

# PSYCHOLOGY B5

## RELATED (DEPENDENT) TWO-SAMPLE $t$ -TEST (15 PTS)

Name:

1. Define the related-repeated (pre/post) two-sample  $t$ -test and the related-matched two-sample  $t$ -test.
2. Write the statistical hypotheses and draw the normal distribution for each of the follow hypothesis scenarios.

### Two-tailed Hypothesis

Statistical  
Hypotheses

Distribution and  
Region of  
Rejection

### One-tailed Hypothesis

First condition is a higher score than the second condition.

First condition is a lower score than the second condition.



5. Students have the opportunity to attend study sessions for their statistics class. You would like to see if attending a study session prior to taking an exam affects scores, compared to exam scores when students didn't attend a study session. Eight students took exam one without attending the study session. The same eight students attended a study session prior to exam two. Conduct a statistical test to see if the study session made a difference. *The above scenario and the following names and scores are made up.*

a. Research Question:

IV:

DV:

b. Statistical Test:

c. Hypotheses:

d. Alpha:

Tails:

$df$ :

$t$ -crit:

Participant	Exam 2 Post-Study Session	Exam 1 Pre-Study Session	$D$	$D^2$
Stephanie	84	80		
Jarret	79	76		
Ivonne	84	76		
Sabrina	91	72		
Tizoc	85	89		
Christopher	73	81		
Cecilia	74	66		
			$\Sigma D =$	$\Sigma D^2 =$
			$n =$	
			$\bar{D} =$	

e. Variance, Error, Obtained

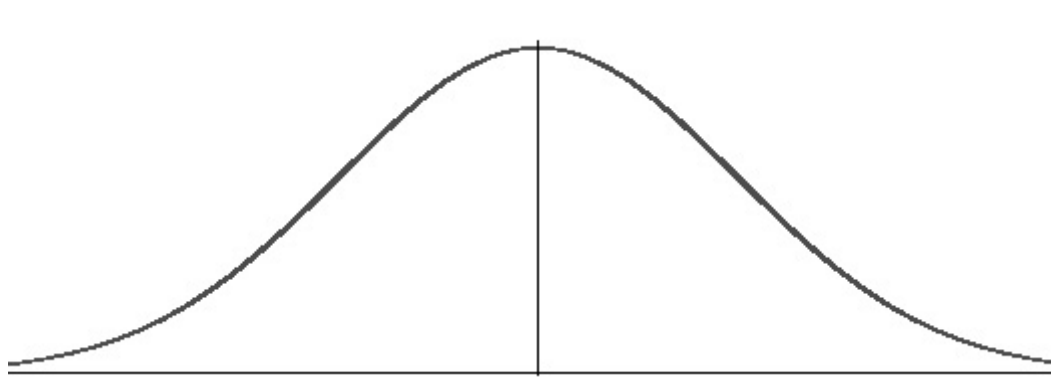
f. Decision: What will you do with the hypotheses?

*t-crit:*

*t-obt:*

Null Hypothesis:

Alternative Hypothesis:



g. Findings:

6. Working as a recreation & activities director at an assisted-living facility, you would like to see if going for walks reduces depression for the residents in the facility where you work. You randomly select 6 **pairs** of residents, matched by age and then randomly assign one member of each pair to either the “walking” group or the “non-walking” group. For one week you take the “walking” group out for an afternoon walk each day. The “non-walkers” continue to participate in the regular activities program, without walks. After one week you will measure and compare the “walker” well-being index scores with the “non-walker” well-being scores.

a. Research Question:

IV:

DV:

b. Statistical Test:

c. Hypotheses:

d. Alpha:

Tails:

$df$ :

$t$ -crit:

Matched Ages	“Walker” Well-Being	“Non-walker” Well-Being	$D$	$D^2$
66	6	5		
74	7	6		
78	8	6		
71	8	5		
76	6	7		
85	8	6		
			$\Sigma D =$	$\Sigma D^2 =$
			$n =$	
			$D =$	

e. Variance, Error, Obtained

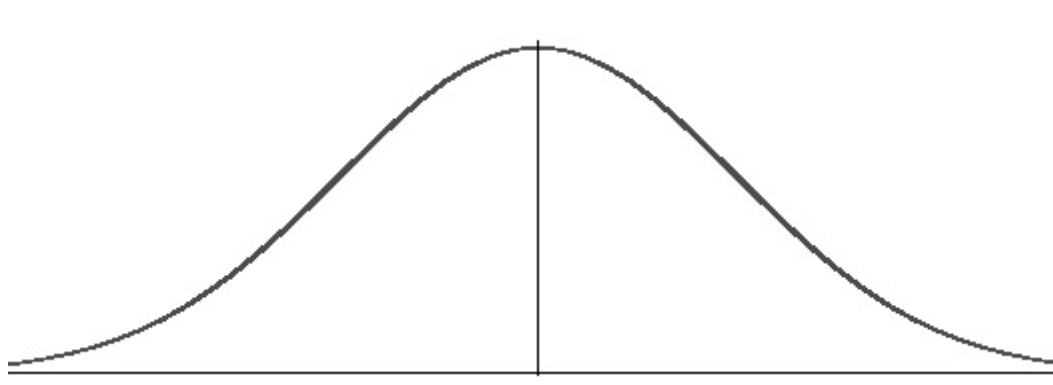
f. Decision: What will you do with the hypotheses?

*t-crit:*

*t-obt:*

Null Hypothesis:

Alternative Hypothesis:



g. Findings:

#### h. Effect Size

Square Point-Biserial Correlation Coefficient

Cohen's d