KEY Homework #7b: One-sample t-test

For each of the following, complete hypotheses testing steps 1-5, giving special attention to the paragraph write-ups.

Q1. Punishment: The researcher predicted participants in the "severe vengeance" condition would recommend more than 2 minutes of loud noise to punish the cheating opponent (x=2,3,4,2,3,4,4,2,5,3,4).

Hypothesis testing steps:

1. cf. M and μ
2. H_O: μ = 2, H_A: μ ≠ 2
3. 2-tailed, α=.05, df= 10, t_{crit} = ± 2.228
4. t_{obt} = 4.183

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
duration	11	3.27	1.009	.304

	Test Value = 2					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
duration	4.183	10	.002	1.273	.59	1.95

5. The hypothesis was supported. Participants in the severe vengeance condition recommended sig. more punishment (M=3.27) than normal (μ =2), t(10) = 4.183, p≤.05. The effect of condition on punishment was large, d = 1.2616.

If needed, calculate d here:

d = 1.273/1.009=1.2616

a. What type of hypothesis testing error is possible? _Type 1___ b. Sample mean _M = 3.27_____ c. μ = __2_____

c. What's the chance you would see this difference between the sample & pop. means just by chance? ___.2%_____

d. State the symbol and value for std error. _$\hat{s}_{xbar}$ = .304_____ d. "difference observed" ____M – μ = 1.273__

f. Summarize the statistic: ___t(10) =4.183, p≤.05__ g. $\hat{s}_x$ = ____1.009_____ g. p = ____.002_____

Q2. Giving: The researcher predicted participants in the "crushing guilt" condition would offer more than the typical $10 charity gift. (x=$8, 10, 5, 7, 20, 7, 12, 9, 20, 12, 4, 3).

Hypothesis testing steps:

1. cf. M and μ
2. H_O: μ = 10, H_A: μ ≠ 10
3. 2-tailed, α=.05, df =11, t_{crit} = ± 2.201
4. t_{obt} = -0.156.

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
dollars	12	9.75	5.562	1.606

	Test Value = 10					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
dollars	-.156	11	.879	-.250	-3.78	3.28

5. The hypothesis was not supported. Participants in the guilt condition did not give sig. more or less (M = 9.75) than normal (μ = 10), t(11) = -0.156, n.s.

If needed calculate d here:

n/a (t was not sign)

a. What type of hypothesis testing error is possible? Type II b. Sample mean 9.75 c. $\mu = 10$

c. What's the chance you would see this difference between the sample & pop. means just by chance? 87.9%

d. State the symbol and value for std error. $\hat{s}_{xbar} = .1.606$ d. "difference observed" -.250

f. Summarize the statistic: t(11) = -.156, n.s. g. $\hat{s}_x = 5.562$ g. p = .879

Q3. The researcher predicted the attractiveness ratings of dates in the "rollercoaster" condition would exceed the normal rating of 5.

a. What type of hypothesis testing error is possible? Type I b. Sample mean 5.40 c. $\mu =$ 5

c. What's the chance you would see this difference between the sample & pop. means just by chance? 3.3%

d. State the symbol and value for std error. $\hat{s}_{xbar} = .180$ d. "difference observed" .400

f. Summarize the statistic: $t(34) = 2.227, p \leq .05$ g. $\hat{s}_x = 1.063$ g. p = .033

Q4. Indicate the types of hypothesis testing error that might be made if you…. Type…

a. __I___ Decide the debate team is smarter than normal
b. __I___ Decide the sky is falling
c. __II___ Decide global warming is not occurring
d. __I___ Decide your wait time at the store is greater than the 3 minutes promised.
e. __I___ Decide the extraversion scores of the sales people are higher than normal.