

HPS201/771

Week 9 - Seminar

Seminar Outline

- ANOVA & Post-Hoc Tests
- jamovi Assignment – Task 6
- Practice Questions



	Wizards	Psychologists	Stats Lecturers
Mind Reading Score	1	5	9
	2	6	10
	3	7	11
	4	8	12
Average	2.5	6.5	10.5



Source	df	SS	MS	F
Treat	2	128.00	64.00	38.40
Error	9	15.00	1.67	
Total	11	133.00		



Tukey's Honestly
Significant
Difference (HSD)

Minimum difference between
two means that is required for
statistical significance

$$\bar{X}_i - \bar{X}_j = q_{critical} \sqrt{\frac{MS_{error}}{n}}$$

$$\bar{X}_i - \bar{X}_j = 3.95 \sqrt{\frac{1.67}{4}}$$

Based on number of
means involved in the
analysis and df_{error}

$$\bar{X}_i - \bar{X}_j = 2.55$$

	Wizards	Psychologists	Stats Lecturers
Mind Reading Score →	1	5	9
	2	6	10
	3	7	11
	4	8	12
Average ↗	2.5	6.5	10.5



jamovi

Stats.
Open.
Now.

Q1

Report the results of the analysis in APA format.

A One-way ANOVA was conducted to compare the mean reaction time between the control, decaf, coffee and water groups. The analysis revealed a significant difference between the groups, $F(3, 24) = 6.59, p = .002, \eta_p^2 = 0.45$. Tukey's HSD post-hoc analyses revealed that the mean reaction time for the control group ($M = 188.29, SD = 10.93$) was significantly lower than the mean reaction time for the coffee ($M = 208.00, SD = 12.88$), decaf ($M = 215.86, SD = 12.16$) and water ($M = 210.86, SD = 13.70$) groups.

Q2

In this study, the critical q -value for a comparison between the largest and smallest mean is 3.90. What is Tukey's HSD for this analysis?

$$\bar{X}_i - \bar{X}_j = q_{critical} \sqrt{\frac{MS_{error}}{n}}$$

$$\bar{X}_i - \bar{X}_j = 3.90 \sqrt{\frac{155.30}{7}}$$

$$\bar{X}_i - \bar{X}_j = 18.37$$



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Open.
Now.

AT1 - Task 6

Exam Practice

Q1

Post-hoc tests are run:

A

Before an ANOVA has been run to test specific hypothesis

B

After a non-significant ANOVA to determine which groups (treatments) are different

C

After a significant ANOVA to determine which groups are different

D

Both B and C

Q2

Post-hoc tests are not necessary if:

A

You have a significant ANOVA with 2 groups (treatments)

B

You have a significant ANOVA with 3 groups (Treatments)

C

You have a significant ANOVA with 4 groups

D

None of the above

Q3

In an ANOVA, an independent variable is referred to as:

A

A dependent variable

B

A factor

C

A group

D

A trial

Q4

A priori tests are set-up:

A

Before an analysis has been run to allow for specific hypothesis to be tested

B

After a non-significant ANOVA to determine which groups (treatments) are different

C

After a significant ANOVA to determine which groups are different

D

Both A and B

See you next week!