# PSYC 51.09: Problem Set 6

## Introduction

This problem set is intended to solidify the concepts you learned about in this week's lectures and readings. Your responses will be worth 3% of your final grade. You are encouraged to work together with your classmates in small groups, and/or to post and answer questions on the courses Canvas site. ***However, you must clearly indicate who your collaborated with and submit your own (uniquely worded) responses.***

We will go over the answers to this problem set in class on **Monday, February 22, 2016 at 1:45 pm**. You must upload your answers before then in order to receive credit. No late submissions will be accepted.

## Readings and ungraded questions

1. Read Chapter 7 of *Foundations of Human Memory*. What were your thoughts on the reading? **(Ungraded)**
2. Read the chapter *The Role of Context in Episodic Memory* in *The Cognitive Neurosciences*. What were your thoughts on the reading? **(Ungraded)**
3. Brainstorm possible topics for your final paper. Write down 2-3 of the most promising options. **(Ungraded)**

## Graded questions

1. Suddenly it comes to you in the middle of the night: you've figured out how memory works! You furiously scribble down as many details as you can, before the thoughts are lost forever. You have created...***the SHAM model***.

   The next morning, you look back at your scribbles, and you realize that the SHAM model is actually very similar to another model you've studied in PSYC 51.09– the SAM model. In fact, it's the identical in every way, except for one "small" detail. In the SAM model, the associations between items that occupy the short term memory store at the same time are strengthened. But in the SHAM model, the opposite happens. Specifically, items that occupy the short term memory store at the same time become *less strongly associated*.

   With a sinking feeling, you realize that the SHAM model is going to make some pretty strange predictions about people's free recall behaviors.

   (a) What would the SHAM model predict the *serial position curves* (Fig. 7.11A) will look like for immediate free recall and delayed free recall? Draw two curves (and label which is which). Explain (in 1 paragraph) why you drew the curves the way you did. **(1 point)**

   (b) What does the SHAM model predict people's temporal clustering patterns (Fig. 7.4) will look like (for immediate free recall)? Draw a curve analogous to Fig. 7.4, and explain (in 1 paragraph) why you drew the curve the way you did. **(1 point)**

2. Since graduating from Dartmouth last year, *future you* has been pouring all of your energy into a new tech startup you founded with some of your Dartmouth classmates. You've created a new search engine, *SHAM2* (no relation to that strange model you thought up back when you were an undergrad) that uses the Temporal Context Model to more effectively help people to retrieve personal files on their computer. For example, suppose you're listening to a song while working on a problem set for PSYC 51.09. Those two co-active events will become linked in a "context database" so that, later, when you search for the song it

will also bring up the document, or when you search for the problem set (or its contents) it will bring up the song.

You've been pitching your search engine to a friend-of-a-friend who knows a group of investors who might be interested. Your contact arranges a meeting, but the investors make it clear that they are going to be deciding between backing your TCM-based search engine, or another search engine that has no contextual awareness but is slightly faster than the one you've been working on.

You need to make your case: why should they back your company? Explain to the investors why they should care about context-aware search and invest their millions (billions?) in your company instead of your competition. **(2-3 paragraphs; 1 point)**