

Brain Myths & Folk Psychology 200.214

Fall 2009

Thurs. 2:00-4:30pm

Ames Hall 234

<http://www.psy.jhu.edu/~ashelton/courses/BrainMyths214>

Instructor:

Dr. Amy Shelton

Ames 223

ashelton@jhu.edu

Office Hours:

Th 10-11am
or BY APPT

Teaching Assistant:

Chad Spiegel

Ames 121

chad.spiegel@jhu.edu

Office Hours:

W 1-3pm
BY APPT

Course goal: The primary goal is to explore popular notions about the brain and psychology and to discuss what science has actually revealed about them. In the process, we will introduce you to major concepts, questions, and research techniques in cognitive and systems neuroscience. Note: this class is *about the science*, using popular media as a springboard for teaching about a variety of topics in psychology & neuroscience.

Books: There is no textbook for this class. Instead, you need to attend the movies and lectures. Lecture/discussion notes will be available on the website following the lectures. Slides are NOT an appropriate substitute for attending class, but should be used in conjunction with good note-taking.

There are two required novels for the course:

Flowers for Algernon by Daniel Keyes

READ BY 10/15 (thought paper due that day)

Magic Hour by Kristin Hannah

READ BY 10/29 (thought paper due that day)

Both books are available at the bookstore or can be found very cheap at any online book vendor. They should also be available at most libraries.

Additional Readings: There are assigned readings for each topic in the course, listed at the back of the syllabus and on the course website. These are subject to changes (or additions) no less than 2 weeks before they are due. Any changes will be announced in class. All readings must be completed by the date listed in the course schedule. These are available via library reserves, which can be accessed through the class website or directly at: <http://reserves.library.jhu.edu> (Password: SHE214)

Quizzes & Demos: Several 5-point quizzes and demos will be given in class for up to 50 points. These will be unannounced, so be prepared at the beginning or end of all class meetings. Quizzes will test your basic understanding of the reading and any previous material covered in the course. Demos will illustrate important concepts. **If you miss a quiz or**

demo for any reason, you will not be able to make it up. However, the points simply accumulate, and there will be plenty of opportunities throughout the term. If you are concerned, you can also avail yourself of the extra credit opportunities.

Thought papers: Six 25-point thought papers (4-6 pages each) are required for this course. Each paper is in response to one of the books or movies and the scientific readings. If you fail to turn in a paper on time FOR ANY REASON, you may not make it up, but only the 4 best scores count towards your grade. You will receive a 0 for any paper not turned in, so you cannot miss more than two without consequences. Detailed instructions on the thought papers can be found at the end of the syllabus. The best strategy is to do all six papers—you get feedback and you have more flexibility at the end. In addition, for those of you who are daring, we offer a make-your-own assignment option. This option replaces one thought paper, but it has strict guidelines (see section on Make-Your-Own-Assignment Option).

Exams: There are two cumulative exams in the course, a midterm and a final. Exams will be a mix of question types. (We wish we could give more exams, but the schedule just does not permit it.)

Attendance: Although there is no explicit requirement to attend class, there are substantial consequences for missing a course that only meets once a week. First, you are responsible for all lecture materials, videos, demos, and movies shown in class. Most of the movies are available through the library or your local video store, but that means you have to find time to watch them and respond. Second, without a textbook, the lectures are critical. The lecture slides are not sufficient for learning the material. Finally, the quizzes and demos are a big part of your learning experience and a part of your grade. If you miss them, you cannot make them up unless you do extra credit.

Extra Credit: Students may earn a **maximum of 10 extra credit points** in this course by doing a combination of two different opportunities. Note: there are more opportunities than just the 10-point maximum. You may obtain more than 10, but only 10 will be added to your grade.

- » **Experimental participation (max 10 points)**—students may participate in psychology experiments for up to 10 points of extra credit. One credit is awarded for each hour of participation (half hour = half credit). See Experimentrix handout for details.
- » **Website contributions (max 5 points)**—on the course website, we list resources on brain myths and related topics. Students may choose to contribute to this list of resources by finding, analyzing, and writing up a new website. A description of what is required will be provided when a potential website is submitted via email to the

instructor and TA. Only the first student to identify any given website will be eligible to write-up that site. Each website is worth UP TO 1 point, depending on our evaluation of how much effort went into it.

IMPORTANT:

1. This is EXTRA credit and not a required part of the course. We offer these as a cushion or to make up points. There is no expectation about how much or how little extra credit any individual will complete. Availability of EC is not guaranteed.
2. Extra credit cannot be used to change a failing grade to a passing grade. In other words, if you have an F before adding extra credit, you will receive an F for the course regardless of how much extra credit you complete.
3. Extra credit will be given as points only. It does not automatically change one letter grade to a higher one as it all depends on the total points acquired.

Grading: This class is all about accumulating points. We will use a standard grading scale by dividing the total number of points accumulated by the total number possible. All passing grades will be recalculated with the extra credit added to the total accumulated before the final course grade is given.

Point breakdown

Quizzes & Demos	50
Thought Papers	100
Exam 1 (10/22)	100
Final Exam (12/12)	150
Total	400

Just a few class rules...

1. Respect each other. Mutual respect can go a very long way in creating a comfortable environment. We will not always agree with each other, but it is important that we treat each other with respect. This includes being on time, being attentive, and participating in discussions.
2. NO PHONES. It is incredibly rude for a phone to ring during a lecture or any other classroom activity. If you cannot remember to turn your ringer off, then you should leave your phone at home. If your phone rings during class (movie, demo, lecture, etc.), 2 points will be deducted from your point total. If your phone rings during an exam, 5 points will be deducted from your point total.
3. Talk to us and to each other. A big part of science and education is communication. Ask questions, tell us your thoughts, and talk to each other about the course. Just be sure to do your thought papers on your own.

Course Schedule

Date	Topic/Activity	Reading(s)
9/3	<ul style="list-style-type: none"> Overview and Intro What is Folk Psychology? 	
9/10	MOVIE: <i>Defending Your Life</i> (2001)	
9/17	<p style="text-align: center;">Thought paper 1 is due</p> <ul style="list-style-type: none"> Do you more than 10% of <i>your</i> brain? Basics of brain anatomy & function 	<ul style="list-style-type: none"> Beyerstein (1999) Damasio et al. (1990)
9/24	MOVIE: <i>At First Sight</i> (1999)	
10/1	<p style="text-align: center;">Thought paper 2 is due</p> <ul style="list-style-type: none"> What you see is what you get? 	<ul style="list-style-type: none"> Sacks (1993) Weisel (1982) Ostrovsky et al. (2006)
10/8	<ul style="list-style-type: none"> Are you a Left-Brain or a Right-Brain? Hemispheric Differences 	<ul style="list-style-type: none"> Gazzaniga (2005) Josse & Tzourio-Mazoyer (2004).
10/15	<p style="text-align: center;">Thought paper 3 is due</p> <ul style="list-style-type: none"> IQ testing and <i>Flowers for Algernon</i> Exam review 	<ul style="list-style-type: none"> <i>Flowers for Algernon</i> Spren et al. (1995)
10/22	<ul style="list-style-type: none"> 2:00-3:15: EXAM 1 3:30pm: VIDEOS: <i>Baby Einstein</i> 	
10/29	<p style="text-align: center;">Thought paper 4 is due</p> <ul style="list-style-type: none"> Feral children & <i>Magic Hour</i> Making Smarter Babies 	<ul style="list-style-type: none"> Steele et al. (1999) Knudsen (2004) Park (2007) Zimmerman et al. (2007)
11/5	MOVIE: <i>Memento</i> (2000)	
11/12	<p style="text-align: center;">Thought paper 5 is due</p> <ul style="list-style-type: none"> Amnesia and memory systems 	<ul style="list-style-type: none"> Squire et al. (1993) Packard & McGaugh (1996) Corkin (2002)
11/19	MOVIE: <i>Eternal Sunshine of the Spotless Mind</i> (2004)	
12/3	<p style="text-align: center;">Thought paper 6 is due</p> <ul style="list-style-type: none"> Can we wipe out memories? 	<ul style="list-style-type: none"> Wixted (2004) Forcato et al. (2007) Loftus (2005)
12/12	2:00-5:00pm Final Exam	**CHANGED**

Note: Movies in this course are R-rated for various reasons, including language, sexual content, violence, and nudity. They are shown unedited to preserve the filmmakers original intent. If this poses a problem for you, please discuss it with your instructor immediately. The movies are essential to the course.

Readings

The following is a list of required readings for the course. You need to read these sources before coming to class on the day they are assigned.

Contents of the readings will be included on in-class quizzes and exams.

These titles are available for download at:

<http://reserves.library.jhu.edu> (Course Readings link, password: SHE214)

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- Beyerstein, B. L. (1999). Whence cometh the myth that we only use 10% of our brains? In Della Sala, S. (Ed.) *Mind Myths: Exploring Popular Assumptions about the Mind and Brain* (pp. 3-24). Chichester, UK: John Wiley & Sons Ltd.
- Damasio, A. R., Tranel, D., & Damasio, H. (1990). Face Agnosia and the Neural Substrates of Memory. *Annual Review of Neuroscience*, *13*(1), 89-109.
- Mayer, J. D., Salovey, P., & Caruso, D. R. (2008). Emotional intelligence: New ability or eclectic traits? *American Psychologist*, *63*(6), 503-517.
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- Sacks, Oliver (1993, May 10) To See and Not See: A Neurologist's Notebook. *New Yorker*, 59-73.
- Wiesel, T. N. (1982). Postnatal development of the visual cortex and the influence of environment. *Nature*, *299*, 583-591.
- Ostrovsky, Y., Andalman, A., & Sinha, P. (2006). Vision Following Extended Congenital Blindness. *Psychological Science*, *17*, 1009-1014.
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- Gazzaniga, M. S. (2005). Forty-five years of split-brain research and still going strong. *Nat Rev Neurosci*, *6*, 653-659.
- Josse, G., & Tzourio-Mazoyer, N. (2004). Hemispheric specialization for language. *Brain Research Reviews*, *44*, 1-12.
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- Spreeen, O., Risser, A. H., & Edgell, D. (1995). *Developmental Neuropsychology*. New York: Oxford University Press. Chapter 28 (pp. 449-470)
- Sternberg, R. J. (1996). Myths, Countermyths, and Truths about Intelligence. *Educational Researcher*, *25*(2), 11-16.
- Jaeggi, S. M., Buschkuhl, M., Jonides, J., & Perrig, W. J. (2008). Improving fluid intelligence with training on working memory. *Proceedings of the National Academy of Sciences*, *105*(19), 6829-6833.
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- Steele, K. M., Bass, K. E., & Crook, M. D. (1999). The Mystery of the Mozart Effect: Failure to Replicate. *Psychological Science*, *10*, 366-369.
- Knudsen, E. I. (2004). Sensitive Periods in the Development of the Brain and Behavior. *Journal of Cognitive Neuroscience*, *16*(8), 1412-1425.
- Park, A. (August 6, 2007). Baby Einsteins: Not So Smart After All. *Time*.
- Zimmerman, F. J., Christakis, D. A., & Meltzoff, A. N. (2007). Television and DVD/Video Viewing in Children Younger Than 2 Years. *Archives of Pediatric and Adolescent Medicine*, *161*, 473-479.
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- Corkin, S. (2002). What's new with amnesic patient H.M.? *Nature Reviews Neuroscience*, *3*, 153-160.
- Squire, L. R. (2009). The Legacy of Patient H.M. for Neuroscience. *Neuron*, *61*(1), 6-9.
- Packard, M. G., & McGaugh, J. L. (1996). Inactivation of hippocampus or caudate nucleus with lidocaine differentially affects expression of place and response learning. *Neurobiology of Learning and Memory*, *65*, 65-72.
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- Wixted, J. T. (2004). The psychology and neuroscience of forgetting. *Annual Review of Psychology*, *55*, 235-269.
- Forcato, C., Burgos, V. L., Argibay, P. F., Molina, V. A., Pedreira, M. E., & Maldonado, H. (2007). Reconsolidation of declarative memory in humans. *Learn. Mem.*, *14*, 295-303.
- Loftus, E. F. (2005). Planting misinformation in the human mind: A 30-year investigation of the malleability of memory. *Learning & Memory*, *12*(4), 361-366.
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Thought papers

There are 6 required thought papers, and the best 4 will be used to calculate your grade. We encourage you to do all of the papers to maximize your score and prepare you for in-class discussions. In addition, you may opt to replace one thought paper grade with the Make-Your-Own-Assignment Option (see subsequent section). This option has strict guidelines, but it also offers you some flexibility for writing on a topic not covered in class.

All of the assignments are designed to get you thinking about the major themes of the popular media accounts and how they relate to the scientific knowledge. A set of questions is given for each of the papers—**these are guidelines for thinking and not instructions for the paper content.** The key is for you to link what you are seeing/reading in the popular media to the science in the articles. If you are uncertain about an assignment, please ask the instructor or TA in advance.

Format:

- 4-6 pages
- typed and double-spaced
- 11 or 12 pt font
- 1 inch margins (top, bottom, left, and right)
- Your name, date, and the assignment number in the header

Each paper will be graded on a 25-point scale based on the following criteria:

1. Clear and concise descriptions of the relevant issues in the media presentation (book or movie).
2. Clear effort to understand the media issues in light of the scientific readings.
3. Insights that reflect careful analysis of the scientific issues and myths.
4. Clarity and quality of writing.

Deadlines: The deadline for each thought paper is listed here and in the schedule. These papers are due at the beginning of class on the due date—NO EXCEPTIONS. If you have a temperamental printer or are a procrastinator, be sure to plan ahead. Missed assignments will be given 0 points. If you miss more than two, you should opt for some extra credit described above to recover some points. (Better yet, just don't miss the deadlines! It is much better to turn in something for partial credit than to receive a 0. This is particularly important early in the semester because you never know how your schedule will be later on.)

Assignments: BULLET POINTS ARE THINGS FOR YOU TO **THINK ABOUT** AND SHOULD **NOT** BE TAKEN AS OUTLINES FOR THE PAPERS.

Thought paper 1 DUE 9/17	<i>Defending Your Life</i> , untapped brain potential, & basic brain function Reflect on what it means to have unused brain potential.
Thought paper 2 DUE 10/1	<i>At First Sight</i> and Vision <ul style="list-style-type: none"> • Reflect on Virgil's experiences • How do they speak to the "correctness" of vision?
Thought paper 3 DUE 10/15	<i>Flowers for Algernon</i> , IQ, & mental retardation <ul style="list-style-type: none"> • Reflect on Charlie's experiences before and after the procedure. • How did the depiction relate to the readings? • What is IQ? How is it characterized in the book and other readings?
Thought paper 4 DUE 10/29	<i>Magic Hour</i> , feral children, and making smarter babies <ul style="list-style-type: none"> • What were the different theories for what had happened to Alice and her development? • What role do critical/sensitive periods play? • How do wild children relate to the examples from non-human animals in the readings? • What is the relationship between wild children and the ideas behind Baby Einstein and the Mozart Effect?
Thought paper 5 DUE 11/12	<i>Memento</i> and Amnesia <ul style="list-style-type: none"> • What was Leonard's problem? • What could Leonard actually remember? • How did the depiction relate to what you learned about H.M. and memory systems?
Thought paper 6 DUE 12/3	<i>Eternal Sunshine</i> and Forgetting <ul style="list-style-type: none"> • What was the basic principle on which the memory erasing method was based? • Based on the readings, why would it be important to remove all memorabilia? Could you really remove everything? • How realistic do you think the method would be?

NOTE: THE MAKE-YOUR-OWN-ASSIGNMENT OPTION HAS STRICT DEADLINES AND CANNOT SIMPLY BE TURNED IN ON A THOUGHT PAPER DAY.

Make-Your-Own-Assignment Option

Because we cannot possibly cover all of the interesting topics in the media, we offer an alternative that allows you to pursue some other topics. **With permission**, you may elect to replace one (1) thought paper grade with a make-your-own assignment. This will be more work than a regular thought paper, but it lets you incorporate your own interests in the class. Here is what you have to do.

- Find a myth, ad, or media depiction of an idea not covered in class.
- Research the science behind the source you have found.
- Write a scientific critique about the source using the known science:
 - What is correct about the claims/ideas?
 - What has been exaggerated, skewed, misrepresented, etc.?
 - What is just plain wrong?

This option has strict guidelines and strict deadlines, so you must get materials in on the appropriate dates to be eligible for this option:

TOPIC APPROVAL BY 10/16	You must turn in your source and meet with either Dr. Shelton or Mr. Spiegel BEFORE 10/16 to determine whether it is appropriate for the assignment.
WORKING BIBLIOGRAPHY BY 11/5	You must turn in a brief list of relevant scientific references in peer-reviewed journals that will be used to support your critique. (See a reference librarian if you need assistance with searching journal databases.)
FINAL WRITE-UP DUE 11/19	Final write-up with source attached in some form must be turned in. Paper should be complete with references.

University Statement on Academic Ethics

The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition.

In this course, thought papers and in-class quizzes and exams are to be done without discussion or collaborations. If you have questions, you should always ask your professor or teaching assistant.

Report any violations you witness to the instructor. You may consult the associate dean of students and/or the chair of the Ethics Board beforehand. See the guide on "Academic Ethics for Undergraduates" and the Ethics Board Website (<http://ethics.jhu.edu>) for more information.