

****Preliminary syllabus -- subject to revision****

**The Wandering Mind:
Psychological Approaches to Distraction (4 pts)**

Psychology, w3225

Spring 2013

Dr. Jason Buhle

When and where

Thursdays 10:10 am – 12:00 pm

405 Schermerhorn Hall

Office hours and contact information

Thursday 12:00 pm – 1:00 pm, or by appointment

356 Schermerhorn Extension

jtb2102@columbia.edu

What this course is about

Try as we might, humans simply cannot maintain complete focus on one thing for very long. Over time, our attention flags and unrelated thoughts pop into our mind. Sometimes we do not even realize our mind has wandered until minutes have passed. This course surveys a diversity of psychological and neuroscientific approaches to studying this surprising feature of the

human mind. Our primary goal will be to tie together independent strands which have emerged in the recent scientific literature, and then to develop proposals from this integrated understanding for future research that could help advance our understanding of why and how the mind wanders. 4 credit hours.

Goals

- Critically evaluate scientific literature on sustained attention and distraction
- Foster strong oral and written communication skills
- Develop scientific questions about sustained attention and distraction that are both theoretically important and tractable

Prerequisites

PSYC 1001 or 1010 or the equivalent, plus prior permission from me. Ideal preparation for this course will include an experimental course with a lab section (PSYC 1400-level course), Introductory Statistics (PSYCH 1610), and at least one intermediate course in cognitive psychology, such as PSYC 2210, 2215, 2220, or 2225. Senior Psychology Majors, Neuroscience and Behavior Majors, and students in the Psychology Postbaccalaureate Certificate Program will have priority, but I will also consider other students with appropriate preparation. You must email me (jtb2102@columbia.edu) to obtain permission before you register for the class. In your email request, please list relevant prior coursework and research experience, as well as any other experience you think might enhance what you would bring to the class.

Methods of evaluation

Your activities in this course are described in detail below. They will contribute to your course grade as follows:

- 25% – Class Participation
- 25% – Blog Posts
- 35% – Research Proposal:
 - 5% – Initial written proposal
 - 15% – In-class oral proposal
 - 15% – Final written proposal
- 15% – Peer Reviews

Please note that this is a four-point seminar, and the workload is thus substantially greater than most three-point seminars.

Class participation – 25%

To make this class a success, every student needs to participate in every discussion. Therefore, it is critical that you attend every class and that you come well prepared. You will be evaluated both on the quality of the ideas you contribute, and on your ability to foster good discussion among your peers. Good questions are just as important as good insights. After each class, I will evaluate you on a scale from 0-3, and I will email you with your grade and some comments. If you ever do not understand why I gave you a particular grade, please let me know as soon as possible. With many students and long class sessions, at times I might forget or overlook your contributions, but I will be happy to change your grade if that has happened. Just respond quickly, as the likelihood you will be able to jog my memory will decrease rapidly over time!

0 – You did not attend class.

1 – You made minimal contributions to discussion. I am not sure if you did the readings.

2 – You made some helpful contributions. You appear to have done the readings.

3 – You made substantial contributions. You appear to have done the readings and thought about them deeply.

Blog posts – 25%

Each of you will maintain a public blog in which you will post your responses to the readings. I recommend you use Blogger.com or WordPress.com. You can choose to use your real name or a pseudonym for your blog.

Blog posts are due on Wednesdays at 8 am (Sessions 2-7, 9-12). Each post should be 750-1250 words in length. In general, these posts should respond to the questions posed under each date on the calendar below. However, if at times you find that you would like to talk about some other aspect of the readings, feel free to do so. Just make sure to choose a topic that is interesting and important. Your grade will then be determined both by your choice of topic and by your answer. If you are unsure if what you would like to write about is suitable, feel free to email me to check. These posts are designed in part to help prepare you for class discussion, so you may want to bring a printed copy to class, in addition to putting them on your blog (see *General notes for written assignments* below for more information.) You may also want to read the blog posts of your peers on Wednesday to help you prepare for discussion on Thursday.

A good formula for these blog posts is to start with a brief summary of the readings (no more than 200 words). The bulk of the post should be your novel thoughts—comments, criticisms, questions, comparisons of the different articles, etc. Make sure to provide a list of references at the end of the post, and insert hyperlinks to the relevant article web page in this reference list and in the text the first time you refer to the article. Feel free to use images—your own, those in the articles, or from other sources. If you use an image that is not your own, you must indicate the source and provide a link if possible. The best blog posts will typically address all of the assigned readings for that week.

I will evaluate your blog posts on a scale from 0-4, and I will email you after the class with your grade and some comments.

0 – You did not do the post, it is not the appropriate length, or it shows virtually no understanding or insight.

1 – Your post shows some understanding and little insight.

2 – Your post shows good understanding and some insight.

3 – Your post shows good understanding and good insight.

4 – Your post shows excellent understanding and insight.

NOTE: The assignment for Session 10 requires you take an off-site class and write about it in conjunction with the readings. Make sure you plan to take the class well in advance.

Research proposal – 35%

5% initial written proposal

15% in-class oral proposal

15% final written proposal

The culmination of this course is the creation of a novel research proposal relating to the material of the class. Imagine that you are requesting funding from a grant panel at a government funding agency. I will evaluate your proposal based on how compelling I find it as a whole—how interesting the idea is, the likelihood that the proposed studies could be successfully performed and make a substantial contribution to the field, and the clarity of your presentation, both written and oral. Session 3 will feature a presentation by a library research specialist to help you learn to conduct an efficient literature review for your topic.

Initial written proposal. The initial written proposal should be about 2 pages in length. It will consist of your responses to a series of questions posted in a separate document on CourseWorks. You can think of this as a quick, first pitch of your idea.

In-class oral proposal. In Session 13, each student will present a research proposal relating to the material of the class. The oral proposal should be no more than 12 minutes (time yourself when you practice!). An additional 5 minutes will be allotted for questions. In general, I recommend you devote about 4 minutes to an introduction, in which you place the proposed studies in the context of the relevant literature, about 3 minutes to a methods section, in which you describe the studies themselves, about 3 minutes to a results section, in which you review figures depicting results that would both confirm and disconfirm your hypotheses, and about 3 minutes to a discussion section, in which you explain the contribution these results would make to the field, discuss any major limitations or caveats, and possibly lay out some future directions. Note, these are just guidelines—the ideal length of each section could vary a lot, depending on the complexity of your design, the existing literature on your topic, etc.

PowerPoint slides must be posted to Courseworks by the beginning of class. We will discuss the effective use of PowerPoint slides during Session 12, and a tips sheet on how to use PowerPoint effectively will be available on Courseworks. As always, you should make an appointment to come see me as soon as possible if you need help with PowerPoint, making figures of your hypothetical results, or any other aspect of your oral proposal. You must also print out and bring packets of your slides with space for notes for me and each of your classmates (this is easily done in PowerPoint).

Final written proposal. The written proposal should be no more than 7 pages, not including figures, references or the abstract. Each proposal should contain an abstract of no more than 250 words summarizing the proposal. The main body of the proposal should consist of the four sections described in the oral proposal section above. I recommend you devote about 3 pages to the introduction, about 1.5 pages to the methods, about 1 page to results (excluding figures), and 1.5 pages to the discussion. As with the oral proposal, this is just a guideline—the ideal length of each section could vary a lot, depending on the complexity of your design, the existing literature on this topic, etc. Each proposal should contain references and in-text citations (see the section entitled “General notes for written assignments,” below, for formatting details.) Although there is not set number of required references, I would be surprised if you had fewer than 15. I would also be surprised if you did not need to look well beyond the papers discussed in class in order to really know your topic.

You should incorporate the feedback provided in the written peer reviews you receive (see assignment below) and the group critique in Session 14. The written proposal must be posted to CourseWorks by 5pm on the 7th of May, the first day of Reading Days.

Peer reviews – 15%

You will write critiques of approximately one page each for up to 10 of your fellow students' projects (the exact number will depend on enrollment). These critiques will be based on the oral presentations given in Session 13. You should imagine you are a reviewer on a grant panel, deciding whether this work will be funded. The critique should begin with a very brief paragraph summarizing the proposal in your own words. A second very brief paragraph should then give your overall impression of the work and its potential importance. Your goal in these first two paragraphs is to convey the gist of the proposal and your opinion of it to someone who has not seen or read the proposal (for example, the head of the funding agency). The bulk of the critique (at least 2/3rds of a page) should consist of bulleted major and minor points. These points should describe specific strengths and weakness. Each point can be as short as a sentence or as long as a paragraph. You should start with major points that address conceptual or critical methodological aspects of the proposal, and close with any minor points that address issues of clarity and style. Your goal here is to help the applicant improve his or her application, by highlighting what is good and what needs improvement, and explaining why. You will give these critiques to your peers during a discussion in Session 14. Please ensure your tone is constructive and professional. Peer reviews must also be posted to Courseworks before the beginning of Session 14. Please have all your reviews in a single Word .doc file.

General notes for written assignments

Your research proposal and peer reviews should be posted to Courseworks in Word format. Text should be double-spaced, using 12 point font and with standard margin sizes.

All in-text citations and reference lists should adhere to the American Psychological Association (APA) Guide, 6th edition. Although I will not require you rigorously follow any particular format for other aspects of your written assignments, if questions should arise, please refer to the APA Guide. You may purchase a hard copy of the guide, or consult an abbreviated version, such as this one: <http://owl.english.purdue.edu/owl/section/2/10/>

For your written research proposals, I recommend you use reference management software. EndNote is one popular option that the library makes available free to Columbia students here: <http://www.columbia.edu/acis/software/endnote/>. Zotero is a popular, browser-based alternative that is free for everyone.

Class policies

Academic dishonesty

Plagiarism is a very serious violation within the academic community. While I encourage you to discuss the readings and your projects with your classmates, all work you turn in must be your own. Appropriate citation practices are discussed in the Columbia University Undergraduate Guide to Academic Integrity. Please review this Guide, at <http://www.college.columbia.edu/academics/integrity>, including its guidelines about citing sources. Any case of suspected plagiarism will be reported to the university.

Disabilities

If you believe you may need disability-related classroom accommodations please contact me as soon as possible. Please also contact the Office of Disability Services on the 7th floor of Lerner Hall (212.854.2388) to register for support services.

Syllabus

I may make changes to the syllabus over the course of the semester. The most recent version will always be posted to Courseworks.

Attendance and late assignments

If for any reason you cannot attend class or turn in an assignment on time, please inform both me and your dean as soon as possible. In general, if you are late to or absent from class, your participation grade for that session will be reduced, and late papers will not be accepted. However, if both your dean and I agree your reason is valid, these policies will be modified. If you do not know who your dean is (for example, if you are a visiting student), contact me and I will help you determine the appropriate person. I require you to contact your dean because I have no way of knowing what may be happening in your other classes or the rest of your life. Your dean can see any problems that arise in this broader context, allowing him or her to intervene as necessary to ensure you get whatever help you may need.

Calendar

Note: All reading assignments will be available on Courseworks. I recommend you read the articles in the order listed.

Session 1: Introduction to the course

January 24th

Readings:

Mackworth, N. H. (1948). The breakdown of vigilance during prolonged visual search. *Quarterly Journal of Experimental Psychology*, 1, 6-21.

Note: We will spend the first half of class discussing the syllabus and the plan for the semester, and the second half discussing the reading for today. Additionally, a writing expert from the Columbia Writing Center will visit class to discuss the services they offer.

Session 2: Vigilance and sustained attention

January 31st

Blog post assignment: Briefly review the major theories of vigilance described in these articles. How do they compare to one another? Which do you find most compelling, and why?

Readings:

Signal detection handout from David Heeger.

Frankmann, J. P., & Adams, J. A. (1962). Theories of vigilance. *Psychological Bulletin*, 59, 257–272.

Mackworth JF (1968) Vigilance, arousal, and habituation. *Psychol Rev* 75:308–322

Session 3: The Parasuraman vigilance taxonomy

February 7th

Blog post assignment: Summarize the Parasuraman taxonomy and briefly review some of the evidence that has been deemed to support it. What are some strengths of this taxonomy? What are some of its weaknesses?

Readings:

Parasuraman, R. (1979). Memory load and event rate control sensitivity decrements in sustained attention. *Science*, 205, 924–927.

Warm, J. S., R. Parasuraman, et al. (2008). Vigilance requires hard mental work and is stressful. *Hum Factors* 50(3): 433-441.

See, J. E., Howe, S. R., Warm, J. S., & Dember, W. N. (1995). Meta-analysis of the sensitivity decrement in vigilance. *Psychological Bulletin*, 117, 230–249.

Scerbo, M. (1998). What's so boring about vigilance? In R.B. Hoffman, M. F. Sherrick, & J. S. Warm (Eds.), *Viewing psychology as a whole: The integrative science of William N. Dember* (pp. 145–166). Washington, DC: APA.

Note: This session will feature a presentation by a science library research specialist. She will demonstrate a number of ways to efficiently conduct psychology and neuroscience literature searches and she will show you how to use the reference management program Zotero. If you already have an idea of what your topic might be, try doing a little research beforehand, and come prepared with questions. The session will be interactive, so please bring a laptop.

Session 4: Mindlessness vs. resource theory of sustained attention

February 14th

Blog post assignment: Summarize the competing theories presented in these readings. How do the debates between these theories compare to the debates we discussed in Sessions 2&3? Which theory do you find most compelling, and why?

Readings:

Robertson, I. H., T. Manly, et al. (1997). 'Oops!': performance correlates of everyday attentional failures in traumatic brain injured and normal subjects. Neuropsychologia 35(6): 747-758.

Allan Cheyne, J., G. J. Solman, et al. (2009). Anatomy of an error: a bidirectional state model of task engagement/disengagement and attention-related errors. Cognition 111(1): 98-113.

Helton, W. S. and P. N. Russell (2011). Feature absence-presence and two theories of lapses of sustained attention. Psychol Res 75(5): 384-392.

Ariga, A. and Lleras, A. (2011). Brief and rare mental “breaks” keep you focused: deactivation and reactivation of task goals preempt vigilance decrements. Cognition 118:439–443.

Helton, W. S., & Russell, P. N. (2012). Brief mental breaks and content-free cues may not keep you focused. Experimental Brain Research, 219, 34–46.

Session 5: Mind wandering and meta-attention

February 21st

Blog post assignment: Compare and contrast the views offered of mind wandering presented in these articles. Pay close attention to the methods used. Are they sufficient to answer the questions asked? Can you think of better approaches?

Readings:

Antrobus, J. S. (1968). Information theory and stimulus-independent thought. British Journal of Psychology, 59: 423–430.

Singer, J. L. (1975). Navigating the stream of consciousness: Research in daydreaming and related inner experience. American Psychologist, 30(7), Jul 1975, 727-738

Giambra, L.M. (1995) A laboratory method for investigating influences on switching attention to task-unrelated imagery and thought. Conscious Cognit. 4, 1–21.

Session 6: Executive function vs. executive failure view mind wandering

February 28th

Blog post assignment: Briefly summarize the evidence for the “executive function” and “executive failure” views of mind wandering. Are they mutually exclusive? Which view do you find more compelling, and why?

Readings:

Smallwood, J. and J. W. Schooler (2006). The restless mind. Psychol Bull **132**(6): 946-958.

Watkins, E. R. Constructive and unconstructive repetitive thought. Psychological Bulletin, Vol 134(2), Mar 2008, 163-206.

McVay, J. C. and M. J. Kane (2010). "Does mind wandering reflect executive function or executive failure? Comment on Smallwood and Schooler (2006) and Watkins (2008)." Psychol Bull **136**(2): 188-197; discussion 198-207.

Smallwood, J. Why the global availability of mind wandering necessitates resource competition: Reply to McVay and Kane (2010). Psychological Bulletin, Vol 136(2), Mar 2010, 202-207

Session 7: Consequences and functionality of mind wandering

March 7th

Blog post assignment: This session’s articles describe both positive and negative aspects of mind wandering. Are these positive and negative aspects mutually exclusive? Can you think of other potential positives and negatives that warrant testing?

Readings:

Killingsworth, M. A. and D. T. Gilbert (2010). "A wandering mind is an unhappy mind." Science 330(6006): 932. [make sure to read the supplement to this article as well]

McVay, J. C. and M. J. Kane (2011). "Why does working memory capacity predict variation in reading comprehension? On the influence of mind wandering and executive attention." J Exp Psychol Gen.

Delaney, P. F., L. Sahakyan, et al. (2010). "Remembering to forget: the amnesic effect of daydreaming." Psychol Sci 21(7): 1036-1042.

Baird, B., J. Smallwood, et al. (2011). "Back to the future: Autobiographical planning and the functionality of mind-wandering." Conscious Cogn.

Session 8: [Topic TBA]

March 14th

Blog post assignment: You do not need to write a blog post for this week.

Readings: [TBA]

Due: Note: Initial written research proposals are due before the beginning of class. (see assignment details under *Methods of Evaluation*, above)

Session 9: Neuroimaging of the default mode

March 28th

Blog post assignment: Articles 2-4 for this session attempt to offer cognitive explanations for default network activity. Which, if any, of these explanations do you find compelling, and why? Do these explanations conflict with those offered by Fox et al.?

Readings:

Fox, M. D., A. Z. Snyder, et al. (2005). "The human brain is intrinsically organized into dynamic, anticorrelated functional networks." Proc Natl Acad Sci U S A 102(27): 9673-9678.

Mason, M. F., M. I. Norton, et al. (2007). "Wandering minds: the default network and stimulus-independent thought." Science 315(5810): 393-395.

Andrews-Hanna, J. R., J. S. Reidler, et al. (2010). "Evidence for the default network's role in spontaneous cognition." J Neurophysiol 104(1): 322-335.

Stawarczyk, D., S. Majerus, et al. (2011). "Neural correlates of ongoing conscious experience: both task-unrelatedness and stimulus-independence are related to default network activity." PLoS One 6(2): e16997

Session 10: Mindfulness and meditation-based attentional training

April 4th

Blog post assignment: Attend an introductory meditation class from the list provided on Courseworks. Briefly describe your experience, highlighting the specific ways in which the class relates or does not relate to the training of attention. How does the type of meditation you learned about compare to those discussed in the readings for this week? Do you believe this practice would be a good way to train attention? Why or why not?

Readings:

Lutz, A., H. A. Slagter, et al. (2008). "Attention regulation and monitoring in meditation." Trends Cogn Sci 12(4): 163-169.

MacLean, K. A., E. Ferrer, et al. (2010). "Intensive meditation training improves perceptual discrimination and sustained attention." Psychol Sci 21(6): 829-839.

Jensen, C. G., S. Vangkilde, et al. (2011). "Mindfulness training affects attention-or is it attentional effort?" J Exp Psychol Gen. [make sure to read the supplement to this article as well]

Baer, R. A., G. T. Smith, et al. (2006). "Using self-report assessment methods to explore facets of mindfulness." Assessment 13(1): 27-45.

Session 11: Disordered attention

April 11th

Blog post assignment: This week's articles focus on the use of our knowledge of sustained attention to learn about disorders of attention. Basic research is used to inform clinical research. For this essay, consider whether the relationship can be reversed. That is, can studying deficits of attention inform basic research on attention? If your answer is 'yes', make sure to address any potential pitfalls with this approach.

Illustrate your discussion with examples from the reading, and feel free to also include any novel, hypothetical cases you can imagine.

Readings:

Bonnelle, V., R. Leech, et al. (2011). "Default Mode Network Connectivity Predicts Sustained Attention Deficits after Traumatic Brain Injury." J Neurosci **31**(38): 13442-13451.

Berman, M. G., Peltier, S., Nee, D. E., Kross, E., Deldin, P. J., & Jonides, J. (2011). Depression, rumination and the default network. Soc Cogn Affect Neurosci, 6(5), 548-555.

Sayette, M. A., E. D. Reichle, et al. (2009). "Lost in the sauce: the effects of alcohol on mind wandering." Psychol Sci **20**(6): 747-752.

Manly, T., V. Anderson, et al. (2001). "The differential assessment of children's attention: the Test of Everyday Attention for Children (TEA-Ch), normative sample and ADHD performance." J Child Psychol Psychiatry **42**(8): 1065-1081.

Session 12: Attention across the lifespan

April 18th

Blog post assignment: What are some of the special challenges of researching attention across the lifespan? What techniques can be used to overcome these challenges? Have the studies we read about for this session done a good job of overcoming these challenges?

Readings:

Lin, C. C., C. K. Hsiao, et al. (1999). "Development of sustained attention assessed using the continuous performance test among children 6-15 years of age." J Abnorm Child Psychol **27**(5): 403-412.

Carriere, J. S., J. A. Cheyne, et al. (2010). "Age trends for failures of sustained attention." Psychol Aging **25**(3): 569-574.

Jackson, J. D. and D. A. Balota (2011). "Mind-wandering in younger and older adults: Converging evidence from the sustained attention to response task and reading for comprehension." Psychol Aging.

Note: We will spend part of the session discussing how to create good PowerPoint slides for your oral research proposals. Even if you have not yet started making your slides, if you are not familiar with PowerPoint, try to spend some time exploring it a little before class. Try to think of things you have seen in other classes or presentations that were especially effective or not effective.

Session 13: Project presentations

April 25th

Due: Oral research proposals (see assignment details under *Methods of Evaluation*, above)

Note: We will try to finish on time, but class may have to run late to accommodate all the presentations. Please make arrangements so you can stay for the entire time.

Session 14: Project feedback

May 2nd

Due: Peer reviews (see assignment details under *Methods of Evaluation*, above)

Note: Final written research proposals are due on Tuesday, May 7th, at 5 pm (see assignment details under *Methods of Evaluation*, above)