One Same Z-Tests

1. Listening to music while taking a test may be relaxing or it may be distracting. To determine which, 49 participants are tested while listening to music and they produce a sample mean of 54.63. The mean of the population of students who have taken this test without music is 50, with a standard deviation of 12. Perform a hypothesis test to see if there is a significant difference between the sample test scores of students who listened to music while taking the test and those of the population who didn't listen to music while taking the test at an alpha level of .05. What is the 95% Confidence Interval of test scores? What is the effect size?

2. A researcher asks whether attending a private school leads to higher or lower performance on a test of social skills. A sample of 100 students from a private school produces a mean score of 71.62 on the test, and the national population mean for students from public schools is 75.62 with a standard deviation of 28.0. Perform a hypothesis test to see if the sample of private school students' social skills is significantly higher or lower than the population of public school students' social skills at an alpha level of .05. What is the 99% Confidence Interval for social skills? What is the effect size?

3. On a standardized anagram task (anagrams are sets of scrambled letters that must be arranged to form words), people successfully complete an average of 26 anagrams with population standard deviation of 4. This distribution is normal. A researcher would like to demonstrate that the arousal from anxiety is distracting and will decrease task performance. A sample of n=14 anxiety-ridden participants is tested on the task. The average number of anagrams solved is sample mean of 23.36. Perform a hypothesis test to find out if the anxiety-ridden participants show a significant decrease in task performance at an alpha level of .05. What is the 95% Confidence Interval of task performance? What is the effect size?