

# PSYC 2317: Statistical Methods for Psychology

Tarleton State University

Unit 7 Homework

For each of the hypothesis testing problems below, you need to justify your answer by explicitly defining your null hypothesis  $\mathcal{H}_0$  and alternative hypothesis  $\mathcal{H}_1$  and reporting the  $p$ -value for the resulting test statistic.

1. Two separate samples receive two different treatments. The first treatment group ( $N = 9$ ) has a mean of 50 with  $SS = 710$ . The second treatment group ( $N = 6$ ) has a mean of 60 with  $SS = 460$ . Is the second treatment group significantly larger than the first? What is the effect size?
2. A researcher surveys a group of college students to determine the negative life events that they experienced in the past 5 years and their current feeling of well-being. For  $N = 18$  participants with 2 or fewer negative experiences, the average well-being score was  $\bar{X} = 42$  with  $SS = 398$ . For the  $N = 16$  participants with 5 to 10 negative experiences the average score is  $\bar{X} = 48.6$  with  $SS = 370$ . Is there a significant difference between the two populations represented by these two samples? What is the effect size?
3. In 1974, Loftus and Palmer conducted a classic study demonstrating how the language used to ask a question can influence eyewitness memory. In the study, college students watched a film of an automobile accident and then they were asked questions about what they saw. One group was asked “About how fast were the cars going when they smashed into each other?” Another group was asked the same question except the verb was changed to “hit” instead of “smashed into”. The “smashed into” group reported significantly higher estimates of speed than the “hit” group. Suppose a researcher repeats the study with a sample of today’s college students and obtains the following results:

Smashed into	Hit
$n = 15$	$n = 15$
$M = 40.8$	$M = 34.0$
$SS = 510$	$SS = 414$

Do the results indicate a significantly higher estimated speed for the “smashed into” group? What is the effect size?