

# PSYC8101: Midterm Exam Corrections

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## **#3** (0 of 2 points)

Assuming grades are curved such that your grade is determined by your location relative to your class-mates, if you score above average on a midterm exam, you're more likely to get a higher letter grade if that standard deviation is

- a. Small
- b. Large
- c. It does not matter what the standard deviation is
- d. ~~Cannot be determined from the information given~~

## **#6** (0 of 2 points)

When testing a hypothesis about the mean of one population, the only way to avoid sampling error is to

- a. ~~Use the standard error of the mean~~
- b. Use a random sample
- c. Draw a large number of samples
- d. Measure the entire population

## **#7** (0 of 2 points)

Why do researchers usually **not** use  $\alpha = .10$  as the level of significance?

- a. It would make a Type I error too likely
- b. ~~It would make a Type II error too likely~~
- c. It would make both a Type I and a Type II error too likely
- d. None of the above

## **#11** (0 of 2 points)

When estimating the standard error of the difference between means of two independent samples, the pooled variance

- a. Gives greater weight to the larger of the two samples
- b. Gives greater weight to the smaller of the two samples
- c. ~~Gets smaller as the sample size gets larger~~
- d. None of the above

## **#17** (0 of 2 points)

If the null hypothesis for a one-way ANOVA is true,  $MS_{between}$  is expected to be approximately equal to

- a. 0
- b. 1
- c.  $MS_{within}$
- d.  $F$

## **#19** (0 of 2 points)

Compared to Fisher's protected  $t$ -tests, Tukey's HSD test

- a. Leads to a higher rate of Type I errors
- b. ~~Leads to a lower rate of Type II errors~~
- c. Maintains less control over experimentwise alpha
- d. Is more conservative

## **#20** (0 of 2 points)

We can think of mean squares as

- a.  $F$ -ratios
- b. Central tendency
- c. ~~Standard deviations~~
- d. Variances

**#31 b.** (2 of 4 points)

How does the  $p$ -value relate to the comparison of the test statistic with the critical value when we carry out hypothesis testing by hand? You may draw a picture if it is helpful.

**#32 b.** (1 of 3 points)

We have talked about income being an example of a skewed variable. Why don't we need to worry about the distribution of income when we construct the sampling distribution?

**#35 b.** (1 of 3 points)

Provide a technical interpretation of the 95% confidence interval.

**#35 c.** (1 of 3 points)

Why is presenting this confidence interval an improvement over conventional hypothesis testing?

**#36 d.** (0 of 4 points)

Explain why the test result is statistically significant but not practically significant. In other words, how can we have a statistically significant difference but such a small effect?

**#37** (1 of 3 points)

Briefly explain what is meant by the homogeneity of variance assumption in between-subjects designs.

**#38** (3 of 6 points)

Imagine that you are comparing a sample of vegetarians to a sample of meat-eaters on cholesterol levels. If the effect size is expected to be 0.6 and we want an equal number of people in each group, how many people total would be required to attain a power level of 0.85? Assume that  $\alpha = 0.05$  and that you will conduct a two-tailed test.

**#39 d.** (0 of 3 points)

Suppose Dr. Bowles is interested in whether each of the two classical music groups differs from the control group. Of these *post-hoc* tests that we have discussed, which would be most powerful for addressing this research question?

**#39 e.** (0 of 4 points)

Show how the first score in the control group ( $X_{11} = 9$ ) can be decomposed according to the general linear model. Make sure to label all of the terms.

**#40 a.** (4 of 6 points)

Showing all of your work, carry out a two-tailed independent samples  $t$ -test comparing the two group means ( $\alpha = 0.05$ ). Make sure to state your conclusion.

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