QRMS Project 3: Parapsychological Testing, Part 1 (Due November 19, 2011 by 5:00 PM)

In this project, you'll be testing whether you or your classmates have the psychic ability to predict the suit of a playing card. Or, if it turns out that you and (most of) your classmates lack such psychic abilities, you'll be testing how coincidences and other things can be misinterpreted as significant statistical results and how to avoid this. For this project, you'll need a standard deck of playing cards and should work in a group of two or three. If you absolutely don't want to work with a group, talk to me about alternative options. Your answer to part 1 of this project will consist entirely of sending me an e-mail with information requested at the end of the procedure given below. This e-mail is due by 5:00 PM on November 19, 2011 and is worth 5 of the 50 points that the project is worth. Part 2 of the project (worth 45 points) will be given to you later and will be based on an analysis of the data you send me in part 1. As such, Part 1 **will not** be accepted after the due date.

It is common for assignments to ask you to read all of the instructions before beginning. This project is an exception: since some steps of this project will ask you to consider things that you may not have considered in previous steps, it will work better if you perform the previous step before reading the next step. With that in mind, don't read beyond this sentence until you and your group are ready to begin the following and don't read a step below until you've already completed the step that preceded it.

Part 1: Data Gathering

In this part, you will design your method and gather your data. However, nothing described in this part will appear directly in your paper (which will be described in part 2, available later). Note that the focus of this project is on your process rather than your results, so please be scrupulously honest in presenting your results.

1. We are interested in the ability of you and your fellow group members to predict what the next card turned over from a deck of cards is going to be. Run through a deck of cards once for each member of the group, letting them predict what suit the next card will be before turning over the card. For each person, record the number of times out of 52 for which they correctly predicted the suit of the card.

2. Now that you've finished the first step, let's think about how we should have done it. The above was written in a way that encouraged you to be somewhat casual about the procedure that you used. But as we've seen in class, this is not a good idea in a statistical study: we'd like to talk about our goal, population, sample and method of choosing it, and so on before we actually begin the study itself. Think back on the procedure that you used in the previous step and write down *exactly* what procedure you used in Step 1. For example: did you shuffle the cards between tests? When you turned over a card, did you do so in such a way that the person being tested could see the card? And so on. Be as precise as possible.

3. In this step, you're going to repeat step 1 exactly, using the procedure as you wrote in down in Step 2. Each person should be tested again and the number of cards whose suits he/she correctly predicts should again be recorded. But, each of you should try to "beat" the test when it's your turn to be tested. Since the goal here is to beat the test, brainstorm with your group about ways that you could do this before beginning the test. Some things you might consider: if the cards aren't being shuffled, you might be able to memorize the suits of some or

all of them, which will increase your accuracy. If you get to see the card after your prediction, you might consider trying to keep track of how many cards of each suit have already been seen, which will help increase your accuracy at the end of the deck. (This is similar to "counting cards," except that you'll be interested in the suit instead of the number.)

4. Now, let's think about how to do this correctly. With your group, think about what it is that you are trying to test and develop a test protocol that avoids the sorts of problems that you saw in the previous step. Carefully write down what this procedure is.

5. Perform the procedure in the previous step once for each member of your group and record the number of correct suit predictions that each person makes.

6. One person from each group should send me an e-mail with results for their group. (Since all of you will get points for this, it is your responsibility to ensure that this e-mail actually gets sent.) This e-mail should not contain the procedures that you wrote down in steps 2 and 4 (but keep them: you'll use them when you write your paper in part 2), but should *only* contain the number of correct predictions that each of you made in steps 1, 3, and 5. For example, an e-mail might look like the following:

   Part 1:
   Joe James: 15/52
   Alice Wilson: 12/52

   Part 2:
   Joe James: 23/52
   Alice Wilson: 25/52

   Part 3:
   Joe James: 13/52
   Alice Wilson: 14/52

7. I will do a statistical analysis of all the data e-mailed to me, which will form the basis of Part 2 of this project. The assignment sheet for Part 2 will be posted to the class webpage on November 20 (and I will send out a class e-mail when it is up). If you want to get started on Part 2 over break, you can download it. Otherwise, I'll hand out copies of it at our first class session after the break.