CS 245: Minds, Brains, & Machines 11-1-08
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Assignment 5.1: Due in class Monday, Nov. 10

1. In this question you use the *How to Think Like a Cognitive Scientist Scheme* discussed in the Oct. 29 lecture to read and analyze Gordon, Franklin, and Beck's (2005) paper *Wishful thinking and source monitoring*. (There are parts of this paper that are fairly technical, particularly the signal detection analysis on p. 422. Nevertheless, the overall thrust of the paper is accessible.)

   The eight parts of the *Cog Sci Thinking* scheme are given below.

   For this question we'll fill in the first two items in the scheme:

   a. *Interesting question.* The interesting question underlying the *source monitoring* research program is why information about the sources of memories sometimes get detached from the contents of the memories.

   b. *Theoretical framework.* The general theoretical framework we considered involved two factors: (i) Internally and externally generated experiences are unreliably stored in a single associative memory structure; (ii) Memory reports involve the conscious (re)construction of a coherent "memory" from currently active (retrieved) associations.

   Next, you use background from the course and the paper by Gordon, Franklin, and Beck to fill in the other items in the scheme. Write a paper with the headings below, answering the question for each heading. Do not quote the readings. State your answers in your own words.

   c. *General hypothesis.* Start by stating the general idea of source monitoring as developed in Johnson's paper *Memory & reality* (2006) and in the introduction to Gordon, Franklin, & Beck. Use the general theoretical framework above, as well. You might also want to give an example or two from your own experience.

   d. *Testable hypotheses.* What are the hypotheses that Gordon, Franklin, and Beck attempted to test in their three experiments. Show how this is a logical progression of hypotheses. Explain how the second hypothesis refines the first hypothesis. Explain what the third hypothesis adds to the first two.

   e. *Experimental design.* Explain the methods of Experiment 3. What are the stimuli for the experiment? What is the procedure? What is the memory test? Explain how the experiment is designed to test the authors' hypothesis for this experiment.

   f. *Data & data analysis.* The authors claim that the data presented in Table 4 supports their hypothesis for Experiment 3. The table below simplifies their Table 4 by leaving out the standard deviations and focusing on the mean (average) percent correct in four

conditions. Leaving the statistical analysis aside, explain why the pattern of this data supports the authors' hypothesis.

Source accuracy means (averages) for minor scenarios (Actual data)		
	High desired reliability Accuracy score (percent correct)	Low desired reliability Accuracy score (percent correct)
Correct minor prediction	.55	.40
Incorrect minor prediction	.47	.52

Suppose the results of the experiment were as shown in the mock data below. Why does this data not support the authors' hypothesis? Try giving a simple alternative explanation of this pattern of data.

Source accuracy means (averages) for minor scenarios (Mock data)		
	High desired reliability Accuracy score (percent correct)	Low desired reliability Accuracy score (percent correct)
Correct minor prediction	.55	.40
Incorrect minor prediction	.47	.32

g. *Discussion and critique.* How well do you think the studies reported in this paper support the authors' hypotheses? Explain your conclusion. In particular, you should summarize and expand on the authors' discussion of the practical implications of their findings.

h. *Do over.* Can you describe one or more further studies that should be done to further explore the relationship between wishful thinking and memory.