PSY 2801 – Statistics	Babcock/Derringer/Klieger
October 19, 2007	**Homework # 6–NHST & Sampling Distributions**

1. Sampling Distributions and the Central Limit Theorem (CLT): USE SPSS, AND SHOW RELEVANT SPSS OUTPUT. MAKE SURE THAT ALL OF YOUR ANSWERS (INCLUDING HISTOGRAMS) ARE CLEARLY LABELLED AS TO WHAT THEY ARE DESCRIBING. IN YOUR HOMEWORK ANSWERS, PROVIDE YOUR HISTOGRAMS SIDE-BY-SIDE ON THE SAME PAGE.
    a. Including all lab sections, what is the overall mean height?
    b. In your SPSS Data View window, delete the rows for cases 101 to 111. Next, divide the remaining 100 cases (i.e., students) into 10 groups, with 10 people in each group (N=10). Group 1 contains cases 1 to 10; group 2 contains cases 11 to 20; etc. What are the mean heights of each of the 10 groups? What is the standard error for the 10 means? Create a histogram for the 10 means.
    c. Divide the 100 cases into 5 groups, with 20 people in each group (N=20). Group 1 contains cases 1 to 20; group 2 contains cases 21 to 40; etc. What are the mean heights of each of the 5 groups? What is the standard error for the 5 means? Create a histogram for the 5 means.
    d. How does the size of N relate to the standard errors that you found? How does the size of N relate to the shape of the histograms that you drew? What does any of this have to do with the Central Limit Theorem?

2. Null Hypothesis Significance Testing (NHST): ACCURATELY THINKING ABOUT THE FOLLOWING QUESTIONS IS LIKELY TO CAUSE YOU MENTAL DISCOMFORT. IT IS PART OF A BALANCED DIET, AND IN ANY CASE, IT CAN'T BE HELPED. THE SIDE EFFECTS GENERALLY DO NOT LAST. WHATEVER YOU DO, DO NOT SIMPLY COPY WORD-FOR-WORD FROM YOUR NOTES, A TEXTBOOK, THE WEB, ETC.
    a. What is a hypothesis (H)? What is hypothesis testing?
    b. What is a null hypothesis (H_0)? What can a null hypothesis tell you, and how likely is it that a null hypothesis will be true? What is an alternative hypothesis (H_1 or H_A)? What can an alternative hypothesis tell you?
    c. What is a p-value? What is the major assumption that underlies all p-values?
    d. What is Type I error (α)? What is Type II error (β)?
    e. What factors affect the likelihood of rejecting a null hypothesis?
    f. Who hates NHST the most: Ben, Jaime or Dave?