

Mastery Exam Study Guide

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Choosing the Correct Test

One Group T-test: One group score and an Existing Score (i.e. National Average)

Paired T-test: A) Comparing a single group's scores on 2 observations

B) Comparing 2 group's that are linked in some way (i.e. Scores of Husbands and Wives)

Unpaired T-test: One Independent Variable (2 levels) on one Dependent Variable.

One-Way ANOVA- One Independent Variable (3 or more levels)

Two-Way ANOVA- Two Independent Variables

Correlation- Relationship of Two Measured Variables

Regression- Predict score on one Continuous Variable (Criterion) using other Continuous Variable(s) (Predictor)

Notes

Do not use the terms:

-Dependent Variable: Just describe how you measured it

-Independent Variable: Describe how groups where divided up and what they were

-Null Hypothesis: Just describe the Research Hypothesis

Do not write that p value was surprising; refer to test procedures on how to describe significant p values

If p value is $> .05$ do not just report it and stop, you must say what this means (i.e. for Unpaired T-tests that there was no difference between the groups)

Only report outliers when they are way out and not near other points

What to put in Summaries

T-Tests

(Summarize T-Tests the same unless noted)

(1) Describe Experiment

-Subjects

-Independent Variable:

One Group T-test- You are comparing a groups measure on a DV to an existing score (ie. National Average)

Paired T-Test-

A. Comparing a single group's scores on 2 observations

B. Comparing 2 group's that are linked in some way (i.e. Scores of Husbands and Wives)

Unpaired T-Test- you are comparing 2 independent groups

-**Dependent Variable:** What you measured

-**Research Hypothesis**

(2) Appropriate Descriptive statistics

-Means of the groups (in Paired T-test and Unpaired T-tests)

-Mean of group and existing score (One-Sample T-test)

-Mean differences

-Outliers

(3) Results

- Always write out t-test results: $t(38) = 4.25, p < .003$

One Sample T-test

If $p > .05$ there was no significant difference between group and existing score (you're done)

If $p \leq .05$ there was a significant difference between group and existing score, and describe the direction of difference (which was higher on DV)

Paired T-test

If $p > .05$ there was no significant difference between observations/groups (your done)

If $p \leq .05$ there was a significant difference between observations/groups, and describe the direction of difference (which was higher on DV)

Unpaired T-Test

-If $p > .05$ there was no significant difference between groups. (You're done)

If $p \leq .05$ there was a significant difference between groups, and describe the direction of difference (which was higher on DV)

One-way ANOVAs

(1) DESCRIPTION OF THE EXPERIMENT/STUDY/OBSERVATIONS

- what is the n in each group? Who are the subjects?

-What variables were measured and controlled, including precise descriptions of the (1) Independent variable and (2) Dependent variable

-What are the hypotheses? In English – don't call them that!

(2) APPROPRIATE DESCRIPTIVE STATISTICS

-Discuss any interesting (Unusual) Descriptive statistics

(3) RESULTS

A. FACTOR

1. Is anything going on?

-Report the F test results even if the results are not significant

$F(2,41) = .047, p < .9541$

If $p > .05$ there is no significant difference between groups (you're done)

If $p \leq .05$ at least one group is different (go to part 2)

2. What exactly is going on?Bonferroni

- Describe the groups that differ, and their direction of difference (does your factor increase or decrease your Dependent variable)
- Describe the non-different groups (go to part 3)

3. Magnitude: How much is your dependent variable affected?

- What is eta-squared, for your IV? In other words, how much of the variance within groups for the dependent variable explained by this factor?

Two-way ANOVAs

(1) DESCRIPTION OF THE EXPERIMENT/STUDY/OBSERVATIONS

- What is the n in each group? Who are the subjects?
- What variables were measured and controlled, including precise descriptions of the (1) Independent variables and (2) Dependent variable
- What are the hypotheses? In English – don't call them that!

(2) APPROPRIATE DESCRIPTIVE STATISTICS

- Discuss any interesting (Unusual) Descriptive statistics

(3) RESULTS

A. FACTOR 1

1. Is anything going on?

- Report the F test results even if the results are not significant
 $F(2,41) = .047, p < .9541$
If $p > .05$ there is no significant main effect (go to next Factor)
If $p \leq .05$ there is a significant main effect (go to part 2)

2. What exactly is going on?

- If your Factor has only 2 levels you don't need Post-Hoc just explain the difference and the direction of difference (go to part 3)
- If your Factor has 3 or more levels you need to do the Bonferroni post hoc test

Bonferroni

- Describe the groups that differ, and their direction of difference (does your factor increase or decrease your Dependent variable)
- Describe the non-different groups (go to part 3)

3. Magnitude: How much is your dependent variable affected?

- What is eta-squared, η^2 for this factor? In other words, how much of the variance within groups for the dependent variable explained by this factor?

B. FACTOR 21. Is anything going on?

-Report the F test results even if the results are not significant.

$F(2,41) = .047, p < .9541$

If $p > .05$ there is no significant main effect (go to Interaction)

If $p \leq .05$ there is a significant main effect (go to part 2)

2. What exactly is going on?

-If your Factor has only 2 levels you don't need Post-Hoc just explain the difference and the direction of difference (go to part 3)

-If your Factor has 3 or more levels you need to do the Bonferroni post hoc test

Bonferroni

-Describe the groups that differ, and their direction of difference (does your factor increase or decrease your Dependent variable)

-Describe the non-different groups (go to part 3)

3. Magnitude: How much is your dependent variable affected?

-What is eta-squared, η^2 for this factor? In other words, how much of the variance within groups for the dependent variable explained by this factor?

C. INTERACTION

1. Is anything going on?

-Report the F test results even if the results are not significant

$F(2,41) = .047, p < .9541$

If $p > .05$ there is no significant interaction (your done)

If $p \leq .05$ there is a significant interaction. This means: the effect of ____ (independent variable 1) on ____ (the dependent variable of interest) depend on ____ (independent variable 2) (go to part 2)

2. Magnitude of Interaction

-What is eta-squared, η^2 for this Interaction? In other words, how much of the variance within groups for the dependent variable explained by this Interaction (go to part 3)

3. Describe the Interaction

-Use the graph to describe how the increase in one independent variable depend on the other independent variable in affecting your dependent variable (your done)

Correlation

Remember Correlation does not equal Causation

(1) DESCRIBE EXPERIMENT

-Research Hypothesis

-Describe how variables were measured

(2) APPROPRIATE DESCRIPTIVE STATISTICS

- Means
- Outliers

(3) RESULTS

- Report the correlation coefficient $r = .567$
- Report z-score ($z = 6.12$, $df = 34$, $p < .0012$)
- If $p > .05$, there is no relationship between variables (you're done)
- If $p \leq .05$ there is a significant relationship
 - Describe the relationship
 - If negative correlation when one variable increase the other decrease
 - If positive correlation when one variable increases the other increases

Regression**(1) DESCRIBE EXPERIMENT**

- Research Hypothesis
- Describe how variables were measured

(2) APPROPRIATE DESCRIPTIVE STATISTICS

- Means
- Outliers

(3) RESULTS

- Report f-score $f(1,45) = 4.25$, $p < .0123$
- If $p > .05$, your predictor variable is not a good predictor for your criterion variable (you're done)
- If $p \leq .05$ your predictor variable is a significant predictor for you criterion variable
- Report and define slope- This is the amount we predict our criterion (predicted) variable to increase or decrease (depending on sign) with each increase of 1 on our predictor variable
- Report and define intercept-The predicted value for a criterion with a predictor of 0.
- Report r^2 which is the proportion of variance in your criterion predicted by your predictor variable