Sample Essay Questions – Cognitive Psychology (PSYC 325 / Final)

This list contains 6 potential questions from the second half of the semester, and 3 “old” questions that were on the previous essay question list for the first half of the semester. Please be prepared for questions out of both sets, but as I stated in my email a few days back, there will be a stronger emphasis on the second half of the semester. Similar to the midterm exam, there will also be one additional essay question that is not part of this list (at least not in its exact form).

1. In the field of mental imagery, two different research findings have been very important. Stephen Kosslyn’s research is often cited as evidence that humans manipulate visual mental images in similar ways than when perceiving actual physical stimuli. Similarly, Roger Shepard’s research seems to indicate that humans solve some visual tasks in ways analogous to physical operations. Please give one characteristic example of a research study for each of the two research programs and discuss how the findings have been interpreted. Finally, discuss the major differences between the two approaches and what implications they have theoretically.

2. Please describe the basic idea behind the Sapir-Whorf hypothesis of linguistic relativity. After describing the theory in general, please give two distinct empirical examples that test the hypothesis and discuss the implications of this research.

3. Please describe in your own words the basic assumptions and predictions of Alan Paivio’s dual code theory. List a prototypical experiment that supports his theory. Finally, discuss the potential applications of the theory in instruction and education.

4. Discuss the notion of priming in semantic networks. First, describe the general elements and structure of a semantic network. Once you have described the basic structure, you should then use a simple example to demonstrate the processing that occurs in a semantic network. Using your example, define the term “priming” and discuss how priming might result naturally from information processing in semantic networks.

5. Describe how in Rumelhart and McClelland’s model, a connectionist network can learn the general and specific rules of English past tense. First, describe the basic elements in Rumelhart and McClelland’s connectionist model and point out the differences to a semantic network model. Second, describe the basic principles by which such a system can learn. Third, describe the main findings of their simulation study of past-tense learning that we discussed in class.

6. Discuss the concept of analogical problem solving. Please first identify the type of mapping between problems that has to be achieved by the problem solver in analogical problem solving and identify some of the major problems that might stand in the way of successful analogical problem solving. Lastly, use Duncker’s radiation problem as an example how analogical problem solving can be studied and what the main results of this research are.
7. Please describe 4 different methods used in human neuroscience to identify the regions of the brain that are involved in particular cognitive activities. Give a description of an exemplary “hypothetical” study for each one.

8. Describe the main results from experiments on visual search and explain them using Treisman’s feature-integration theory. How would you use this knowledge if you had to design a visual display and you wanted to draw an observer’s attention to one particular region of the display (give 3 different examples).

9. James Gibson’s theory of ecological perception emphasizes one particular aspect of vision. Please give a brief overview about the central claims of the theory and at least two different applications of these ideas to real-world tasks.