Freshman Seminar: FYSEM-UA732
Nature versus Nurture, the neurobiology of individuality

Instructor: Dr. Margarita Kaplow email: mkaplow@nyu.edu

Meeting Time: Wednesday 2:00pm -4:30pm - 25 West 4th_C-18
Office Hours: Wednesdays, 12:30pm-1:30pm - Meyer 1021 or by appointment

Course Objective:
The main objective of this course is to read, analyze and discuss scientific work and popular media pertaining to the long-debated topic of nature vs. nurture. The course will discuss ideas surrounding intrinsic versus extrinsic factors that influence human behavior and individuality. We will read books and articles that have opposing views on the topic. Students will first learn about the different studies, experiments and evidence related to heredity and behavior. Students will delineate the strengths, weaknesses, and limitations of the varying point of views. To what extent do genes and the environment shape individuals? How do current neurobiologists study the relationship between intrinsic and extrinsic factors that influence each person? Students will write short analytical papers on the nature vs nurture topics discussed in class. Students will also work together in groups to evaluate case studies and propose solutions and explanations to case studies by using concepts learned in class. The course will encourage healthy discussions. Students will be expected to research and write a final paper on a nature vs nurture topic of specific interest to them.

Learning Objectives

1) To sharpen critical and analytical skills through the evaluation and critique of written text, scientific literature and modern works on the topic of nature vs. nurture.

2) To develop clear oral communications skills by organizing ideas logically, leading class discussions, and by class presentations.

3) To learn research skills by proposing hypotheses, effectively gathering evidence, and supporting or offering alternative ideas.

4) To develop clear and concise writing skills through persuasive and expository writing assignments.

5) To learn how to cooperate and work collaboratively with other classmates through case studies, in-class assignments and problem solving projects.
Grading and Evaluation
- Assigned Paper - 20%
- Homework -20%
- In Class Assignments- 20%
- In Class Discussion and Participation - 10%
- Final Project- 30%
  Writing component- 20%
  Presentation- 10%

Assigned Paper - After week five, the course will study specific neurobiological topics related to nature vs. nurture. Two students will be assigned to lead discussion for each week/topic. Students who are the assigned discussion leaders are required to write a review of the assigned readings. The first component of the paper should summarize the main ideas from the assigned text. The second component of the paper should critique the assigned reading. Students must incorporate their own point of view on the reading assignments. Was the writing convincing? What were the strengths and weakness of the works you read? An example of a written review will be provided to students. Discussion leaders are also required to have a separate list describing the main takeaways from the readings. This list should be organized using a minimum of five bullet points, each stating a salient idea from the readings.

Homework- Homework questions will require students to read, analyze and critique papers, popular press articles and book chapters pertaining to a specific neurobiology topic on nature vs nurture. Weekly assignments will also involve writing short responses to questions regarding the texts. Students will be required to critique and analyze specific passages of text. There will be three to four questions for each homework assignment. Students will be required to answer questions clearly and concisely, writing a paragraph for each homework question. We will discuss answers to homework assignments during class time. Students will also be required to write one three-page essay on one of the questions presented as homework. This three-page essay assignment will require students to elaborate on their ideas regarding a specific question presented in the homework assignment. Students will choose the topic of the three-page essay. Students will be notified which homework questions will be allowed as the essay assignments.

In Class Assignments- In class assignments will be collaborative and involve case study assignments, problem-solving work, generating hypotheses, group research on a specific neurobiology topic related to nature vs. nurture.

Discussion and Participation- Students are required to be active participants during lectures, homework review, group discussions and presentations. Since this course will be primarily based on discussion, active participation is essential. Please do not be late to class since this is disruptive during presentations and discussions.

FINAL RESEARCH PROJECT-

Final Research Paper- You will be required to write a final paper on the topic of nature or nurture, the neurobiology of individuality. In consultation with the professor,
topic of the paper will be decided by each student. After the proposed topic is approved, students will extensively research the topic and will use three to four references for the paper. You will write a five-page paper describing the topic at hand. Student should describe the different sides and arguments surrounding the subject of the final paper. Students should also write about their own viewpoint on the topic, using research materials to support their argument. The paper should also describe future directions and research on the topic they choose. A more detailed description on the format of the paper will be provided.

Oral Presentation – Complementing their final paper, students will present to the class. Power point or keynote programs should be used for presentations. Durations of presentations should be 15 minutes followed by five minutes of class discussion. Students should organize their presentation by providing the class with background information on their topic, stating the questions and controversies within the field, and stating future directions and current research on their subject. A more detailed description on the format and structure of presentations will be provided.
Required reading:


I will also provide articles, review papers and book chapters on NYU classes. You will be required to read assigned text before each class meeting. Please follow the schedule posted on the syllabus and make sure you turn in homework writing assignments on time. Late work will not be accepted and will result in a zero for that homework assignment.

COURSE POLICY:

- No devices in class, unless the assignment requires it.

- Please adhere to the NYU’s policy on plagiarism and cheating. Plagiarism will be reported to the Associate Dean of Students.

- Disability Disclosure Statement: Academic accommodations are available for students with disabilities. The Moses Center website is www.nyu.edu/csd. Please contact the Moses Center for Students with Disabilities (212-998-4980 or mosecsd@nyu.edu) for further information. Students who are requesting academic accommodations are advised to reach out to the Moses Center as early as possible in the semester for assistance.

**Syllabus schedule is subject to change depending on the pace of class discussions**

**Wednesday, September 4th**

Introduction to the course syllabi, requirements, assessment- Lecture- What is neurobiology of individuality? Human Behavior vs. Animal Behavior?
-Case study #1 on twins -Group assignment

**Wednesday, September 11th**

Reading Assignments— Chapter 5 and 6, *Behavioral Genetics (Nature Point of View)* (pp 55-92)

*Jane Brody’s article: What Twins Can Teach Us About Nature vs. Nurture*

*NYU classes: Homework Assignment #1, continue with case study#1*

**Wednesday, September 18th**

Reading Assignments- Chapter 1-3 – *It’s Not Your Genes (Nurture Point of View)* (pp 1-73)

*Carl Zimmer’s article: You Are Shaped by the Genes You Inherit. And Maybe by Those You Don’t*

*NYU Classes Homework #2, review solutions to case study #1*

**Wednesday, September 25**

Reading Assignments *Chapter 11 (pp 167-192) and Chapter 19 (pp 306-315)- Behavioral genetics (nature point of view)*
Towards Combinatorial Approaches for Preserving Cognitive Fitness In Aging (pp 885-897)
The Atlantic Monthly: The High-Stakes Allure of an Anti-Alzheimer's Diet
NYU classes: Homework#3
In Class Assignment #2: The risk of dementia, is it nature vs. nature?

Wednesday, October 2nd
Reading Assignments- Chapter 4 through 7 – It’s Not Your Genes (pp75-163) (Nurture Point of View)
Stephen Gould: The New Yorker, Curveball
NYU Classes: Homework #4
In Class Assignment #3: Everyone Knows Girls Are Bad at Math, Right?!

Wednesday, October 9th –TOPICS- Cognition, Learning and Plasticity
Reading Assignments-Neural Development and Lifelong Plasticity, Charles A. Nelson
Neural Plasticity Beyond the Critical Period (pp 45-64)
Behavior Brain Research: Use It or Lose it: how Neurogenesis keeps the brain fit for learning (pp450-458)
The Atlantic: Do Adult Brains Make New Neurons? A Contentious New Study Says No
NYU classes: Homework#5

Wednesday, October 16th –TOPICS- Cognition and Language
Reading—Ian Deary, Intelligence, Current Biology (pp 673-pp 677)
Cognition:A critical period for second language acquisition: Evidence from 2/3 million English speakers (pp263-277)
Nature Education: The Development of Bird Song (pp1-3)
TIME: Why is it Hard To Learn Language after Childhood
NYU Classes: Homework #6
In class assignment #4: Is there a genetic component to dyslexia? The science of dyslexia

Wednesday, October 23rd –TOPICS- Emotion and Aggression
Reading: Advances in Genetics, Chapter 8, Human aggression across the lifespan: genetic propensities and environmental moderators, Tuvblad C, Baker LA (pp171-214)
WIRE Cognitive Science: Considering anger from a cognitive neuroscience perspective (pp 65-74).
The genetics of Major Depression (pp 484-498)
Nature:The genetics of depression: successful genome wide association studies introduce new challenges (pp 2-10)
NYU classes: Homework #7
In class assignment #5: The Contagious Spread of Violence Among US Adolescents Through Social Networks.

Wednesday, October 30th –TOPICS- Anxiety and Fear
Reading
NY TIMES: Why Are More American Teenagers Than Ever Suffering From Severe Anxiety?
NY TIMES: The Germs in Your Gut are talking to your brain. Scientist want to know what they are saying
Nature neuroscience: Resolving Neural Circuits of Anxiety (pp1394–1404)
Cell: Rethinking the Emotional Brain (pp653-668)
NYU classes: Homework #8
Continue with in class assignment #5: The Contagious Spread of Violence Among US Adolescents Through Social Networks.
Wednesday, November 6th–TOPICS- Social Behavior- ASD and Williams Beuren Syndrome
Reading
Chapter 15- Developmental Psychopathology, Behavior Genetics (pp238-253)
Experimental Biology: A Short Review on the Current Understanding of Autism Spectrum Disorders. (pp 1-13)
NY Times: Scientists Link Gene Mutation to Autism Risk
NY Times: New Study Implicates Environmental Factors in Autism
NY Times: Why are dogs so friendly, the answer may be in two genes
NYU classes: Homework#9

Wednesday, November 13th–TOPICS- Addiction and Substance Use Disorder

Chapter 16 and 17 (pp254-291), Behavior Genetics
Animal models in addiction (pp 247-257)
Trends in Neuroscience: Drug Induced Glucocorticoids and Memory for Substance Use (pp 853-868)
In Class assignment#6: Addiction as a developmental disorder

Wednesday, November 20th–TOPICS- Trauma and PTSD
Reading
Childhood Trauma in Schizophrenia: Current Findings and Research Perspectives (pp1-13)
Chapter 13: Behavioral Genetics (pp 210-221)
Genes Brain and Behavior: Role of social cognition in PTSD: A review and metaanalysis (1-10)
NY TIMES: Can we really inherit trauma?
Discover: Grandma's Experiences Leave a Mark on Your Genes
Homework#10

Wednesday, November 27th– NO CLASS

Wednesday, December 4th – Final Project Presentations

Wednesday, December 11th – Final Project Presentations