your TAs.

Mini Research Proposals. For the research proposals, late assignments will be accepted; however, late assignments will receive a **10% penalty deduction per day (e.g., 2 days late, 20% penalty deducted)**. Please keep in mind that weekend days and holidays count as late days. For example, if the assignment were to be due on a Friday but you submitted it late on Sunday then you would receive a 20% penalty deduction. So the clock is ticking

the moment you are late and continues until your assignment has been submitted. This late-submission policy applies to both the draft and final mini research proposal. Late mini research proposals are to be submitted on Blackboard.

(A partial exception to receiving late penalty points is if you're ill then you can reduce your total penalty points by 10%. For example, let's say you submit your assignment 3 days late but you were sick and you have obtained a doctor's note, then you'll be penalized 20% rather than 30%). It's important to submit your late assignment as soon as possible on Blackboard. To apply for the 10% reduction in penalty points due to an illness, please submit your signed doctor's note to Gloria Luza in Room SW-420B within one week after the assignment due date. Assignments being submitted late due to a documented illness must be submitted both on Blackboard and in hardcopy to Gloria Luza in Room SW-420B.

Extra Credit

Extra credit assignments are not accepted late. Instructions for submitting your extra credit assignment on Blackboard will be made available a week in advance of the term and final exams.

Optional Tutorials (Help Sessions)

To offer students a chance to meet in smaller groups in a less formal setting with their TAs, three or four optional tutorials will be offered outside of the class meeting time (see description of the tutorials below). These tutorials will take place during the semester to help answer questions about the weekly Applied Science Assignment and about the rough and final drafts of the Mini Research Proposals. (See schedule below.) For these optional tutorials, TAs will provide a brief overview of the assignment and share their insights into what they look for when marking the assignment. They will also answer specific questions you may have about the assignments. Whether you ask a question and contribute to the discussion or would like to hear some of the questions your peers raise, these optional tutorials should be helpful for those wishing to improve their work. A schedule of the tutorials will be posted on Blackboard and is listed below. For those of you who may be unable to attend the tutorials (for example, due to a conflict in your schedule), please be assured that you may obtain similar learning benefits from attending my regular office hours or by contacting the TAs by e-mail.

Description of Tutorials

Tutorials will cover the following topics during four separate tutorial sessions:

Sessions A: What is a Mini Research Proposal (MRP) and how will it be evaluated?
Sessions B: How can I improve my weekly Applied Science assignments?
Sessions C: How do I address the TA's feedback to make my final MRP perfect?
Sessions D: Do I have any more questions about my final MRP before I submit it?

Dates of the Tutorial Sessions:

September 9 / Week 1	
September 16 / Week 2	
September 23 / Week 3	
September 30 / Week 4	**Tutorial Sessions A**
October 7/ Week 5	*Mini Research Proposal Drafts due today*
October 14 / Reading Week	(No class)
October 22 / Week 6	**Tutorial Sessions B**
October 28 / Week 7	**Tutorial Sessions C**
November 4 / Week 8	
November 11 / Week 9	**Tutorial Sessions D**
November 18 / Week 10	*Mini Research Proposals (final) due today*
November 25 / Week 11	
December 2 / Week 12	

Each tutorial session (A, B, C, D) will be conducted three times (one meeting for each of the three TAs) on the Wednesday of the week indicated above. If you plan to attend one or more of the tutorial sessions (A, B, C, D), please sign up for one of these three meetings. For each session, the schedule will be as follows:

Tutorial 1 (Carly): 10 to 11 a.m. Wednesdays, Room MW110
Tutorial 2 (Joanna): 3 to 4 p.m., Wednesdays, Room AA206
Tutorial 3 (Ayaan): 12 to 1 p.m., Wednesdays, Room IC230

Although the tutorials are optional, you must sign up for a tutorial on ROSI regardless of whether you'll be attending them or not at the start of the semester. (Tutorial enrollment will be used to help us assign TAs to students, and by enrolling in a particular tutorial, you will be assigned to a particular TA.) Please attend only the tutorial sessions in the tutorial you have registered for on ROSI. If you are unable to attend a tutorial session(s), please let your TA know in advance.

Lectures, Slides, and Readings

The schedule given at the end of this syllabus details the lecture topics and readings for each week.

You are responsible for reading all of the assigned articles. Some but not all of the material in the lectures is also in the readings; also, there is material in the readings that is not covered in lectures. Although the organization of the lectures is independent of the readings, reading assignments are placed next to the lecture for which they are most relevant. It is strongly recommended that you do the reading assigned for a meeting *before* the class meeting.

PowerPoint slides for the lectures will be posted on Blackboard in advance. The slides contain all the important material from the lecture for which you are responsible, and they are made available for your convenience and to enhance your learning of the material. If you try to learn the material only by reading the PowerPoint slides and do not come to (or watch) lecture, you will miss explanations, illustrations, and elaborations that enhance understanding and retention of the course material.

Similarly, if you come to (or watch) lecture without having done the reading, you'll be less able to follow the lecture.

A good way to consolidate your knowledge and understanding of the material is to 1) attend and or watch all classes and take notes; 2) print out the PowerPoint slides of the lecture after class and compare your notes with them, so that you can see if you are catching all the important information in your note-taking; and 3) look in the assigned readings for material corresponding to the lecture—keeping in mind that not all material covered in lecture is in the articles (and vice versa).

Course Website

I will make the syllabus and all readings, lecture notes, announcements, and exam review materials available on the course website (log in to the U of T Blackboard portal at https://weblogin.utoronto.ca/). Please check this website regularly for announcements and messages. Also, please ensure that your current e-mail address is correctly linked to your Blackboard account.

Getting Help with Course Materials

If you are struggling with the course material, you should come to my office hours, send an e-mail to your TA, or set up a special time to meet and discuss the matter. The worst things you can do if you are struggling are to fail to ask for help, stop coming to class, or give up trying. If you have questions that are not answered in this syllabus or on the course website, you may post the question in the online discussion forum (on Blackboard; see above), bring the question to the TAs' weekly office hours, or discuss it with me during my office hours. You may also send an e-mail message to one of our TAs, but please allow *two working days' time* for a reply. Major questions relating to course content can be addressed in far greater depth in person.

Access*Ability*

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the Access*Ability* Services Office as soon as possible. I will work with you and Access*Ability* Services to ensure you can achieve your learning goals in this course. Enquiries are confidential. The UTSC Access*Ability* Services staff (located in S302) are available by appointment to assess specific needs, provide referrals, and arrange appropriate accommodations. They can be reached at (416) 287-7560 or ability@utsc.utoronto.ca.

Academic Integrity

Academic integrity is essential to the pursuit of learning and scholarship in a university and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters (http://www.governingcouncil.utoronto.ca/policies/behaveac.htm)

outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offenses. Potential offenses include, but are not limited to:

In papers and assignments:
-Using someone else's ideas or words without appropriate acknowledgement
-Submitting your own work in more than one course without the permission of the instructor
-Making up sources or facts
-Obtaining or providing unauthorized assistance on any assignment
On tests and exams:
-Using or possessing unauthorized aids
-Looking at someone else's answers during an exam or test
-Misrepresenting your identity
In academic work:
-Falsifying institutional documents or grades
-Falsifying or altering any documentation required by the University, including (but not limited to) doctors' notes

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your instructor or from other institutional resources (see http://www.utoronto.ca/academicintegrity/resourcesfor students.html).

Schedule of Lectures and Readings

September 9 / Week 1: Syllabus and Overview

September 16 / Week 2: Adverse Childhood Experiences

Center on the Developing Child at Harvard University Working Paper #1: *Young children develop in an environment of relationships* (2004).

Center on the Developing Child at Harvard University Working Paper #2: *Children's Emotional Development Is Built into the Architecture of Their Brains* (2004).

September 23 / Week 3: Biological Embedding

Center on the Developing Child at Harvard University Working Paper #3: *Excessive Stress Disrupts the Architecture of the Developing Brain* (2005).

Center on the Developing Child at Harvard University Working Paper #9: *Persistent Fear and Anxiety Can Affect Young Children's Learning and Development* (2010).

Center on the Developing Child at Harvard University Working Paper #10: E*arly Experiences Can Alter Gene Expression and Affect Long-Term Development* (2010).

September 30 / Week 4: Friending, Freaking Out, and Giving Up

Sapolksy, R. (2003). Taming stress. *Scientific American,* 86-95.

October 7/ Week 5: Dyadic Stress and Reparation*

Haley, D. W. & Stansbury, K. (2003). Infant Stress and Parent Responsiveness: Regulation of Physiology and Behavior During Still-Face and Reunion. *Child Development, 74,* 1534 – 1546.

****Mini Research Proposal Drafts due today***

October 14 / Reading Week (No class)

October 22 / Week 6: Hidden Regulators of Attachment

Hofer, M. A. (2006). Psychobiological roots of early attachment. *Current Directions in Psychological Science, 15,* 84-88.

October 28 / Week 7: The Parental Brain

Rilling, J. K. & Young, L. J. (2014). The biology of mammalian parenting and its effect on offspring social development. *Science, 345,* 771–776.

November 4 / Week 8: No lecture

November 11 / Week 9: Child Abuse

Teicher, M. H. (2002). *Scientific American,* 68-75.

November 18 / Week 10: Executive Function *

Cuevas, K. (2014). What's mom got to do with it? Contributions of maternal executive function and caregiving to the development of executive function across early childhood**.** *Developmental Science 17,* 224–238

****Mini Research Proposals (final) due today***

November 25 / Week 11: Sleep

David R. Euston *&* Hendrik W. Steenland. Memories getting wired during sleep. *Science, 344,* 1087–1088.

December 2 / Week 12: Infant Memory

Haley, D. W. (2013). Infant memory consolidation. Chapter 11 in *The Infant Mind: Origins of the Social Brain* edited by M. Legerstee, D. W. Haley, & M. H. Bornstein.