PSYCHOLOGY 365
Cognitive Neuroscience
3 credits

University of British Columbia, Vancouver
Jan-April, 2018
T-Th 3:30-5:00
Buchanan A102

Instructor: Dr. Rebecca Todd
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Office Hours: Wed 12:30-1:30pm

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Office: Kenny 2563
Office Hours: Thurs 2:15-3:15

TA: Mana Ehlers
E-mail: manaehlers@psych.ubc.ca
Office: Kenny 2405
Office Hours: Tue 2:00-3:00pm

I. About your instructor and teaching assistants

Dr. Rebecca Todd is a faculty member in the Cognitive Science area of Psychology. She received her Ph.D. in Psychology and Neuroscience from University of Toronto. Her interests focus on the influence of emotion on attention and memory, and why our attention is tuned to things in the environment because of our own unique history and priorities. She also studies genetic and brain processes that contribute to these “biases” in attention and memory, as well as how they develop across the lifespan.

Alexander Terpstra is a second year MA student in clinical psychology. His research focuses on emotionally biased cognition in depression and whether certain biases (e.g., increased engagement of attention toward sad pictures) may predict response to treatments like cognitive behavioural therapy or antidepressant medication.

Mana Ehlers is a fourth year Ph.D. student in cognitive Neuroscience. Her research investigates individual differences in people’s ability to learn associations of emotionally relevant stimuli and how those
differences predict our unique attentional biases. She uses an array of behavioral and psychophysiological measures and combines those with genetics and brain imaging techniques.

**Course description and goals.** The two-fold goal of this course is to introduce you to questions that drive research in cognitive neuroscience and the methods we have to answer them, while engaging you in active and critical discussion of current research and controversies in the field. That is, the goal is to give you a taste of classic studies and late-breaking news in the neuroscience of human cognition, while giving you the skills to make your own decisions about what information means and what to do about it in the world of FAKE NEWS! Topics include the cognitive neuroscience of perception, attention, learning, memory, and decision-making. After successful completion of this course, you will have a better understanding of what we know and don’t know about the mysterious workings of the human mind and brain — and a glimpse of what the future may hold.

II. **Course Materials**

**Readings**

**Required Textbook.** Richard Passingham (2016). *Cognitive Neuroscience: A Very Short Introduction*. Oxford University Press. Available at the Bookstore. Also available as an ebook. ISBN: 9780198786221. This inexpensive and very readable book will provide a general overview and some background for the experimental studies we will read and discuss in class.

**Other readings.** These include peer-reviewed experimental papers which will be posted on Canvas. Papers are also available through the UBC library. There will also be videos, media articles, and blog posts occasionally assigned.

Readings are meant to provide background (textbook) as well as details (papers) of scientific studies to be covered in each class, and will be due before class. The lectures will not simply recapitulate the readings, but will build on, expand and clarify material in the readings as well as provide additional information. Therefore, it’s important to make sure you do the readings before the relevant lecture so that you have the necessary background for the lecture material. The lectures will highlight the information from the papers that you will need for the exams, so that you can study what’s important. Most weeks you will be required to read ONE empirical paper a week. Papers listed in parentheses are optional, and are sources of material that will be in the lecture. FOR OPTIONAL PAPERS YOU WILL ONLY BE EXAMINED ON MATERIAL THAT IS IN THE LECTURE.

**i-clickers.** The I-clicker response system will be required for participation. Note that there will be i-clicker questions on the readings at the beginning of each class. This is to encourage you to do the readings and to get to class on time!

III. **Course webpage**

https://canvas.ubc.ca/ (location for important announcements, readings, lecture notes, discussion, and grades)

IV. **Course requirements**

The assignments in this course are designed to foster an understanding of cutting-edge research in cognitive neuroscience that is informed by background knowledge of how thinking has developed in each research area. Readings, lectures, and exams will be geared towards this goal.

Note that class time is hands on. Your weekly responsibilities in this class include:

• Read the chapter/article for that class as background before you come to class.
• Participate actively via i-clickers and class discussion.

Exams
Exams will cover all in-class (e.g., lecture and video) and reading material. Note that lectures add to and elaborate on reading materials, and will contain information that is not in the readings. All Exams will be a mixture of multiple choice and short answer questions, but the proportion of short answer will be higher with each successive exam. Multiple choice questions are a way to test whether you have learned the range of material we've covered and short answer questions test your ability to synthesize it. As we go along there will be more to synthesize and you will have had more practice doing it.

Quiz: Brain Imaging (5%) and Neuroanatomy (5%) (10% of total course grade).
This in-class quiz is designed to ensure students have a sufficient foundation in neuroanatomy and cognitive neuroscience research methods to sufficiently understand and evaluate the studies discussed over the rest of the course. It is also structured to provide some lower-stakes practice for the midterms and final. I will post a practice version of the quiz in the first week of class.

2 Midterms (20% each, 40% of total course grade).
These will draw on both lectures and the readings. For superior performance; you must have a clear understanding of both. There are two midterms so that you can digest the material in smaller chunks, which should allow you to master it better. Having two midterms also gives you more practice for the final exam, and the chance to keep bringing up your game, as well as giving you some insurance if one of the exam days is just a bad day.

Final Examination (45% of course grade). While there will be more emphasis on material not covered in the mid-terms, the final will be cumulative in that you will be expected to synthesize more recent material with material learned earlier in the course.

Participation (5% of course grade). I-clicker. Your participation grade will be the total i-clicker points you are credited for STARTING TUES, JAN 9. You will get 5 points per session if you answer at least 75% of the questions that session. There are 20 classes with i-clicker sessions allowing for a total of 100 points. Everybody starts with a 10-point bonus to allow for two non-penalized sick days/absences or joining the class later. If you forget your i-clicker I CANNOT give you presentation points.

Research participation (extra credit). You also have the opportunity to earn up to two (2) extra percentage points on your overall final grade by participating in studies regularly conducted by the Psychology Department and coordinated through the human subject pool (HSP). This provides the valuable opportunity to observe the research process directly and to contribute to the ongoing research activities at UBC. The extra grades are obtained by signing up for the Introductory Psychology Subject Pool through their web site: https://hsp.psych.ubc.ca/. Please note that any inquiries about credits should be directed to HSP or the experimenters that you worked with, *not* the instructor.

One percentage point is assigned to your final grade for each hour of participation and partial credits will be rounded down (i.e., 1.5 hours = 1% extra credit). Credits can be recorded and tracked via the subject credit website. These credits are added to your grade at the end of the course. If you do not correctly assign your credits to this course, you will NOT receive credit so please make sure you have done this correctly.

As an alternative to participating in studies, you may choose to complete library writing projects, in which you read and summarize a research article; each article summary counts as one hour of research participation. You must select a research article (not a letter to the editor, commentary, or review paper)
published between 2000-present in the journal *Psychological Science*. Each summary should be about 500 words and should include the purpose, method and results of the study. Library assignments are due on the last day of classes (Friday April 10 for the upcoming term). If you choose the library option, you should submit their assignment on TurnItIn. Please contact Prof. Todd for the class ID for "Psychology HSP (Winter 2018)", password "research". A full description of the library assignment is available on page 4 of the attached “Info for Participants” document. This document will be available for students through the psychology department website as of the first day of classes.

V. **Course grading**

Your final grade consists of the items described in Section V. Performance for each of the items above will be put into a calculator that outputs your final course percentage earned. As mentioned in Section VI, any extra credit earned will be added to this final score.

In order to reduce grade inflation and maintain equity across multiple course sections, all psychology courses are required to comply with departmental norms regarding grade distributions. According to departmental norms, the mean grade in a 300-level class in psychology is 70 for a good class, 68 for an average class, and 66 for a weak class, with a standard deviation of 13. Scaling may be used in order to comply with these norms; grades may be scaled up or down as necessary by the professor or department. Grades are not official until they appear on a student’s academic record. You will receive both a percent and a letter grade for this course. At UBC, your course percentage is converted according to the key below:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>90-100%</td>
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<tr>
<td>A</td>
<td>85-89%</td>
</tr>
<tr>
<td>A-</td>
<td>80-84%</td>
</tr>
<tr>
<td>B+</td>
<td>76-79%</td>
</tr>
<tr>
<td>B</td>
<td>72-75%</td>
</tr>
<tr>
<td>B-</td>
<td>68-71%</td>
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<tr>
<td>C+</td>
<td>64-67%</td>
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<tr>
<td>C</td>
<td>60-63%</td>
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<tr>
<td>C-</td>
<td>55-59%</td>
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<tr>
<td>D</td>
<td>50-54%</td>
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<tr>
<td>F</td>
<td>0-49%</td>
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</tbody>
</table>

Remember, you are earning a degree at a highly reputable post-secondary institution. Therefore, criteria for success are high. The Faculty of Arts offers the following guidelines that broadly characterize the kind of work that is generally associated with the main grade ranges. These characteristics help to put the Psychology Department Grading Policies into context. Please note that adequate performance is in the C range, which is the typical class average.

**A RANGE: Exceptional Performance.** Strong evidence of original thinking; good organization in written work; capacity to analyze (i.e., break ideas down) and to synthesize (i.e., bring different ideas together in a coherent way); superior grasp of subject matter with sound critical evaluations; evidence of extensive knowledge base.

**B RANGE: Competent Performance.** Evidence of grasp of subject matter; some evidence of critical capacity and analytic ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.

**D-C RANGE: Adequate Performance.** Understanding of the subject matter; ability to develop solutions to simple problems in the material; acceptable but uninspired work; not seriously faulty but lacking style and vigor.

**F RANGE: Inadequate Performance.** Little or no evidence of understanding of the subject matter; weakness in critical and analytical skills; limited or irrelevant use of the literature.
VI. Course policies

Class participation & lecture slides.
Active learning is a critical component of a good education and it is an important feature of this course. For that reason, participation via i-clicker is worth 5% of your grade. Lecture slides will be uploaded before class.

Readings
The readings will be current experimental papers featuring cutting edge studies in cognitive neuroscience, supplemented by short chapters from the Passingham textbook. Note these papers are demanding! I will walk you through how to read these papers and point you to what material is important to know for exams and quizzes and what methodological details are unnecessary for our understanding of the papers.

E-mail policy
In most cases, e-mails will be answered within 48 hours of receipt (not including weekends). If you send the instructor or teaching assistant an email, the email subject should include the course and nature of the inquiry (i.e., “PSYC 365 – Question about memory consolidation”). Emails that you send should contain no more than one question and you should try to explain your current understanding of the concept in the email (which will be affirmed or corrected).

If you have more than one question, you should visit office hours. Please note that emails about test questions may very well not be answered the day before an exam so please plan accordingly.

Devices in class.
Some research suggests that writing notes on paper helps you learn and study better. But if you have a need or preference to use a laptop, that’s fine. Please avoid doing things that aren’t related to the class. If you do use a device, you might be asked to sit in a particular location in the room that I think is most suitable for the learning environment for other students in the class. Audio or video recording in class is prohibited unless prior authorization is granted. No devices are allowed during quizzes/exams unless specified otherwise.

Syllabus changes
There may be minor changes to the syllabus during the term. You will be notified of these changes ASAP and no changes will be instituted that dramatically affect your ability to properly prepare for an examination.

Office hours
You are strongly encouraged to visit office hours if you have questions or concerns about any of the material. If you cannot attend regularly scheduled office hours, you should send an email to try to make an appointment for another time (please give at least 48 hours of notice). You may also come to office hours to ask about graduate school, research or other related questions. If we cannot answer your question(s) about topics beyond the course, we’ll direct you to someone who can.

You will need to visit TA office hours to review your quizzes and assignments if you so choose. If you have any outstanding questions you can fill out a request form and talk to Dr. Todd. Any grading disputes other than calculation errors for the midterms must be handled with Dr. Todd within three weeks of when the scores were released.

Classroom conduct
Our classroom is a place where you should always feel safe and respected. It is also a place that is conducive to learning and intellectual curiosity. Any behaviors compromising this environment will not be tolerated and the student(s) and/or individual(s) will be asked to leave.

Access and Diversity
UBC is committed to equal opportunity in education for all students including those with documented physical or learning disabilities. If you believe you fall in this category, please visit this website (http://www.students.ubc.ca/access/disability-services/support-students/exam-accommodations/) to take the necessary steps to ensure that you have every opportunity that you deserve to excel here at UBC.

Grade bumps
When computing final grades, the instructor carefully analyzes every single student to determine whether a grade bump is deserved. Bumps may be awarded for consistent performance at a major grade boundary or for marked improvement from the midterm to the final (i.e., 10%+). Bumps are not guaranteed and are *not* awarded for non-academic reasons (i.e., student is graduating and/or involved in sports or other extracurricular activities). **DO NOT** send the instructor an email asking for a grade bump.

Academic Misconduct
Cheating, plagiarism, and other forms of academic misconduct are very serious concerns of the University, and the Department of Psychology has taken steps to alleviate them. Relevant to this course, the Department has implemented software that can reliably detect cheating on multiple-choice exams by analyzing the patterns of students’ responses. This will be used for every assessment we take in this course. For what how to avoid plagiarism on writing assignments see UBC guidelines for plagiarism: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,959

In all cases of suspected academic misconduct, the parties involved will be pursued to the fullest extent dictated by the guidelines of the University. Strong evidence of cheating may result in a zero credit for the work in question. According to the University Act (section 61), the President of UBC has the right to impose harsher penalties including (but not limited to) a failing grade for the course, suspension from the University, cancellation of scholarships, or a notation added to a student’s transcript.

Do note that during exams, the instructor and invigilators reserve the right to move students in their seating arrangement with no explanation provided.

VII. Links that you may find useful...

Helpful student information
UBC Academic Calendar http://www.calendar.ubc.ca/vancouver/academicyear.cfm
UBC Access and Diversity http://www.students.ubc.ca/access/index.cfm
Tips to help overcome test anxiety http://www.swccd.edu/~asc/lrnglinks/test_anxiety.html

WELLNESS RESOURCES
Below you will find a list of resources you may want to utilize if you are struggling in any way to manage your responsibilities while in school or the stresses of life in general.

The Kaleidoscope:
the-kaleidoscope.com
A confidential peer-run mental health support group that takes place on campus at least once a week.
You may attend the group if you are experiencing any kind of mental health related challenges, or if you're just feeling stressed about school in general. Registration is not required to attend the group. See the website for meeting times and locations. Food and drink are provided.

**Counselling Services:**
students.ubc.ca/livewell/services/counselling-services  
Phone number: 604-822-3811  
Counselling services offers a variety of resources to help you maintain your mental health while in school. You may see a counsellor on an individual basis, attend group counselling, or to document an illness if you should require academic concession.

**SpeakEasy:**
amu.ubc.ca/services/speakeasy/  
Phone number: 604-822-9246  
A student run service that offers confidential support for students experiencing crisis. Also a good resource for additional information and referrals within the UBC community.

**SHARE:**
www.vivreshare.org  
Self Harm Anonymous Recovery and Education is a program designed to promote self care and educate about self harm. SHARE support groups meet biweekly; times and locations can be found on their website.

**UBC Wellness Centre:**  
students.ubc.ca/livewell/services/wellness-centre  
Phone number: 604-822-8450  
Speak with other students about tips for managing stress, keeping healthy sleep and eating patterns, concerns about safe sex and more.

**Access and Diversity:**  
students.ubc.ca/about/access  
604-822-5844  
Access and Diversity provides accommodations for students living with physical or mental disabilities.

**Student Health Services:**  
students.ubc.ca/livewell/services/student-health-service  
604-822-7011  
Student health provides students with a variety of healthcare related services to help you maintain your health while studying. Access to doctors and registered nurses.

**Mood Disorders Clinic UBC:**
ubc-mooddisorders.vch.ca/  
A psychiatric program designed specifically to treat individuals living with depression or bipolar disorder.

**Live Well, Learn Well:**  
students.ubc.ca/livewelllearnwell  
The Live Well, Learn Well initiative is a resource hub that provides students with information to help improve physical and mental wellbeing.

**Mental Health Awareness Club:**
ubcmhac.sites.olt.ubc.ca/  
A club that offers opportunities to speak about mental health with others and strives to promote mental health awareness throughout the UBC community.

**Pacific Spirit Addiction Services:**  
3rd Floor, 2110 West 43rd Ave Vancouver B.C. V6M 2E1
Phone number: 604-267-3970
A free and confidential service for youth and young adults up to the age of 24. Services include counselling, access to an addiction physician - including usage of a methadone maintenance program - and a drug education series.

AMS Food Bank:
ams.ubc.ca/services/food-bank/
If you are in a financial emergency AMS food bank can provide you with a food hamper. You are able to use the service up to 6 times each term.

UBC Psychology Clinic:
clinic.psych.ubc.ca
Professional psychological services provided to the community, including assessment & treatment for children, adults & families by clinical psychology trainees.

BC Crisis Center:
crisiscentre.bc.ca
Phone number: 604-872-3311
Non-profit, volunteer-driven organization that provides emotional support to youth, adults, and seniors in crisis in BC. Crisis line available 24/7.

Distress Line:
Phone number: 1-800-Suicide (784-2433)
If you are in distress or are worried about someone in distress who may hurt themselves, call 1-800-SUICIDE 24 hours a day to connect to a BC crisis line, without a wait or busy signal.
# Psychology 365 2017: CLASS and reading schedule

May be subject to minor revisions with advance notice from the instructor.

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4-Jan</td>
<td>Th</td>
<td>Introduction/Syllabus</td>
<td>(readings in parentheses are optional)</td>
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<tr>
<td>2</td>
<td>9-Jan</td>
<td>T</td>
<td>Cognitive Neuroscience: The Good, the Bad,</td>
<td>Passingham Chap 1; Blog: How to Read a Scientific Paper for Non-Scientists</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>and the Ugly</td>
<td>Poldrack, 2015; Blog: Controversial Study of Brain Imaging</td>
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<tr>
<td>3</td>
<td>11-Jan</td>
<td>Th</td>
<td>fMRI: Workhorse of Cog Neuro</td>
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<tr>
<td>4</td>
<td>16-Jan</td>
<td>T</td>
<td>The landscape of the brain</td>
<td>3D brain atlas, 2-minute Neuroscience videos</td>
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<tr>
<td></td>
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<td>Researcher debates on male vs. female brain.</td>
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<tr>
<td>5</td>
<td>18-Jan</td>
<td>Th</td>
<td>Sex Differences and the brain</td>
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<tr>
<td>6</td>
<td>23-Jan</td>
<td>T</td>
<td>Quiz!! Guest lecture: Split Brain</td>
<td></td>
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<tr>
<td>7</td>
<td>25-Jan</td>
<td>Th</td>
<td>Recognizing objects</td>
<td>Passingham Chap 2; Blog: Neural networks made easy; Blog: Core Object Recognition</td>
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<td>8</td>
<td>30-Jan</td>
<td>T</td>
<td>Classifying objects</td>
<td>Blog: How to Read a Scientific Paper (Connolly et al., 2012).</td>
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<td>Facephenes blog; Van Bavel et al., 2008; (Nestor et al., 2015; Rossion et al., 2016)</td>
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<tr>
<td>9</td>
<td>1-Feb</td>
<td>Th</td>
<td>What is special about faces?</td>
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<tr>
<td>10</td>
<td>6-Feb</td>
<td>T</td>
<td>Predicting perception</td>
<td>Egner, Monti &amp; Summerfield, 2009</td>
</tr>
<tr>
<td>11</td>
<td>8-Feb</td>
<td>Th</td>
<td>Selecting Attention</td>
<td>Passingham Chapter 3 (Peelen &amp; Kastner, 2011)</td>
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<td>12</td>
<td>13-Feb</td>
<td>T</td>
<td>Midterm 1 (Classes 6-11)</td>
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<tr>
<td>13</td>
<td>15-Feb</td>
<td>Th</td>
<td>Sustaining attention</td>
<td>Rosenberg et al., 2016</td>
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<tr>
<td>14</td>
<td>20-24 Feb</td>
<td></td>
<td>NO CLASS – Reading Week</td>
<td></td>
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<tr>
<td>15</td>
<td>27-Feb</td>
<td>T</td>
<td>Emotion &amp; attention (&amp; learning)</td>
<td>Panksepp, Affective Neuroscience, Chap 3 – up to AFTERTHOUGHT p. 56</td>
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<td></td>
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<td>Anderson et al., 2016; Blog: The Many Crimes Against Dopamine</td>
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<tr>
<td>16</td>
<td>1-Mar</td>
<td>Th</td>
<td>Reward and attention (&amp; learning)</td>
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<tr>
<td>17</td>
<td>8-Mar</td>
<td>Th</td>
<td>Days of future past</td>
<td>Guterstam et al., 2015</td>
</tr>
<tr>
<td>18</td>
<td>13-Mar</td>
<td>T</td>
<td>Emotional Learning and Memory; Review</td>
<td>(Visser et al., 2011)</td>
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<tr>
<td>19</td>
<td>15-Mar</td>
<td>Th</td>
<td>Midterm 2 (Classes 13 -18)</td>
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<tr>
<td>20</td>
<td>20-Mar</td>
<td>T</td>
<td>Autobiographical memories</td>
<td>Bonnicci &amp; McGuire, 2012</td>
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<tr>
<td>21</td>
<td>22-Mar</td>
<td>Th</td>
<td>Rehearsing and retrieving memories</td>
<td>Bird et al., 2015; (Richter et al., 2016)</td>
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<tr>
<td>22</td>
<td>27-Mar</td>
<td>T</td>
<td>Making decisions</td>
<td>Passingham Chap 6; (Boorman et al., 2011)</td>
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<tr>
<td>23</td>
<td>29-Mar</td>
<td>Th</td>
<td>Failures of Imagination</td>
<td>Hakimi &amp; Hare, 2015</td>
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<tr>
<td>24</td>
<td>3-April</td>
<td>T</td>
<td>Making bad decisions</td>
<td>Clark et al., 2014</td>
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<tr>
<td>25</td>
<td>5-April</td>
<td>Th</td>
<td>Review</td>
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