What makes each of us unique? Where do these differences come from? How do they contribute to enduring differences in health and wellness?

ADMINISTRATIVE INFORMATION

- **Tue/Thu 11-12:15 in BPS 1243**
- **Instructor:** Dr. Alex Shackman ([shackman@umd.edu](mailto:shackman@umd.edu); 3123G BPS)
- **Teaching Assistant:** Claire Kaplan ([cmkaplan@umd.edu](mailto:cmkaplan@umd.edu); 0124 BPS)
- **Required Materials**
  - Textbooks: n/a
  - Readings: Available in .pdf format via Canvas ([www.elms.umd.edu](http://www.elms.umd.edu))
- **Class cancellation, room change, or other time-sensitive announcements:** Will be directed to the email account listed in Canvas
- **Academic Calendar:** [http://www.testudo.umd.edu/acad_cal/fall_2013.html](http://www.testudo.umd.edu/acad_cal/fall_2013.html) and [http://faculty.umd.edu/teach/dates.htm](http://faculty.umd.edu/teach/dates.htm)
- **Office Hours**
  - Dr. Shackman: By appointment
  - Ms. Kaplan: Tue 2-3pm (BPS 0124). Other times by appointment

*Continued...*
Welcome! This course will introduce students to a diverse array of theoretical and empirical issues related to the study of stable individual differences in temperament and personality (T&P). We will discuss recent research in humans, monkeys, and rodents that helps to clarify

- The childhood origins of temperament
- The fundamental dimensions of T&P
- The psychological and neurobiological mechanisms that underlie trait-like differences in T&P
- The mechanisms that contribute to stability and plasticity in T&P across the lifespan and across generations
- The nature and nurture of T&P. We will delve into...
  - behavioral genetics (i.e., heritability)
  - molecular genetics and ‘imaging genetics’
  - recent advances in epigenetics
- The complementary strengths and limitations of different tools and approaches for assaying T&P
- The nature of temptation and self-control
- Implications for mental health and physical wellbeing, public policy, and public safety
- Implications for understanding ourselves and our loved ones (our parents, our children or children-to-be) and becoming more thoughtful and informed taxpayers, voters, and citizens

The information in this document is designed to help you understand how the course works and to get you started. If you have any questions, please contact the instructor. We’re excited to have you aboard and want you to get the most out of this opportunity to learn more about the science of individual differences!

Note: This is an introductory course and an extensive background in biology, genetics, neuroscience, statistics, or other “STEM” fields is not assumed.

Continued...
CAN YOU BE MORE SPECIFIC ABOUT THE MATERIAL COVERED IN THE CLASS?

Sure! Here are the key concepts that students will learn in this course.

**Structural Models**
- BIS/BAS; Behavioral Inhibition; Big 2; Big 3; Big 5 (OCEAN)

**Scientific Concepts**
- Affective chronometry; Appetitive motivation; Approach/Withdrawal; Biomarkers, Endophenotypes & Intermediate Phenotypes; Epigenetics and Non-genomic transmission of acquired traits; Fear vs. Anxiety; Frontal EEG asymmetry; G * E interactions; Hedonic hotspots; Heritability (common misconceptions); Incentive sensitization model; Liking vs. Wanting; Natural language hypothesis; Pavlovian fear conditioning; Scientific skepticism; Self-stimulation; Sensitivity, Specificity, and Reliability (e.g., test-retest); Serotonin transporter polymorphism; SNP

**Psychometric Concepts (Non-Technical Overview)**
- Correlation (vs. causation); Factor analysis; Internal-consistency reliability; Meta-analysis (classical and ALE); Test-retest reliability;

**Brain Regions**
- Basal forebrain cholinergic system; Extended amygdala, Hippocampus, HPA axis, Lateral prefrontal cortex, Medial forebrain bundle, Mesocorticolimbic dopamine system, Midcingulate cortex, Nucleus accumbens, Orbitofrontal cortex, Ventral striatum

**Methods (Non-Technical Introduction Focused on Strengths and Weaknesses)**
- ASL MRI; BART; Cortisol; Daily diary; Deep brain stimulation (DBS); EDA/SCR/GSR; EEG/ERP (including N2, ERN, FRN, and P3b); Eriksen flanker; Excitotoxic lesions; Experience sampling; FDG-PET; Fear-potentiated startle; fMRI (task-related and resting-state functional connectivity); GWAS; Limitations of introspective measures and self-report (e.g., peak-end rule); NeuroSynth; Pharmacological methods (e.g., benzodiazepines); Stop-signal task

**Famous and Not-So-Famous Neuropsychological Patients**
- B-19, EVR, SM, and Phineas Gage

**Neuropsychiatric Disorders (Epidemiology/Prevalence, Burden, Symptoms)**
- Anxiety; Depression; Substance Abuse/Addiction; Impulse Control Disorders (e.g., gambling); Parkinsons

**Investigators**
- Ralph Adolphs; Yair Bar-Haim; David Barlow; Kent Berridge; Jenni Blackford; Jack Block; Ryan Bogdan; Niall Bolger; Turhan Canli; Avshalom Caspi & Temi Moffitt; Lee Anna Clark; Michelle Craske; Tony and Hannah Damasio; Richie Davidson; Mike Davis; Hans and Mike Eysenck; Nathan Fox; Jeffrey Gray; Christian Grillon; Dan Grupe; Amad Hariri; Jerry Kagan; Ken Kendler; Carl Lejuez; Joe Ledoux; Schmuel Lissek; Jerry Kagan; Ned Kalin; Ken Kendler; Roman Kotov; Seymour ‘Gig’ Levine; Colin Macleod; Michael Meaney; Walt Mischel; Jack Nitschke; Danny Pine; Diego Pizzagalli; Tony Rangel and Todd Hare; Terry Robinson; Kerry Ressler; Alex Shackman; Jerry Suls; Andy Tomarken; Mike Treadway; Peter Visscher; David Walker; David Watson; Paul Whalen; Tal Yarkoni; David Zald and many others

If this sounds interesting, you’re in the right place!

*Continued...*
A MULTI-DISCIPLINARY PERSPECTIVE ON THE CONTEMPORARY SCIENCE OF T&P

As we begin our adventure, it’s helpful to keep the following idea firmly in mind:

When a scientist doesn’t know the answer to a problem, he is ignorant. When he has a hunch as to what the result is, he is uncertain. And when he is pretty damn sure of what the result is going to be, he is still in some doubt...Scientific knowledge is a body of statements of varying degrees of certainty—some most unsure, some nearly sure, but none absolutely certain.
—Richard Feynman (1955), Nobel Laureate

Science is not a body of facts established by experts, but a set of methods for estimating and reducing uncertainty; a process, at times messy or tedious, of grappling with nature and our preconceived notions about how it works. There are many, many fundamental questions about T&P that remain unresolved. That’s one of the things that make this class so enjoyable. We haven’t figured it out and there are many challenges that remain for future research.

Accordingly, in this class you will learn about the current state of our scientific knowledge about facets of T&P, their organization in the brain, and the implications for understanding psychopathology and other important outcomes. You will also learn about some of the key techniques used for measuring and understanding facets of T&P. But we will not systematically review the history of personality research (e.g., Galen, Freud, Jung — a.k.a. the Hall of Fame or Graveyard Tour approach). As several leading researchers recently noted,

Personality psychology has long been identified in the minds of many people with the first (and perhaps only) course in the subject that they took in college. Too often, this was (and sometimes still is) the classic “tour of the graveyard” that focuses on brilliant but long-deceased theorists and leads students to end the semester thinking the burning concern of the field is the disagreement between Freud and Jung...A course that is restricted to theorists like these is an unforgivable misrepresentation of the field, a failure in one’s duty to educate students, and a slap in the face to every contemporary personality researcher

It is unacceptable that personality psychology remains, generally, a side trip through the history of psychology while the rest of the science of psychology is presented to students through the lens of the most cutting-edge research.

In general, my emphasis will be on a multi-disciplinary perspective, in which research at different levels of analysis, using different tools, samples, or species, is viewed as complementary and mutually informative. Put another way, the class will not be organized around “biological theories,” “psychoanalytic theories,” and so on.

COURSE STRUCTURE

1. Classroom Lectures on the Scientific Study of T&P

You are strongly encouraged to attend all course lectures. Each lecture will last approximately 75 minutes and will include the following components:

(1) Conceptual roadmap outlining the new topics to be covered

(2) The science of T&P drawn from your readings and other sources. The lectures will incorporate occasional multimedia elements, such as film clips. There will be plenty of time for questions and discussion. The lectures are designed to provide a broad overview of the core conceptual themes, methodological issues, and highlights from the recent empirical record.

(3) Recap of the most important take-home points
(4) Critical take-home questions (detailed below).

On occasion, we may have special invited guest lectures.

It is critical that you regularly attend class in order to do well in this course. I strongly encourage you take notes during class to ensure comprehension of the material. It is important to emphasize that there are many opportunities for us to learn from one another in the classroom. Learning can stem from sharing knowledge or from asking questions.

2. Background Readings

Readings for this course have been hand-picked by the instructor; many are original empirical papers or reviews by leading scientists in the field. What better way is there to learn about T&P then straight from the most exciting researchers working in the field today?

To get the most out of this course, it is important that you understand the key take-home points from the readings. Please read the assigned papers before class. This will allow for a better understanding of the lecture and also give you the opportunity to ask questions. Please do not hesitate to ask questions about anything you found confusing or challenging! Readings will be available for download via the course website on Canvas. Again, there is no text book.

While many of the readings were written for a general scientific audience, some of the empirical reports employ complex or unfamiliar methods. My expectation is that you will be able to discern the larger take-home points and implications, even if some of the techniques are unclear. Throughout the Readings section (below), I have identified papers where I do not expect you to invest the time required to fully understand the more technical aspects of the methods.

My aim is to avoid overburdening students with reading. But in some cases, you may find yourself hungry to learn more. The optional readings that accompany most of the learning modules are a great place to start. The source material for the lectures is also cited within my slides and I am happy to provide the papers upon request.

COURSE REQUIREMENTS & GRADING

1. Four Cumulative Examinations (Collectively worth 75%; lowest midterm grade dropped)

There will be four cumulative exams in this course. The first three exams will occur during the regular academic semester. The fourth exam will occur during final examinations week. Exams will consist of multiple-choice questions that involve critical thinking about concepts drawn from the readings and lectures. Exams will take place in class on the assigned date in the syllabus. The lowest of the three ‘mid-term’ exam grades will be dropped.


You are welcome to bring a double-sided (8.5” x 11”) sheet of notes to the exam. No other notes, notebooks, materials, or devices will be permitted.

The purpose of the exams is two-fold. First, you should be able to demonstrate that you have read the material and understand the factual points and arguments. Second, you should be able to synthesize and integrate the material such that this knowledge can be applied in a broader context.

Because the exams are cumulative and occur on a regular basis, you will need to continuously study in order to be successful. On the other hand, you probably will not need to cram for any particular exam. There will be a clicker-based review session before each exam during our regularly scheduled meeting
time. The review sessions are designed to provide a fun, painless way to test your understanding of the material and address any questions that crop up before each exam.

*Make-up exams will only be considered in exceptional circumstances.* Make-up exams will involve different questions than the standard exam (Advice: you want to avoid having to take a make-up exam).

It is important to emphasize that much of what is covered in the exams is not contained verbatim in the lecture slides, so attendance and attention during class is absolutely critical to your success in the course.

Continued...

2. **Take-Home Critical Thinking Questions (Approximately 17 assignments; collectively worth 25%)**

At the end of each lecture, beginning the second week of class (i.e., the 3rd meeting), you will receive two critical thinking take-home questions.

You will be required to respond to the critical thinking questions that are assigned at the end of each lecture. On occasion, there will not be a critical thinking question for a particular class.

Each assignment (pair of responses) will be assigned one of the following grades: 1 (full credit), 1/2 (half-credit), 0 (no credit). Grades will be made available in Canvas. Unexcused late responses will be assigned a score of 0.

At the end of the semester, your two lowest response grades will be dropped (cf. http://www.sfcollege.edu/cat/?section=techTips/ExcelLowVal).

Your response should be approximately 1 paragraph per question (i.e., total of 2 separate paragraphs). Responses are due no later than 9:00am before the subsequent lecture (i.e., questions provided in class Tuesday are due by 9:00am Thursday that week; questions provided in class Thursday are due by 9:00am Tuesday the following week).

You will submit your responses using the “assignment” tab in Canvas. Responses should include 2 components (with each component clearly labeled using headers). Length should range between ½ to 1 page single-spaced for the 2 questions.

3. **Extra Credit**

Four points of extra credit will be available to students who complete the Department Mass Survey using the SONA system (see below for details). These points will be added directly to those that you earned based on the exams and critical thinking assignments. For example, if a student earned a total of 89 points and completed the extra credit, his or her final letter grade would be based on \(89 + 4 = 93 \div 100\) points. Final grades will not be curved or otherwise transformed.

**SCHEDULE**

Please check the course website for the most up-to-date information.

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<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>January 27</td>
<td>Module 1: Introductions, Course Mechanics, and Fundamental Questions Roundtable</td>
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<tr>
<td>January 29</td>
<td>Module 2: Is T&amp;P impactful?</td>
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<tr>
<td>February 3</td>
<td>Module 3: How is T&amp;P defined? What are the fundamental dimensions of T&amp;P? (note: 1st critical thinking assignment)</td>
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<tr>
<td>February 5</td>
<td>Module 4: How should we measure T&amp;P?</td>
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<td>February 10</td>
<td>Module 5: How Are Traits and States Related? (Part 1)</td>
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<td>February 12</td>
<td>Module 6: How Are Traits and States Related? (Part 2)</td>
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<td>February 17</td>
<td>Module 7: What Do Traits Do? (Part 3)</td>
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<td>February 19</td>
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<td>February 24</td>
<td>Clicker-Based Review</td>
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<td>February 26</td>
<td>Exam #1</td>
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**Section I: Foundational Issues in the Scientific Study of Temperament & Personality**

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<tr>
<th>Date</th>
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<tr>
<td>March 3</td>
<td>Module 8: Intermediate Phenotypes and Brain Imaging Tools, Part 1</td>
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<tr>
<td>March 5</td>
<td>Module 9: Intermediate Phenotypes and Brain Imaging Tools, Part 2</td>
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<tr>
<td>March 17/19</td>
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<td>March 31</td>
<td>Clicker-Based Review</td>
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<td>April 2</td>
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**Section II: The Nature and Nurture of Temperament & Personality**

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<td>April 7</td>
<td>Module 10: Neuroticism/Negative Emotionality and Psychopathology</td>
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<tr>
<td>April 9</td>
<td>No Class: SAS and ADAA Meetings</td>
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<td>April 14</td>
<td>Module 11: Behavioral Inhibition and Psychopathology</td>
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<td>April 16</td>
<td>Module 12: Role of the Extended Amygdala in Negative Emotionality, Behavioral Inhibition, and Psychopathology</td>
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<tr>
<td>April 21</td>
<td>Module 16: Splitting Negative Emotionality into Its Constituents, Part 1</td>
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<tr>
<td>April 23</td>
<td>Module 17: Splitting Negative Emotionality into Its Constituents, Part 2</td>
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<tr>
<td>April 28</td>
<td>Clicker-Based Review</td>
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<td>April 30</td>
<td>Exam #3</td>
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**Section IV: Neuroticism and Negative Emotionality**

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<th>Date</th>
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<td>May 5</td>
<td>Module 18: Positive Emotionality, Self-Control, and Dopamine (Part 1): Depression and Anhedonia</td>
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<tr>
<td>May 7</td>
<td>Module 19: Positive Emotionality, Self-Control, and Dopamine (Part 2): Substance Abuse, Impulse Control Disorders, and Everyday Temptation</td>
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<tr>
<td>May 12</td>
<td>Module 20: Semester Recap</td>
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<tr>
<td>May TBA</td>
<td>Final Exam</td>
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Please note: This schedule is subject to change. Any required updates will be announced in class and posted on the course website. All readings will be available on the course website. Examinations may be proctored by the TA or another member of the Department staff.
NO STAKES IN-CLASS ASSESSMENTS & REVIEW SESSIONS: USING THE CLICKERS

Sometimes, class meetings will begin or end with a brief cumulative review of material covered in prior lectures. Many of the questions that will be featured on the exams will be covered during this period. These “no stakes” (i.e., ungraded) assessments will require a clicker, so be certain that you consistently bring your clicker to class, register it, and have some spare batteries on hand. We will also use the clickers extensively during the in-class review sessions.

The goal of these clicker-based sessions is to provide a regular opportunity to review the material that we’ve covered so far. My hope is that these sessions will be fun and minimize the need to ‘cram’ for the examinations.

See http://clickers.umd.edu for details on how to register your clicker as well as technical support.

READINGS

Section 1: Foundational Issues in the Scientific Study of Temperament & Personality

Module 1: Introductions, course mechanics, and fundamental questions roundtable
Required
• n/a

Module 2: Is T&P impactful?
Required
• Moffitt et al. PNAS 2011
• Duckworth PNAS 2011 [brief scientific commentary on Moffitt]
• Lahey Amer Psychol 2009 [review detailing the myriad consequences of neuroticism; highlights are described in lecture]
• Kelly Psych Today 2010 [brief popular press summary of work linking neuroticism to divorce]
Optional
• Roberts et al Persp Psychol Sci 2007
• Lehrer New Yorker 2009 [popular press piece on the pioneering psychologist Walt Mischel]
• Moffitt et al. Amer Sci 2013 [popular scientific press summary of Moffitt et al. PNAS 2011; reviewed in lecture]
• Konnikova New Yorker 2014
• Druckerman New York Times 2014
• Cuijpers et al Arch Gen Psychiatry 2010 [economic burden of neuroticism]
• Lykken 1991 [thought-provoking essay on psychological science by one of its most successful and prominent investigators]

Module 3: How is T&P defined? What are the fundamental dimensions of T&P?
Required
• Caspi et al. Ann Rev Psychol 2005 [you are welcome to skip the sections on Behavioral Genetics & Social Development]

Module 4: How should we measure T&P?
Required
• Block Psychol Bull 1995a
• Tomarken Psychol Assessment 1995
Module 5: How are traits and states related? (Part 1)
Required
- Chap 4 in Matthews, Deary & Whiteman 2009 [pp. 85-89 as well as pp. 107-end]
- Watson & Clark Psychol Bull 1984
Optional
- Suls & Martin J Personality 2005
- Bolger & Schilling J Personality 1991
- Fleeson JPSP 2001
- Fleeson JPSP 2009

Module 6: How are traits and states related? (Part 2)
Required
- Fox et al PlosOne 2008 [please do not worry about the technical aspects of FDG-PET imaging]
- Canli et al PNAS 2006 [please do not worry about the technical details; focus on the description of phasic vs. tonic models]
Optional
- Suls & Martin J Personality 2005
- Bolger & Schilling J Personality 1991

Module 7: What do traits do? (Part 3)
Required
- Davidson Cog and Emo 1998 [please read Sections I and II only]
- Gable, Reis & Elliot JPSP 2000 [please do not worry about technical details of the analytic strategy]
Optional
- Schuyler et al SCAN 2012 [please do not worry about technical aspects of fMRI]
- Suls & Martin J Personality 2005 [wonderful counterpoint to the Gable paper]
- Bolger & Schilling J Personality 1991 [counterpoint to the Gable paper; attempt to quantify stress reactivity vs. stress exposure vs. absolute levels]
- Kendler Psychol Med 2003 [N/NE associated with increased exposure to negative life events, fewer confidants, and reduced social integration]
Module 8: Intermediate phenotypes and brain imaging tools, Part 1

Required
- Patrick Psychophysiol 2014 [brief non-technical commentary on ‘the end of endophenotypes’]
- The Neuroskeptic 2014, Psychiatry: End of the Road for “Endophenotypes”?

Optional
- Iacono et al Psychophysiol 2014c [summary of a large-scale effort at Minnesota to link psychophysiological and electrophysiological endophenotypes to genetic variants; please do not worry about any of the technical details]
- Lillienfeld Behav Res Ther 2014 [cautionary note on the use of biological measures and the search for biomarkers]
- Schaafsma et al Trends in Cog Sci 2015 [although this review is focused on Theory of Mind, a parallel critique can be applied to imaging research aimed at understanding the substrates of broadband traits]

Module 9: Intermediate phenotypes and brain imaging tools, Part 2

Required
- Ariely & Berns Nature Rev Neurosci 2010

Optional
- Wager et al. 2008 [first 14 pages; for those interested in delving more deeply into brain imaging techniques]
- Logothetis Nature 2008 [please do not worry about the finer details; for those interested in delving more deeply into brain imaging techniques]
- Turkheimer Psychol Review 1998 [thoughtful commentary on what it means for a psychological construct to be ‘biological’]
- Lillienfeld Behav Res Ther 2014 [cautionary note on the use of biological measures and the search for biomarkers]
- Kagan Rev Gen Psychol 2013 [non-technical essay arguing for the importance of non-biological measures]
- Pledger eRadImaging 2010
- Wager APS Observer 2006 [brief non-technical scholarly commentary on the utility of brain imaging techniques]
- Turk-Browne Science 2013 [for those interested in delving more deeply into cutting-edge techniques for using imaging data to understand psychological processes]


Required
- Visscher et al Nat Rev Genetics 2008 [please do not worry about the finer details]
- Kendler Mol Psych 2013b [entertaining essay on genetic determinism, free will, and psychopathology; includes a number of compelling real-life case histories]

Optional
- Miller Perspectives on Psychol Sci 2010 pp 18-23 [critical perspective on genetic reductionism]
- Johnson et al Current Directions in Psychol Sci 2010 [makes the case that every phenotype is heritable to some degree]
- Turkheimer Psychol Review 1998 [thoughtful commentary on what it means for a psychological construct to be ‘biological’ or ‘genetic’]
- Dar-Nimrod & Heine Psychol Bull 2011 [review focused on how misunderstandings about genetics facilitate stereotyping and prejudice, influence morality, and can mislead decision-making about interventions for the self (e.g. dieting) and others (e.g prison vs. rehab/treatment)]
- Flint & Kendler Neuron 2014 [recent review of genetic/GWAS studies of depression; argue that stratifying depression into more specific subtypes can increase power to detect genetic underpinnings]


Required
- Caspi & Moffitt Nat Rev Neuro 2006
- Hyman Nature 2014 [brief non-technical commentary by the former director of the NIMH]
• Couzin-Frankel Science 2014 [science writer’s personal story about getting genetic testing for familial breast cancer] -or- Pinker NY Times Magazine 2009 [science writer’s personal story about getting genetic testing]

Optional
• Iacono et al Psychophysiol 2014 [accessible overview of molecular techniques with a glossary]
• Lander Nature 2011 [reviewed in lecture and worth skimming]
• Visscher et al Mol Psychiatry 2012 [reviewed in lecture and worth skimming]
• Charney Behav Brain Sci 2012 [Section 8.1; of especial interest for those hungry to delve deeper]
• Moffitt et al Perspectives Psychol Sci 2006 [a wonderful introduction to G * E interactions that also provides a very useful tutorial on study design]
• Caspi Amer J Psychiatry 2010 [for those interested in G * E interactions and the serotonin transporter polymorphism]
• Monroe Psychol Sci 2008 [for those interested in G * E interactions and the serotonin transporter polymorphism]
• Gelernter Biol Psychiatry 2015 [very readable overview of the state of the field; perhaps a bit overly optimistic]
• Miller Perspectives on Psychol Sci 2010 pp 18-23 [critical perspective on genetic reductionism]
• Turkheimer Psychol Review 1998 [thoughtful commentary on what it means for a psychological construct to be ‘biological’]
• Weatherall Philo Trans Royal Soc B 1999 [describes the massive heterogeneity in phenotypic expression in mono-genetic/Mendelian disorders]


Required
• Bogdan et al. Mol Psychiatry 2013 [please do not worry about the finer technical details]
• Hughes Nature 2014 [brief non-technical commentary on Dias & Ressler Nature Neurosci 2014]
• Meaney Ann Rev Neurosci 2001 [please do not worry about the finer technical details]

Optional
• Dias & Ressler Nature Neurosci 2014 [please do not worry about the finer technical details]
• McCarroll et al Nature Neurosci 2014 [please do not worry about the finer technical details]
• Charney Behav Brain Sci 2012 [Section 5.2; of especial interest for those hungry to delve deeper]

Section IV: Neuroticism and Negative Emotionality

Module 13: Neuroticism/Negative Emotionality and Psychopathology

Required
• Barlow et al Clin Psychol Sci 2013
• Lahey Amer Psychol 2009
• Smith Nature 2014 [infographic on the global burden of neuropsychiatric disease]
• Morrison Vox 2014 [short essay describing one patient’s experience living with generalized anxiety]

Optional
• Ormel et al Clin Psychol Rev 2013
• Watson & Naragon-Gainey Clin Psychol Sci 2014 [do not worry about the technical details of the analysis]

Module 14: Behavioral Inhibition and Psychopathology

Required
• NY Times Magazine article on behavioral inhibition
• Fox et al Ann Rev Psychol 2005
• Clauss & Blackford J Amer Acad Child & Adol Psychiatry 2013 [please do not worry about technical aspects of the meta-analysis]

Optional
• Kagan et al. Science 1988
Module 15: Role of the Extended Amygdala in Negative Emotionality, Behavioral Inhibition, and Psychopathology

Required
- Davis et al Neuropsychopharm 2010
- Fox & Kalin Amer J Psychiatry 2014
- Feinstein et al Curr Biol 2011 (and supplement)

Optional
- Oler, Fox, Shackman & Kalin in press
- Shackman et al PNAS 2013
- Tottenham et al Dev Sci 2011
- Blackford & Pine Child & Adolesc Psychiatric Clin N Amer 2012 [please do not worry about the technical details]
- Etkin & Wager Amer J Psychiatry 2007
- Davis & Whalen Mol Psychiatry 2001
- Adolphs et al Nature 1998
- Kennedy et al Nat Neurosci 2009
- Choi & Kim PNAS 2010 [please do not worry about the technical details]
- Janak & Tye Nature 2015 [for those interested in delving more deeply into amygdala circuitry]

Module 16: Splitting Negative Emotionality into its Key Constituents (Part 1)

Required
- Grupe & Nitschke Nature Rev Neurosci 2013
- La Rosa Buzzfeed 2014

Optional
- Craske et al Dep and Anx 2009
- Lissek Dep and Anx 2012
- Lissek et al. Behav Res & Ther 2005 [please do not worry about the technical details of the meta-analysis]
- Hakamata et al. Biol Psychiatry 2010 [please do not worry about the technical details of the meta-analysis]
- Bar-Haim et al. Psychol Bull 2007 [please do not worry about the technical details of the meta-analysis]
- Craske et al. J Abnorm Psychol 2012
- Kheibeck et al. Nature Rev Neurosci 2012 [more technical review of the contribution of ‘pattern separation’ processes in the hippocampus to over-generalization of fear and anxiety]
- Schafsfma et al Trends in Cog Sci 2015 [although this review is focused on Theory of Mind, the recommendations apply to other efforts to deconstruct broadband psychological constructs into more elementary constituents]

Module 17: Splitting Negative Emotionality into its Key Constituents (Part 2)

Required
- Shackman et al Nature Rev Neurosci 2011
- Cavanagh & Shackman J Physiol Paris in press [please do not worry about the finer details of the analysis]

Section V: Extraversion/Positive Emotionality and Constraint/Self-Control
Module 18: Positive Emotionality, Self-Control, and Dopamine (Part 1): Depression and Anhedonia

Required
- Kringelbach & Berridge Sci Amer 2012

Optional
- Kotov et al. Psychol Bull 2010 [meta-analysis of associations between T&P and psychopathology; covered in lecture]
- Treadway & Zald Curr Directions Psychol Sci 2013
- Berridge & Robinson Brain Res Rev 1998
- Knutson & Greer Philo Trans Royal Soc B 2008
- Floresco Ann Rev Psychol 2015

Module 19: Positive Emotionality, Self-Control, and Dopamine (Part 2): Substance Abuse, Impulse Control Disorders, and Everyday Temptation

Required
- Lopez et al. Psychol Sci 2014 [please do not worry about the more technical aspects of fMRI or EMA]
- Hare et al. Sci 2009 [please do not worry about any of the more technical aspects of this complex neuroeconomics study]
- Konnikova New Yorker 2014
- Druckerman New York Times 2014
- Lake Slate 2014 [short popular press piece on the stigma associated with mental illness]

Optional
- Lehrer New Yorker 2009 [popular press piece on Walt Mischel]
- Kotov et al. Psychol Bull 2010 [meta-analysis of associations between T&P and psychopathology; covered in lecture]
- Knutson & Greer Philo Trans Royal Soc B 2008 [review work linking the VS/NAcc to wanting and positive emotionality]
- Berridge & Robinson Brain Res Rev 1998 [for those interested in delving more deeply into the neurobiology of liking/wanting]
- Kendler Mol Psych 2013 [entertaining essay on genetic determinism, free will, and psychopathology; includes a number of compelling real-life case histories]
- Floresco Ann Rev Psychol 2015

Module 20: Semester Recap

Required
- n/a

TIPS FOR DECIPHERING THE ASSIGNED PAPERS

Here are some helpful tips to keep in mind as you read the assigned papers. Most of these apply equally well to review or empirical papers.

- First Steps
  - Begin by reviewing the title of the article. The title will indicate the central focus of the paper.
  - Next, read the abstract. The abstract will provide an overview of the study’s main research question, goals, and results. Don’t worry too much about the details or get hung up, just try to identify the big picture.

- Introduction
  - The introduction typically describes what the author hoped to achieve and states the problem being investigated. Normally, the introduction provides background and significance. It will summarize or at least foreshadow the experiment, the hypothesis(es) and the general experimental design or method.
  - Aims?
What were the aims of the paper? It can sometimes even be helpful to highlight the main study goals and hypotheses as you are reading the introduction. This will allow you to easily reference the aims as you dig deeper into the methods, results, and conclusions.

If a review paper, what was the scope of the review? In other words, what are the authors trying to accomplish?

- Background & Significance?
  - What is at stake? Why is this line of research worthwhile or important? Are the goals important or trivial? Often, the larger significance of the work is highlighted at the beginning of the Introduction (and the end of the Discussion).

Method and Participants?

- I do not expect students to fully understand every methodological detail or technique. But it is important that students do their best to understand the gist of what was done.
- What did the authors do? Are the methods a good fit for the aims or is there a gap of some sort?
- Who participated and how were they enrolled in the study?
- How representative is the sample? Is it a good fit for the aims or does it limit the conclusions that can be drawn from the study?

Key results?

- Did the results support the hypotheses?

Discussion

- The purpose of the Discussion is put the findings in the context of prior literature, acknowledge limitations of the current study, and suggest specific implications for future research and applications to prevention, intervention, or policy.
- Often, the first paragraph of the Discussion summarizes the key results
- Often, the final paragraph of the Discussion summarizes the broad implications
- In between, the authors usually discuss the meaning and implications of the results as well as key limitations
- Implications?
  - What are the implications for our understanding of T&P?
  - What are the main implications of the findings for theory and for practice?
  - Are there broader implications for our daily lives?
- Limitations/Caveats, stated or otherwise?
  - Provide strong evidence for the stated conclusions?
  - Are the claims convincing? If not, what further evidence is needed? Are there other experiments or work that would strengthen the paper further?
  - Were important aspects of T&P neglected in the paper?
- Future challenges
  - What are the most profitable, impactful future steps?

**HOW TO COMPLETE THE EXTRA CREDIT ASSIGNMENT USING SONA**

Four points of extra credit will be available to students who complete the Department Mass Survey using the SONA system (see below for details).

1. Create an account at [http://ter.ps/SONA signup]. Please take care to enter your contact information correctly (i.e., errors = no extra credit)

2. Choose PSYC 612 as the course (incorrect course = no extra credit)

3. Earn extra credit by completing the “Mass Survey Fall 2014 Questionnaire” - a collection of on-line surveys, many designed to assess facets of T&P. Please note that separate versions of the Mass Survey are available for students who are above or below 18 years of age (owing to different procedures for obtaining consent). The earlier you complete the Mass Testing Questionnaire the better. If you encounter difficulties, please contact the TA. Be prepared to describe the problem in as much detail as possible.
ADDITIONAL COURSE POLICIES

Students are responsible for making themselves aware of the relevant course and University policies. Some of these are described below.

Late Policy
Students will lose 10% of total possible points for each day late without prior approval (barring compelling reasons). Prior approval requires at least 48 hours advance notice.

Grade Disputes
In the case of disputed grades, students are required to submit a written claim within 48 hours of receiving the disputed grade that describes the disputed item/grade, rationale for altering the grade, and suggested alteration.

Curving
Your grade will be determined by your individual performance on the exams and written response exercises. The course will not be graded on a curve. With the exception of calculation errors, no changes will be made to your final grade at the end of the semester. If earning a particular grade is important to you, please speak with Professor Shackman or the TA at the beginning of the semester so that we can offer some helpful suggestions for achieving your goal.

Final Grade for the Course
Final grades will be assigned in accord with University policy, outlined below. Grades will be rounded up to the nearest 10th of a point.

<table>
<thead>
<tr>
<th>Letter</th>
<th>Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>4.0</td>
<td>denotes excellent mastery of the subject and outstanding scholarship.</td>
</tr>
<tr>
<td>A</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
<td>denotes good mastery of the subject and good scholarship.</td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
<td>denotes acceptable mastery of the subject and the usual achievement expected.</td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>C-</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>D+</td>
<td>1.3</td>
<td>denotes borderline understanding of the subject. These grades denote marginal performance.</td>
</tr>
<tr>
<td>D</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>D-</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>denotes failure to understand the subject and unsatisfactory performance.</td>
</tr>
</tbody>
</table>

XF denotes failure due to academic dishonesty.

W indicates withdrawal from a course in which the student was enrolled at the end of the schedule adjustment period. This mark is not used in any computation of quality points or cumulative average totals at the end of the semester.

Course Evaluations
You will have a formal opportunity to evaluate the effectiveness of this course, although I first want to encourage you to schedule a meeting with me (Professor Shackman) or the TA if you have any questions, concerns, or suggestions for how we can help support your learning and engagement. Specifically,
the University will ask you to evaluate all of your courses through the online system (www.courseevalum.umd.edu) at the end of the semester. As members of the campus learning community your feedback is crucial to the success of our program and therefore to the value of your degree. All I ask is that in evaluating all your courses you approach it in the same way that you expect instructors to evaluate your performance: be open, honest, and objective.

**Academic Integrity**

Academic integrity is the foundation of science and the policies will be strictly enforced. My goal is to protect the value and integrity of the grades that have been fairly earned by the vast majority of students. Any indication of academic dishonesty (including but not limited to cheating, plagiarism and falsification) will be referred to the Office of Student Conduct (www.osc.umd.edu) without hesitation. You are responsible for reviewing the Department of Psychology’s policy statement on academic integrity (http://psychology.umd.edu/about-us/documents/documents/Syllabus_Supplement_on_Ethics_of_Scholarship_in_Psychology.pdf) for details.

The University of Maryland has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student, you are responsible for upholding these standards for this course. It is very important for you to be aware that the consequence for cheating, fabrication, facilitation, and plagiarism in this class is a grade of “F”. For more information on the Code of Academic Integrity or the Student Honor Council, please visit: http://www.studenthonorcouncil.umd.edu/whatis.html. The student-administered Honor Code and Honor Pledge prohibits students from cheating on exams, plagiarizing papers, submitting the same paper for credit in two courses without authorization, buying papers, submitting fraudulent documents and forging signatures.

On every examination, paper or other academic exercise not specifically exempted by the instructor, students must write by hand and sign the following pledge: I am not a cheater. I completed this with honor.

Compliance with the code is administered by the Student Honor Council, which strives to promote a community of trust on the College Park campus. Allegations of academic dishonesty should be reported directly to the Honor Council (301-314-8450) by any member of the campus community. For additional information, consult the Office of Student Conduct. For a description of the University's definition of academic dishonesty, suggestions on how to prevent cheating, and practical answers to frequently asked questions about the Code of Academic Integrity, consult the Student Honor Council's webpage and click on the faculty tab.

**Accommodations for Disabilities**

The campus's Disability Support Service Office (DSS) works with students and faculty to address a variety of issues ranging from test anxiety to physical and psychological disabilities. If an instructor believes that a student may have a disability, DSS should be consulted (4-7682 or dissup@umd.edu). Note that to receive accommodations, students must first have their disabilities documented by DSS. The office then prepares an Accommodation Letter for course instructors regarding needed accommodations. Students are responsible for presenting this letter to their instructors by the end of the drop/add period (www.counseling.umd.edu/DSS).

**Religious Observances**

Students will not be penalized because of observances of religious beliefs. Please note that it is your responsibility to notify the instructor by email ASAP regarding any absences for religious observances.

**Electronic Devices**

I expect you to make the responsible and respectful decision to refrain from the temptation to use your cell phone or other mobile electronic devices, such as tablets and notebook computers in class. If you have critical communication to attend to, please excuse yourself from the room and return when you are finished. If I find myself or other students to be distracted by your behavior, I may ask you to leave the room.

**Inclement Weather or Campus Emergency**
If the University is closed due to inclement weather or a campus emergency (you can find this out by looking at the campus website http://www.umd.edu or the snow phone line (301-405-SNOW), classroom activities will be cancelled.

**Learning Assistance Center**
If you are experiencing difficulties in keeping up with the academic demands of this course, you are strongly encouraged to contact the Learning Assistance Service (www.counseling.umd.edu/LAS). Their educational counselors can help with time management, reading, math learning skills, note-taking and exam preparation skills. All their services are free to UM students.

**Students in Distress**
Services for students in various forms of distress are offered by the Counseling Center and the Mental Health Service in the Health Center. During evenings and weekends, the student peer-counseling hotline (4-HELP or 4-4357) is available. Faculty who wish to consult with professionals may call 4-7651 for immediate assistance. For non-emergency issues, faculty can call the Warmline (4-7653). A therapist will respond within a few hours.
ABOUT THE COURSE

Professor Alex Shackman

Dr. Shackman received his Ph.D. in Biological Psychology with a distributed minor in Neuroscience from the University of Wisconsin—Madison in 2008. His graduate research was supported by the National Science Foundation and National Institute of Mental Health. He subsequently conducted postdoctoral research in the laboratories of Richard Davidson, Brad Postle, and Ned Kalin in the Departments of Psychology and Psychiatry at Wisconsin. This work has appeared in a number of outlets, including the Proceedings of the National Academy of Sciences USA, Nature Reviews Neuroscience, Journal of Neuroscience, and Psychological Science. Professor Shackman serves as an Associate Journal Editor at Cognitive, Affective & Behavioral Neuroscience (CABN); Cognition and Emotion; Emotion; and Frontiers in Human Neuroscience.

Dr. Shackman’s major research interests include affective and cognitive neuroscience; neural bases of threat processing, anxiety, fear, and their application to anxiety, mood, and related psychiatric disorders; neural bases of personality; individual differences in anxiety and behavioral inhibition; cognition × emotion interactions; developmental psychopathology; extended amygdala; anterior cingulate cortex (ACC); prefrontal cortex (PFC).

Key methods used by the Shackman lab include multimodal neuroimaging (fMRI, PET, VBM); peripheral physiological techniques (cortisol, facial EMG, fear-potentiated startle), and behavioral assays (eyetracking and experience sampling). Populations of interest include children, adolescents, healthy adults, and psychiatric patients.

To learn more about the lab, please visit our website at http://shackmanlab.org

Claire Kaplan

Ms. Kaplan is currently a first year graduate student in the Clinical Psychology doctoral program. Her research utilizes neuroimaging, psychopharmacology, and computational modeling to investigate the neurobiology of behavior -- specifically regarding individual differences in stress/anxiety, learning, and daily coping mechanisms.

To learn more about her work, please visit her departmental website at http://marylandclinicalpsychology.tumblr.com/Students/ClaireKaplan

Acknowledgements

This course was developed more or less from scratch by Dr. Shackman, but it owes a heavy debt of gratitude to a number of individuals, including Dr. June Gruber, Dr. Leah Somerville, Tara Augenstein, Dr. Hill Goldsmith, and Dr. Heather Abercrombie. The feedback that I have received from students enrolled in prior semesters has also proven invaluable for refining and strengthening the course.