

The Final Project Challenge: Creating a Science of the Mind Journal

Welcome! You are about to embark on a really wonderful journey that might be challenging at times. This is a process. There will be many revisions; be expected to be challenged by your editors and the editing process. We will push you hard and we expect you to push back—we want to have lots of conversations through out this process and make it as authentic as possible. Many editors push their authors to new levels. It will be an exciting process.

So, here's what we're looking for:

1. You have 2 1/2 weeks to write a comprehensive journal article on a **topic of your choice** that includes **one piece of original artwork**.
2. Additionally, we'd like you to write a **short column** about one of our field trips or guest speakers (i.e. Harvard Brain Bank, Moral Cognition Lab, etc.)
3. we would like you take **on one more aspect of the publishing process** which could be:
 - editing
 - work on cover art
 - _____ other

Let's start!

Your **LONG** articles are features about a topic and should include the following:

- Both **humanities** and **science** related content—please address both the **subjective** experience of the *mind* and the **objective, scientific, and anatomical** view of the brain.
- We encourage you to begin with a **personal hook** or start with writing based on **first hand interviews** or a good reconstruction. Try to write from the lens of the **first person** and be **imaginative**. (Avoid making up a hook... talk to us if you're struggling.)
 - In order to help you do this, we ask you to **contact and interview one to three experts** in the field of your topic. Submit all emails and correspondence.
 - Use at least one **primary source** from a **peer-reviewed journal** in fields of psychology, cognitive psychology, developmental psychology, neuroscience, social biology, neurology, medicine, or consciousness studies to reference in your article. (Let us know if you want help finding one of these.)
- We'd like you have a balance between some **subjective point of view** (reporting actual people) and **objective data** (that can be quantified and has scientific, predictive value) that's gained through neuroimaging, through experimental cognitive psychology, through evolutionary psychology explanations, anecdotes from neurological patients, etc.
- The more **converging pieces of evidence** you have that **points to an explanation of a phenomenon**, the better.
 - For example, the subjective reports are corroborated by neuroimaging data, improved outcomes in therapy (behavioral data—i.e. descriptions of the punishments that Fiery talked about). etc. (Kelty, for example, sites at least 3 or 4 different specific pieces of evidence from different studies, while mentioning the researchers and their findings as well as quotes, and has his own experience as well.)
- We encourage you to consider covering
 - one **historical** case,
 - **topics** that we covered in class and on trips.

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Your **SHORT** articles (could also be a poem) should aim to feel like a beat reporter—convey what this lab/person was like from your point of view:

- a **personal** hook—what was your connection with this trip/person? Start with a probing question, perhaps, the way the researchers did
- engage the senses and report what it was like
- leave the reader puzzling through a question

See Sara Lepkof's Example of a short.

See Kely Wilton's Example of a long

See Caitlin's Example of a Letter to the Editor

CAUTION: These are successful ways to do it, but they're not the only way to do it!

Due Dates for SOTM Journal		
Check off the following as they are completed	Tasks	Due Dates
	A topic of your choice Submitted to Amir & Beth via email	Tuesday, March 30 th
	Please submit one the following pieces by Friday, April 2: <ul style="list-style-type: none"> • Hook to Main Paper or • Notes/Summary of Research ... the other one is due on Monday, April 5 th	Friday, April 2 nd
	First Draft of Main Article/Outline	Monday, April 5 th
	1 st Draft of Letter to Expert	Tuesday, April 6 th
	Original Piece of Artwork Short column Final Draft of Short and Long Articles Submitted	The end of science on Tuesday, March 30 th Friday, April 9 th
Schedule for Editing		
Give <i>all</i> your drafts to Amir via email	<ul style="list-style-type: none"> • Meghan • Kyle • Ali • Lena 	
Give <i>all</i> your drafts to Beth via email	<ul style="list-style-type: none"> • Caitlin • Josh • Ariel • Sara 	

EXAMPLE OF A LONG



Kelty Wilton examines brain specimen at the Harvard Brain Bank.

Action - active verbs - set the scene.

"This makes it easier to go back to a place of happiness, and makes it neurologically and physiologically difficult to experience unhappiness."



Students at Boston Museum of Science on the way to the Imax film, *Wired to Win*.

Meditation, Emotion, and the Body

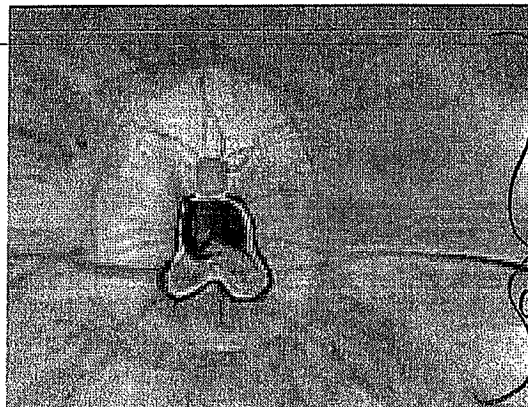
By Kelty Wilton *Personal Hook*.

Oneness. My body blurs. My perception of the world around me wavers. Still, I go over the phrases in my head. Over and over again I repeat, "May you be happy. May you be healthy. May you have ease of mind." It feels like that fleeting moment between wakefulness and sleep when I don't know what will happen next. Anything is possible. Without trying, my mind and body ease deeper into this state. Sounds and feelings begin to wash over me; they are neither absorbed nor contemplated. Sensations are no longer accompanied by corresponding outbursts of emotion. My chest expands, inhaling and exhaling love, as I focus my heart on an image of a white light rippling out over the whole world. How did I reach this blissful state? What is happening to me? It's just another day of school.

A dull ringing penetrates my skull calling me very slowly back to my 3rd block humanities class. We are studying the brain and the mind, and how each affects the body. I was just called out of a loving kindness meditation, known as *metta* meditation in Pali, the language in which Buddhist teachings were originally written. For the past twenty minutes I have been going through images of different people in my head, including myself, a stranger, and someone with whom I don't get along, and wishing each of them happiness, health, and ease of mind. *Transition into neuroscience.*

It is clear to me that doing this practice makes me happy, but what is happening to my brain? Can the changes in my brain have other effects on my body? For thousands of years the mental and emotional benefits of meditation have been recognized, but recently there have been a growing number of scientific studies investigating the affects of the practice on the underlying neurology of the brain as well as other physical systems.

Yongey Mingyur, a Buddhist monk interested in the intersection of science and religion, writes in his book *The Joy of Living: Unlocking the Secret and Science of Happiness*, "Today's researchers are starting to provide objective evidence that learning to calm the mind and develop a more compassionate attitude produces higher levels of personal pleasure, and can actually change the function and the structure of the brain in ways that ensure happiness remains constant over time." Neuroplasticity is the term used to describe this newly discovered phenomenon. Syn-



apses—the connections between neurons in the brain—like muscle tissue, will atrophy unless used regularly. Likewise, the more they are used, the stronger they become. An fMRI and EEG study conducted on a Tibetan lama showed very obvious neuroplasticity as a result of meditation. While he meditated in the large metal cylinder of the fMRI machine with 256 electrodes attached to his skull, powerful computers analyzed the origins of his thoughts by measuring electrical potentials on the scalp.

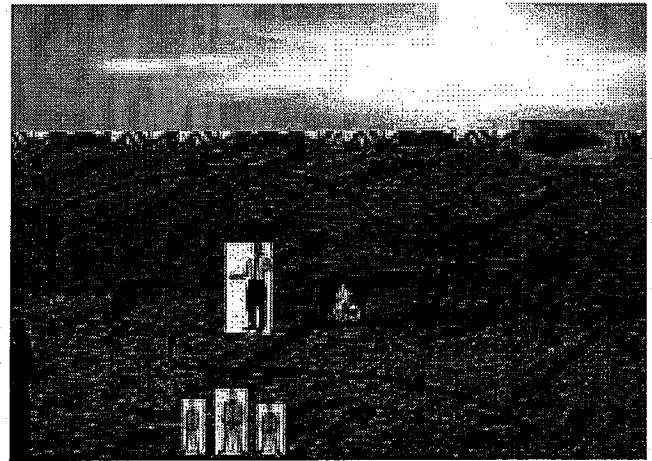
They found that while meditating, there was an increase in activity in his left prefrontal cortex, the region associated with happiness. Not only was there increased activity in this region during meditation, researchers found that the lama's baseline of activity in that area was shifted farther to the left than anyone that had ever been tested. "Judging from this one

Summary of Neuroscience

Original artwork

more neuroscience description of exper.

study, at least, he was quantifiably the happiest man on earth," according to a March 2005 National Geographic article. Evidence points to meditation being responsible for this remarkable shift. Over time, his left prefrontal cortex strengthened, becoming easier to access, and developed into the normal area of function. While the right side was not being used, it weakened and stopped much of its activity.



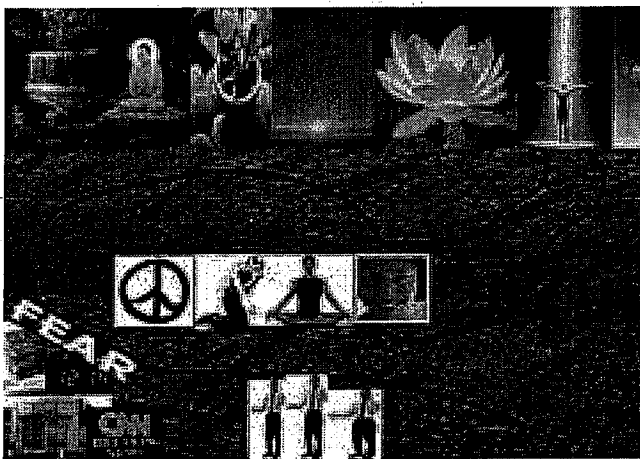
Have I been experiencing neuroplasticity when I meditated during this class?

Brings back the personal.

Can you shift the activity in your brain to more positive areas? The answer is, yes! Every time you are in a good mood you are reinforcing the neuronal connections responsible for that. Accordingly, the less often you are unhappy the more the neural networks associated with unhappiness weaken. This makes it easier to go back to a place of happiness, and makes it neurologically and physiologically difficult to experience unhappiness.

Can these shifts have other benefits on non-emotional levels? It certainly seems that there are several ways that meditation can benefit your overall physiology. Richard J. Davidson, a scientist who has conducted many studies on meditation, tested the effects of meditation on corporate workers. After undergoing a ten week meditation training, the subjects participated in several tests which showed that

Description of meditation experience



there had been shifts toward the left in their prefrontal cortex activity. Additionally, they had significantly lower levels of cortisol, a hormone released in response to stress. As part of its function, cortisol suppresses the immune system, making you more susceptible to sickness and disease. This suggests that meditation leads to an overall healthier body by preventing a physiological response to stress.

One of those positive states that is experienced in the left prefrontal cortex is optimism. A ten year study by Dr. Laura D. Kubzansky looked at the health of men and how it correlated to their mental state. Kubzansky found that those classified as 'optimistic' by the Minnesota Multiphasic Personality Inventory had a reduced chance of developing heart disease.

10 year study

Kubzansky concludes that, "These results suggest that an optimistic explanatory lifestyle may protect against risk of coronary heart disease in older men." After only ten weeks of meditation training by Dr. Jon Kabat-Zinn, Richard Davidson's test subjects were living proof of neuroplasticity. "Those who had meditated showed a pronounced shift in brain activity toward the left, happier prefrontal cortex." Since I began meditating, I have felt many of the effects described in these scientific studies. I often feel stress, but rarely is it consuming. Instead of internalizing the stressors, I acknowledge their presence and wave as I let them pass by. Is this causing cortisol levels to fall, as I deal with stress better? Has my prefrontal cortex activity shifted to the left? Am I a healthier person because of meditation? Studies indicate that the answer to these questions is yes, and it certainly feels probable.

Deal with personal meditation

incorporate scientific evidence

EXAMPLE OF A SHORT

The Connection between Undocumented Workers and Struggling Farms

Sara Lepkoff

The night Julia Alvarez was due to speak about her new book, Return to Sender, the Brattleboro library was bustling with excited fans. We waited impatiently for her arrival. As she walked in, right on time, the room burst into applause. Her presence was calm and graceful and the night's discussion went quickly.

Return to Sender is a fictional book based on the recent rise of undocumented workers employed on local Vermont farms. The book's targeted audience is middle school but her talented storytelling ability appeals to all ages. Her novel highlights the new trend that has saved some rural farmers from giving up their farms due to economic hardships, but has created tensions between the differing cultures.

After her talk, I was one of the many eager fans lining up to meet her because I enjoy her writing style and have read many of her books. Her presentation helped me realize the link between undocumented Mexican workers and our state.

I didn't realize how many Vermont farmers rely on migrant workers even though I have been studying illegal immigration.

In Vermont, it can be easy to forget the issues that face people at the border, which seems so far away. The reality is that there is a noticeable connection between Vermont and illegal immigrants. We need them for our farms to survive.

I commend Julia Alvarez for raising this issue in a way that more people can realize it is manifesting in our backyards. We might as well learn all we can to provide support to these workers while sustaining farming in our state.

I recommend reading Return to Sender, and help spread awareness of immigrant labor with friends and neighbors.

EXAMPLE OF A LETTER TO EXPERT

From: Caitlin Greve <c_joy_dance@yahoo.com>
Subject: letter to expert
Date: March 28, 2010 5:36:44 PM EDT
To: beth science <beth@compass-school.org>

Dr. Jonathan Tripodi
Global Healing Therapies & Seminars
2244 Sunstates Court, Suite 107
Virginia Beach, VA 23451

March 28, 2010

Dear Dr. Jonathan Tripodi,

As a student from Compass School in Westminster Vermont, I came across the work you're doing in Body Memory Recall. I am currently enrolled in a course called Science of the Mind, and have been studying the nooks and crannies of the human brain/mind. Currently, my class is working on developing a unique journal of articles based on topics we have chosen to write about. Here is a link to a journal made by the SOTM class before us: <http://www.compass-school.org/news/2008/09/19/science-mind-journal>. The topic I have chosen is body memory. Here are a few probing questions I have in relation to this fascinating study: 1. Do you find that more and more people are being pulled towards this natural approach to healing considering the state of our economy? 2. Do you find that this technique is more effective when treating patients who have undergone physical trauma as opposed to mental trauma? 3. On average, how long does it take to become liberated from a traumatic body memory?

Thank you very much for your time and efforts. The valuable contributions you have made are going to make a huge difference in society's ability to heal.

Sincerely,

Caitlin Joy Greve