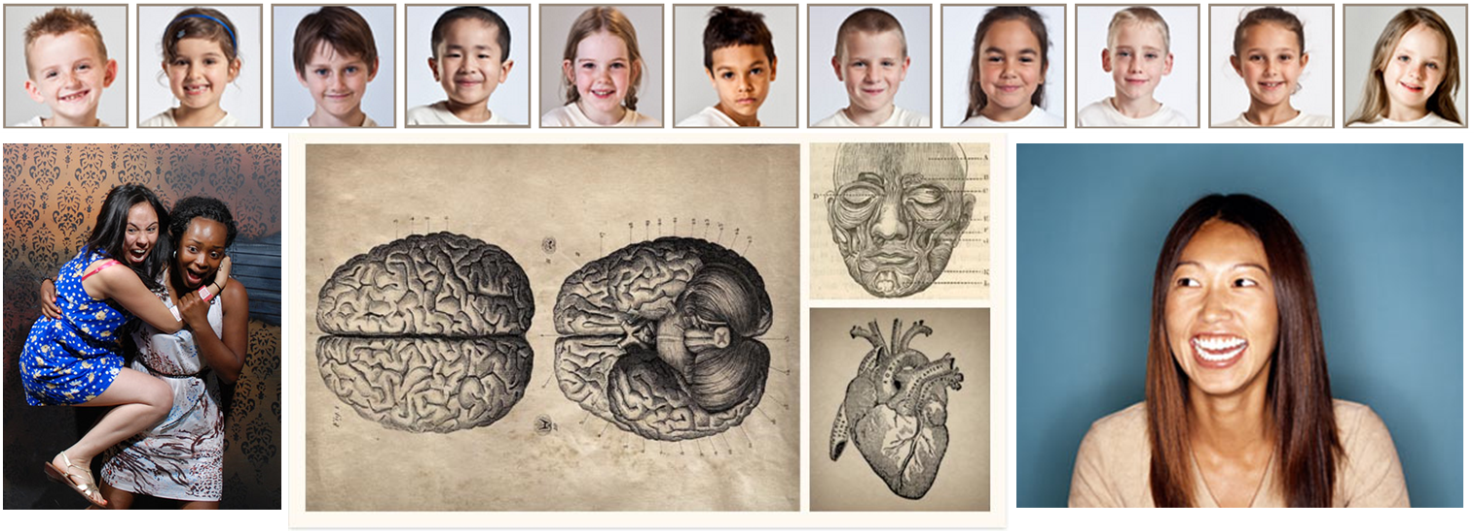
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**PSYCHOLOGY 435: *ADVANCED seminar in tEMPERAMENT AND PERSONALITY (t&p)***

**Developmental origins, biological bases, and implications for psychopathology**

**professor alex shackman, uNIVERSITY OF MARYLAND**

**FALL 2016**

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

*We will selectively review cutting-edge research in humans and non-human animal models aimed at understanding the mechanisms underlying lasting differences in personality and their implications for risk and resilience.*

*We will discuss the developmental origins of temperament, measurement issues, fundamental dimensions, mechanisms contributing to stability/plasticity, heritability, implications for psychopathology and therapeutic intervention, as well as broader implications for public policy.*

1. *A major focus of the course will be the neurobiology of trait-like differences in fear and anxiety, including neural circuits, molecular genetic pathways, and epigenetics.*
2. *A secondary focus will be on individual differences in behavior and biology that confer elevated risk for the development of depression and impulse control disorders (e.g., substance abuse), including neural circuits involved in hedonic pleasure, reward motivated-behavior, and the regulation of impulses in the face of temptation.*

*An extensive background in biology, genetics, neuroscience, statistics, or other ‘STEM’ fields is not necessary to enjoy and benefit from this course.*

**Note:** If you successfully completed PSYC 210 and have concerns about the degree of overlap between the two classes, I strongly encourage you to schedule a time to meet with me.

**ADMINISTRATIVE INFORMATION**



* **Monday 9:30-10:45 AM in BPS 1243 (Clicker Channel 17)**
* **Instructor:** Dr.Alex Shackman ([shackman@umd.edu](mailto:shackman@umd.edu); 3123G BPS)
* **Teaching Assistant:** C. J. Seitz-Brown ([cjsb@umd.edu](mailto:cjsb@umd.edu); 2103S Cole Student Activities Building)
* **Required Materials**
  + **Textbooks**: n/a
  + **Technology**
    - Clicker (Response Card RF LCD by Turning Technologies | Edition: 08 [ISBN: 9781934931400])
    - Note that you will need to purchase a student user license and will want to purchase spare batteries
    - Please bring your clicker to class (**beginning the second week of class)**, register it, and have some spare batteries on hand. See <http://clickers.umd.edu> for details on how to register your clicker as well as technical support.
  + **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.provost.umd.edu/calendar/**](http://www.provost.umd.edu/calendar/)
* **Office Hours**
  + Dr. Shackman: By appointment
  + Mr. Seitz-Brown: Mondays 1-2:45 PM. Other times by appointment.

***Continued…***

**general learning objectives: *Course overview***

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 tax payers, 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:** An extensive background in biology, genetics, neuroscience, statistics, or other “STEM” fields is not necessary to enjoy and do well in PSYC 435.

***Continued…***

**detailed learning objectives: *can you be more specific about the CONTENT 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; Spatial and temporal resolution; SNP; Strengths and weaknesses of prospective longitudinal studies

**Psychometric Concepts (Non-Technical Overview)**

Correlation (vs. causation); Construct validity; 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; Drew Fox; Nathan Fox; Jeffrey Gray; Christian Grillon; Dan Grupe; Amad Hariri; Jerry Kagan; Ken Kendler; Roman Kotov; Will Fleeson; 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; Nora Volkow; David Walker; David Watson; Paul Whalen; Tal Yarkoni; David Zald and many others

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

**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 behavioral and physiological 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.*

—Benet-Martínez, Donnellan, Fleeson, Fraley, Gosling, King, Robins, & Funder (APA Handbook of Personality and Social Psychol, 2015)

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.

***Continued…***

# course structure

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

You are *strongly* encouraged to attend all course meetings. Each lecture or “module” will last approximately 75 minutes and will typically include the following components:

1. Low-stakes cumulative quiz focused on material covered in prior Modules. Quizzes will be conducted using Clickers.
2. Conceptual roadmap outlining the new topics to be covered
3. 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.
4. Recap of the most important take-home points
5. Summary of key learning objectives

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 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.

**The Learning Objectives file available on Canvas provides a powerful tool to guide your independent study and review. I strongly recommend using the Learning Objectives to guide your test preparation. Please review them before you dive into the PowerPoint to forage for crucial pieces of information.**

***Continued…***

2. Background Readings

Readings for this course have been hand-picked by the instructor; many are 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 posted on Canvas 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.

***Continued…***

# ASSESSMENTS, ACTIVITIES, & GRADING

### 1. Three Cumulative Examinations (10%, 20%, and 30%; Total: 60%)

**3 cumulative exams: 2 mid-terms and a final examination.**

The first exam is worth 10%, the second exam is worth 20%, and the final exam is worth 30% of the total grade.

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.

**You are welcome to bring a single index card (3” x 5”) of notes to exams (double sided is OK).** Notes may be handwritten, printed, or photocopied. 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.

**Make-up exams will only be considered in exceptional circumstances.** Make-up exams may 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.

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### 2. Homework (Total: 25%; Two lowest grades dropped)

For Modules 2-19, you will receive two or more critical thinking take-home questions (CTQs) and a detailed set of Learning Objectives.

Please respond to any two of the CTQs assigned for a particular Module –or- complete the Learning Objectives.

For the CTQ’s, your response should be approximately 1 paragraph per question (i.e. total of 2 paragraphs).

One aim of the written homework is to encourage on-going review and learning (and minimize the need for cramming). To encourage this, you are welcome to substitute the Learning Objectives for the CTQ’s. What do I mean? For any particular lecture, ignore the CTQ’s altogether and simply provide short written responses to all of the bulleted “prompts” for the current Module’s Learning Objectives

The CTQ’s and Learning Objectives can be conveniently downloaded from Canvas.

You will submit your responses using the “assignment” tab in Canvas. Length should range between ½ to 1 single-spaced page total for either the 2 CTQ’s or the 1 set of Learning Objectives.

The homework is due by 9:30 AM one week following the classroom discussion of the relevant Module.

Each assignment (i.e. 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 2 lowest response grades will be dropped (cf. <http://www.sfcollege.edu/cat/?section=techTips/ExcelLowVal>)—so there is no need to stress when the occasional unexpected issue crops up (e.g. illness, spaced out, etc.).

### 3. In-Class Quizzes Using Clickers (10-17 quizzes; Total: 15%; 3 lowest grades dropped)

Beginning the second week of class, most lectures will begin with a low-stakes quiz focused on material covered in prior Modules.

These cumulative quizzes will be conducted using Clickers. Many of the questions that will ultimately appear on the exams will first be covered in the quizzes.

Clicker quizzes will be curved *at the end of the semester* in the following sense: if your raw score was 70% or greater, then you will receive full credit for that quiz (that is, it will be curved to 100%); if your raw score was less than 70%, then you will receive your raw percentage. For example, if Jill correctly answers 71% of the items on a quiz, then she will be assigned a curved grade of 100%. On the other hand, if she correctly answers 69% of the items, then she will receive a grade of 69%.

If you occasionally forget your Clicker or encounter a technical issue, don’t sweat—the three lowest grades will be dropped.

***Continued…***

### 4. Two Opportunities for Earning Extra Credit

**a) In-Class Presentation**

You have the option to participate in an extra credit assignment worth 4 points toward your final grade. The assignment will take the form of a brief in-class presentation. This can be done as a group or solo. **The presentation will be in the form of a “flash talk” (<5 minutes),** and must be related to class material, but can be in any format you choose. Examples include:

* A live powerpoint presentation
* A pre-recorded video (e.g. public service announcement)

The presentation could be focused on

* A nano-lecture (e.g. a course-relevant topic incorporating outside scholarly readings)
* A mobile-friendly app that you develop to nudge T&P
* A proposed solution or intervention to a public health problem that is related to the class material
* An intervention targeting a facet of T&P discussed in class
* An (informal) analysis of your own traits (e.g. present the results of a 10+ day daily diary study)
* A hypothetical experiment aimed at discovering some aspect of T&P

Groups of 4 or more can stage a scientific debate. Debates will be allotted 10 min total.

Feel free to be creative on this assignment, but the topic and format must be pre-approved by the TA (deadline for proposing TBA).

**b) SONA – Department of Psychology Mass Survey**

An additional 2 points of extra credit will be available to students who complete the Department Mass Survey **BEFORE October 1, 2016** using the SONA system (see below for details).

***All extra credit 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 + 2 = 95 / 100 points.***

***Final grades will not be curved or otherwise transformed.***

***Continued…***

|  |  |
| --- | --- |
| Date | Activity |
| Tue, August 30 | Module 1: Introductions, Course Mechanics, and Fundamental Questions Roundtable |
|  | |
| Section 1: Foundational Issues in the Scientific Study of Temperament & Personality | |
| Thu, September 1 | Module 2: Is T&P impactful? |
| Tue, September 6 | Module 3: How is T&P defined? What are the fundamental dimensions of T&P? (note: 1st critical thinking assignment) |
| Thu, September 8 | Module 4: How should we measure T&P? |
| Tue, September 13 | Module 5: How Are Traits and States Related? (Part 1) |
| Thu, September 15 | Module 6: How Are Traits and States Related? (Part 2) |
| Tue, September 20 | Module 7: What Do Traits Do? (Part 3) |
| Thu, September 22 | **No Class / Dr. Shackman at a Conference ☺** |
| Tue, September 27 | Module 8: Intermediate Phenotypes and Brain Imaging Tools, Part 1 |
| Thu, September 29 | **No Class / Dr. Shackman at a Conference ☺** |
| Tue, October 4 | Module 9: Intermediate Phenotypes and Brain Imaging Tools, Part 2 |
|  | |
| Section II: The Nature and Nurture of Temperament & Personality | |
| Thu, October 6 | Module 10: Nature & Nurture (Part 1): Behavioral Genetics and Heritability |
| Tue, October 11 | Module 11: Nature & Nurture (Part 2): Molecular Genetics |
| Thu, October 13 | Module 12: Nature & Nurture (Part 3): Neurogenetics and Epigenetics |
| Tue, October 18 | In-Class Review Session |
| Thu, October 20 | **Cumulative Multiple-Choice Exam #1** (Class Led by the TA/Proctor) |
|  | |
| Section IV: Neuroticism and Negative Emotionality | |
| Tue, October 25 | Sick Day |
| Thu, October 27 | Sick Day |
| Tue, November 1 | Module 13: Neuroticism/Negative Emotionality and Psychopathology |
| Thu, November 3 | Module 14: Behavioral Inhibition and Psychopathology |
| Tue, November 8 | Module 15: Role of the Extended Amygdala in Negative Emotionality, Behavioral Inhibition, and Psychopathology |
| Thu, November 10 | Module 16: Splitting Negative Emotionality into Its Constituents, Part 1 |
| Tue, November 15 | Module 17: Splitting Negative Emotionality into Its Constituents, Part 2 |
| Thu, November 17 | In-Class Review Session |
| Tue, November 22 | **Cumulative Multiple-Choice Exam #2** (Class Led by the TA/Proctor) |
| Thu, November 24 | **No Class / Thanksgiving ☺** |
|  | |
| Section V: Extraversion/Positive Emotionality and Constraint/Self-Control | |
| Tue, November 29 | Module 18: Positive Emotionality, Self-Control, and Dopamine (Part 1): Depression and Anhedonia |
| Thu, December 1 | Module 19: Positive Emotionality, Self-Control, and Dopamine (Part 2):Substance Abuse, Impulse Control Disorders, and Everyday Temptation |
| Mon, December 5 | Flash Talk A/V Materials Due to Shackman for those presenting on 12/6  *You will not be allowed to present if you do not share you’re A/V Materials at least 24 hours before your scheduled presentation time* |
| Tue, December 6 | Flash Talks  1. McLaughlin, Clinton, Levin & McKenzie  2. Guntur  3. Tanenbaum  4. Dicello, Yao, Montgomery & Coello  5. Higgins  6. Sadr, Tu, Jennings, & Villatoro  7. Lipsky & Calabrese  8. Goldschtein  9. Hand |
| Wed, December 7 | Flash Talk A/V Materials Due to Shackman for those presenting on 12/6  *You will not be allowed to present if you do not share you’re A/V Materials at least 24 hours before your scheduled presentation time* |
| Thu, December 8 | **Flash Talks**  1. Schuetz & Kolenda  2. Zaccaro  3. Nguyen & Diamond  **Module 20: Semester Recap | In-Class Review Session** |
| Thu, December 15 from 8-10 am | **Final Exam** (Class Led by the TA/Proctor) |

Please note: This schedule is subject to change. Any updates will be announced in class and posted on the course website. All readings, CTQ’s, and Learning Objectives will be available on the course website. Examinations may be proctored by the TA or another member of the Department staff.

**readings**

**SECTION I: FOUNDATIONAL ISSUES IN THE SCIENTIFIC STUDY OF TEMPERAMENT & PERSONALITY**

**Module 1: Introductions, course mechanics, and fundamental questions roundtable**

Required

* Spotting Bad Science
* Spotting Logical Fallacies
* Carl Sagan’s ‘Baloney Detection Kit’ – Popova Brain Pickings 2015

Optional

* Lillienfeld et al. Frontiers in Psychol 2015 [50 psychological terms to avoid]

**Module 2: Is T&P impactful?**

Required

* Moffitt et al. PNAS 2011 [do not worry about the technical details of the analyses]
* Duckworth PNAS 2011 [brief scientific commentary on Moffitt]
* Kelly Psych Today 2010 [brief popular press summary of work linking neuroticism to divorce]
* Barker Time 2014 [brief popular press summary of work linking conscientiousness and neuroticism to diverse outcomes]

Optional

* Lahey Amer Psychol 2009 [review detailing the myriad consequences of neuroticism; highlights are described in lecture]
* Moffitt et al. Amer Sci 2013 [popular scientific press summary of Moffitt et al. PNAS 2011; reviewed in lecture]
* Duckworth et al. Perspectives on Psychol Sci 2016 [accessible review focused on strategies for enhancing and situations that can undermine self-control]

**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]
* Srivastava 2016 [blog post - provides a quick 'nuts-and-bolts' summary of the Big 5 and ways of measuring them; written in a conversational style]

Optional

* Goldsmith et al Child Dev 1987
* Shiner et al Child Dev 2012
* Fox & Walker 2015
* Shiner chapter 3 *in press*
* Shiner chapter 14 *in press*
* Clark & Watson chapter 2008
* Zentner & Shiner chapter 2012
* Soto & John J Personality & Soc Psychol 2016

**Module 4: How should we measure T&P?**

Required

* Block Psychol Bull 1995a
* Tomarken Psychol Assessment 1995

Optional

* Stromberg & Caswell Vox 2015 [on-line magazine article on why the popular Meyers-Briggs test is worthless]
* Funder Psychol Inquiry 1994 [entertaining essay on the strengths and weaknesses of trait theory]
* Epstein Psychol Inquiry 1994 [short, entertaining essay on the limitations of the Big 5 and similar descriptive models of T&P]
* McRae Psychol Inquiry 2010 [Updated rebuttal of Block; I found this to be very compelling]
* John, Naumann & Soto Handbook of Personality 2008 [definitive defense of the Big 5 and FFM]

**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]
* Suls & Martin J Personality 2005
* Watson & Clark Psychol Bull 1984

Optional

* 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

* 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

* None

**SECTION II: THE NATURE AND NURTURE OF TEMPERAMENT AND PERSONALITY**

**Module 8: Intermediate phenotypes and brain imaging tools, Part 1**

Required

* Ariely & Berns Nature Rev Neurosci 2010 [you only need to read Box 2 on page 288; feel free to read more!]
* Schwartz et al. Amer Psychol 2016 [you only need to read pp. 59-61; feel free to read more!]

Optional

* Lillienfeld Behav Res Ther 2014 [cautionary note on the use of biological measures and the search for biomarkers]
* Logothetis Nature 2008 [please do not worry about the finer details; for those interested in delving more deeply into brain imaging techniques]

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

Required

* Miller Ann Rev Clin Psychol 2013 [detailed analysis of endophenotypes]
* 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]
* Roiser The Psychol 2015 [brief, entertaining piece on the value of neuroscience for developing novel intervention strategies]

**Module 10: The Nature & Nurture of T&P (Part 1): Behavioral Genetics and Heritability**

Required

* Visscher et al Nat Rev Genetics 2008 [please do not worry about the finer details]
* Plomin et al. Perspectives on Psychol Sci 2016

Optional

* Miller Perspectives on Psychol Sci 2010 pp 18-23 [critical perspective on genetic reductionism]
* Dar-Nimrod & Heine Psychol Bull 2011 [review focused on how misunderstandings about genetics facilitate stereotyping and prejudice, influence morality, and can mis-lead decision-making about interventions for the self (e.g. dieting) and others (e.g prison vs. rehab/treatment)]

**Module 11: The Nature & Nurture of T&P (Part 2): Molecular Genetics**

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]
* Pinker NY Times Magazine 2009 [science writer’s personal story about getting genetic testing]

Optional

* Mukherjee New Yorker 2016b [science writer’s story about his family and psychiatric genetics]
* Chabris et al. Curr Dir Psychol Sci 2015 [very accessible overview of GWAS]
* Smoller Neuropsychopharm 2016 [comprehensive, but approachable review of the genetics of mood and anxiety disorders]
* Iacono et al Psychophysiol 2014 [accessible overview of molecular techniques with a glossary]
* Topol Cell 2014 [very readable discussion of personal genomics]
* 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]
* Okbay & Rietveld Emotion 2015 [critical analysis of candidate gene studies with methodological recommendations]

**Module 12: The Nature & Nurture of T&P (Part 3): Neurogenetics and Epigenetics**

Required

* 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; seminal review paper by one of the key pioneers]
* Mukherjee New Yorker 2016b [science writer’s story about his family, twins, and epigenetics]

Optional

* Bogdan et al Neuropsychopharm 2016 [sobering updated discussion of neurogenetics]
* Dias & Ressler Nature Neurosci 2014 [please do not worry about the finer technical details]

**SECTION III: NEUROTICISM / NEGATIVE EMOTIONALITY**

**Module 13: Neuroticism/Negative Emotionality and Psychopathology**

Required

* Shackman et al Psychol Bull in press
* 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]
* Orlando et al. Houstonia 2015
* ACHA-National College Health Assessment 2015

Optional

* Jeronimus et al Psychol Med 2016
* Zinbarg et al Clin Psychol Sci 2016
* Barlow et al Clin Psychol Sci 2013
* Ormel et al Clin Psychol Rev 2013

**Module 14: Behavioral Inhibition and Psychopathology**

Required

* NY Times Magazine article on behavioral inhibition
* Fox et al Ann Rev Psychol 2005

Optional

* Fox & Walker 2015 [for those hungry to learn more about BI]
* Kagan et al. Science 1988 [for those interested in delving more deeply into BI; seminal study]
* Schwartz et al. Science 2003 [please do not worry about technical aspects of fMRI; for those interested in delving more deeply into BI; seminal study]
* Clauss & Blackford J Amer Acad Child & Adol Psychiatry 2013 [please do not worry about technical aspects of the meta-analysis; for those interested in delving more deeply into BI]
* Mihalopoulos et al. J Child Psychol & Psychiatry 2015 [detailed analysis of what makes for a cost-effective targeted prevention program]

**Module 15: Role of the Extended Amygdala in Negative Emotionality, Behavioral Inhibition, and Psychopathology**

Required

* Shackman et al Psychol Bull in press
* Feinstein et al Curr Biol 2011
* Adolphs Ann NY Acad Sci 2010 [addresses the contribution of the amygdala to social cognition]

Optional

* Shackman & Fox J Neuro 2016
* Davis et al Neuropsychopharm 2010
* Oler, Fox, Shackman & Kalin in press [lesions in monkeys, relevance to BI and social anxiety disorder]
* Fox & Kalin Amer J Psychiatry 2014 [please do not worry about the technical details]
* Shackman et al PNAS 2013 [please do not worry about the technical details]
* Fox et al Trends in Neurosci 2015
* Fox et al PNAS 2015 [please do not worry about the technical details]
* Etkin & Wager Amer J Psychiatry 2007 [please do not worry about the technical details; seminal meta-analysis]
* Davis & Whalen Mol Psychiatry 2001
* Adolphs et al Nature 1998 [reviewed in lecture and worth skimming]
* Kennedy et al Nat Neurosci 2009 [reviewed in lecture and worth skimming]
* Choi & Kim PNAS 2010 [please do not worry about the technical details] [reviewed in lecture and worth skimming]

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

Required

* Grupe & Nitschke Nature Rev Neurosci 2013
* La Rosa Buzzfeed 2014
* Shackman et al. J Exp Psychopath in press

Optional

* Mogg & Bradley Behav Res & Ther 2016 [comprehensive review of ABM work and anxiety-attention more generally]
* MacLeod & Clarke Clin Psychol Sci 2015 [ABM/CBM: reviewed in lecture and worth skimming]
* Koster & Bernstein J Behav Ther & Exp Psychiatry 2015 [future directions for ABM/CBM]
* Linetzky et al. Dep and Anx 2015 [recent meta-analysis of ABM]
* Duits et al Dep and Anx 2015 [please do not worry about the technical details of the meta-analysis] [reviewed in lecture and worth skimming]

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

Required

* Shackman et al Nature Rev Neurosci 2011
* Cavanagh & Shackman J Physiol Paris 2015 [please do not worry about the finer details of the analysis]

**SECTION IV: EXTRAVERSION / POSITIVE EMOTIONALITY & CONSTRAINT / SELF-CONTROL**

**Module 18: Positive Emotionality, Self-Control, and Dopamine (Part 1): Depression and Anhedonia**

Required

* Kringelbach & Berridge Sci Amer 2012
* Pizzagalli Ann Rev Clin Psychol 2014
* Thomsen et al Frontiers in Behav Neurosci 2015
* Fleming Intell Life Mag 2015 [journalist hangs out with Kent Berridge for a week]

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 [seminal early review]
* Berridge & Robinson Neuron 2015
* Knutson & Greer Philo Trans Royal Soc B 2008
* The Neurocritic DBS RCT 2015 [popular science blog post on failed randomized clinical trials of deep brain stimulation for major depression]
* Scult Sci Amer 2016 [short blog post on the neural circuitry of reward and neurofeedback training]

**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]
* Munro Nature 2015 [infographic on the psychoneurobiology of addiction]
* Yong The Atlantic 2016 [brief popular press piece on the neurobiology of impulsivity and risk aversion]
* Meurk International J of Drug Policy 2016 [how do addicts think about addiction]

Optional

* Kelley et al. Ann Rev Neurosci 2015
* Lehrer New Yorker 2009 [popular press piece on Walt Mischel]
* Mischel 2015 [Press release for the 2015 Congressional Golden Goose award to 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 [seminal early review]
* Berridge & Robinson Neuron 2015 [recent review]
* Duckworth et al. Perspectives on Psychol Sci 2016 [*highly recommended* review focused on strategies for enhancing self-control in the real world; e.g. dieting, planning for retirement, quitting substances, etc.]
* Konnikova New Yorker 2014
* Druckerman New York Times 2014
* Lake Slate 2014 [short popular press piece on the stigma associated with substance abuse and mental illness]

**Module 20: Semester Recap**

Required

* None

***Continued…***

**how to complete the extra credit assignment using sona**

Two points of extra credit will be available to students who complete the Department Mass Survey **BEFORE October 1, 2016** using the SONA system.

1. Create an account at <https://umpsychology.sona-systems.com/default.aspx>. Please take care to enter your contact information correctly (i.e., errors = no extra credit). Choose PSYC 435 (SHACKMAN) as the course (incorrect course = no extra credit). For additional information, please see <https://psyc.umd.edu/undergraduate/participating-research>.
2. You should then be able to complete the pre-screen and continue on to the studies.
3. If you click on "View Available Studies", and scroll down, you should see an option that says “Mass Screening Fall 2016” or “Mass Screening Fall 2016 - Under 18” - a collection of on-line surveys, many designed to assess facets of T&P. 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 Screening Questionnaire, the better. If you encounter difficulties, please contact the TA. Be prepared to describe the problem in as much detail as possible.

**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?

**get some help!**

I expect you to take personal responsibility for you own learning. This includes acknowledging when your performance does not match your goals and doing something about it. Everyone can benefit from some expert guidance on time management, note taking, and exam preparation, so I encourage you to consider visiting <http://ter.ps/learn> and schedule an appointment with an academic coach. Or, if you just need someone to talk to, I encourage you to visit <http://www.counseling.umd.edu>.

Remember, everything is free because you already paid for it and everyone needs help…all you have to do is ask for it.

**additional course policies**

***Students are responsible for making themselves aware of relevant course and University policies. Some of these are described below. Campus policies are detailed at https://www.ugst.umd.edu/courserelatedpolicies.html.***

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 the following rubric

>97 A+

94-96 A

90-93 A-

87-89 B+

84-86 B

80-83 B-

77-79 C+

74-76 C

70-73 C-

67-69 D+

64-66 D

60-63 D-

<60 F

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) 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](http://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 of all your courses you approach it in the same way that you expect instructors to evaluate your performance: be open, honest, and objective.

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.

**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>

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.