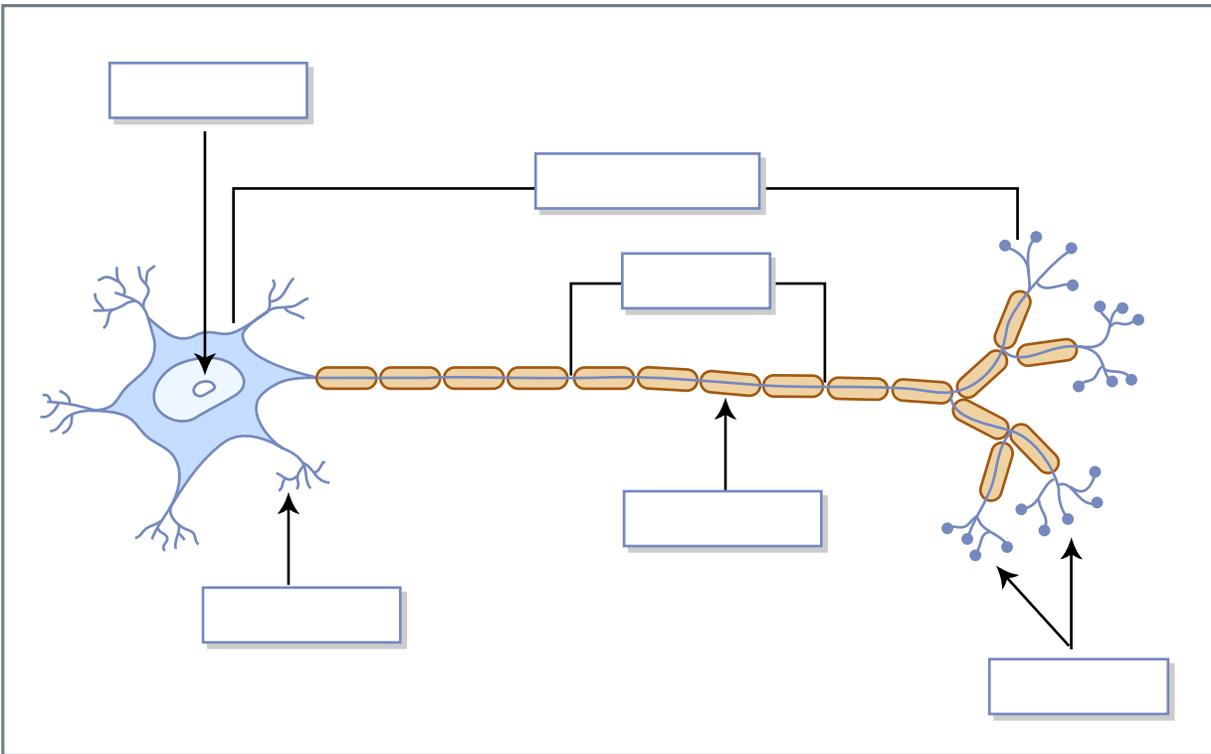


Handout Two: Why do we do anything?

Leftover from last time

How a neuron works: The basics



Terms:

Neuron: axon, dendrite, soma, myelin, synapse

Neuronal Transmission: action potential, neurotransmitter

Figure by MIT OCW.

Lecture Two: Why do we do anything?

The abstract: In this lecture I will combine topics from Chapters 3 and 4 to ask why we do *anything*. The first answer is that we are slaves to our environment. Today, that point, which will recur, will be illustrated by Thorndike's "Cat in the Puzzle Box" experiments. The second answer is that we are slaves to the wiring of our brains and, by extension, to our biology and our genes. That point, which will recur, will be illustrated by Olds and Milner's "Rat Brain Stimulation" experiments. Finally, we will try to go beyond cats and rats to talk about more complex human emotions and behavior.

The outline:

Point 1: Slaves to the environment

We start with my rabbit. How do we understand his behavior.

One answer: Romanes, George. (1897). *Animal Intelligence* (Vol. XLIV). New York: D. Appleton and Co.

A different answer:

Thorndike, E. L. (1898). Animal intelligence. *Psychological Review*, 2(4 (whole No 8)), 1-109.

Thorndike's great experiment: The puzzle box

Handout Two: Why do we do anything?

Thorndike's **Law of Effect** says that a behavior that is followed by a reinforcer will be reinforced. It will be more likely to happen again.

What is a **positive reinforcer**?

What is a **negative reinforcer**?

What is **punishment**? (and why isn't it a negative reinforcer?)

What does it mean to **shape** behavior?

What is **Behaviorism**?

Note: This is all Chapter 4 material, by the way.

Point 2: Slaves to our brains

Olds and Milner (1954) make a cool mistake

They were running a different sort of puzzle box experiment

They found that stimulation of some bits of brain was powerfully reinforcing

Question: Will you kill yourself for pleasure?

Spies, G. (1965). Food versus intracranial self-stimulation in food deprived rats. *J. Comp. & Physiological Psych.*, 60, 153-157.

Multiple subsystems for "pleasure" (or, better, for 'reward')

Notice how "nature" and "nurture" are two sides of the same coin here?

Notice also that the animal seems to be acting on its "feelings". (Safer to say, it is motivated to act in order to get reward or avoid punishment).

Is this true for us too?

Hume said that "reason alone cannot move us to do anything"

Treatise on Human Nature, Bk II, pt II, sec III

Point 3: Drives and Emotions

A word about **preparedness** (maybe)

A word about hunger

consummatory and **appetitive** behaviors and pleasures

drive reduction theory

What are emotions for?

Handout Two: Why do we do anything?

Plutchik, R. (2001). The nature of emotions. *American Scientist*, 89(July-August), 344-350.

A shorthand that helps mobilize resources

And helps you generalize

And helps you communicate

Point 4: Moving beyond sex and hunger

Empathy - a social emotion

The role of facial expression

Why aren't we happier?

Why isn't the world a better place?

Questions to answer from Chapter Three:

NOTE: These questions are intended as a guide to your reading. You do not need to write the answers. At least, you do not need to turn them in. Writing them might be a useful form of study. In any case, I would go back and have a look at these when you are reviewing for exams.

P91 The autonomic nervous system is split into **sympathetic** and **parasympathetic** divisions. Why can't Prof Wolfe remember which is which? Can you? Teach me. □

P91 What is the hypothalamus and what is its role in thermoregulation? □

P94ff What signals tell us when to eat and when to stop eating? □

P97 What does the hypothalamus have to do with that hairy football in Figure 3.6? □

P97ff You will want to be able to say something about causes of obesity. □

P101 There is that sympathetic / parasympathetic division again. How does it relate to our responses to threat? □

P105 The biological underpinnings of sex are of some interest but, for purposes of an Intro Psych course, the interesting psychological questions come later in the term. □

P109 You will want to read the section on sleep and dreams but we will come to that topic much later in the term. At that point, you should probably go back and reread these pages. □

P117 Why does alcohol make people become hyper-excitable? □

Something to write about, #2: The Emotional Brain

Do different emotions have different homes in the brain?
Here is a review article to get you started.

Calder, A. J., Lawrence, A. D., & Young, A. W. (2001). Neuropsychology of fear and loathing. *Nature Reviews Neuroscience*, 2, 352-363.