Statisztika 2. zh

1. List and describe the four scales of measurement. Give examples for each.
2. Explain the difference between one-tailed and two-tailed tests. Why we usually choose a two-tailed one?
3. How do we define degrees of freedom and why do we use this concept?
4. Explain the basics of correlational analyses (why we use it, what it does and does not tell us, determining strength, type and direction of relationship, etc.)
5. How do we interpret the SPSS correlation output?
6. What is regression analysis? When do we use multiple regression?
7. How do we interpret the SPSS regression output?
8. What are the assumptions of parametric tests? What can we do when these assumptions are not met?
9. What is a one-sample t-test and when do we use it? What is a related/unrelated t-test and when do we use them?
10. How do you report the results of a correlation? The results of a t-test?
11. What is effect size? How do you calculate it for a t-test?
12. What different types of ANOVA are there? When do we use each?
13. What is an interaction? How do we interpret it? Give an example.
14. How can we report effect sizes for an ANOVA?
15. What are post-hoc tests and planned contrasts? How do we decide which to use?
16. What are the non-parametric equivalents of the t-tests and ANOVAs?
17. What test can we use if we have nominal independent variables?
18. Kutatók az alkohol és a nikotin hatását vizsgálják különböző feladatokban. Egy erős dohányos, egy részeges és egy kontroll csoportot hasonlítanak össze. Mindhárom csoport elvégez egy memória feladatot, és vicc mesélési feladatot és egy figyelem összpontosítási feladatot. Magasabb pontszám, jobb teljesítményt jelent. A kutatók elvégzik az adatok elemzését, és az alábbi outputot kapják. Hogyan fogják jelenteni az eredményeket?

General Linear Model

Within-Subjects Factors

Measure: MEASURE_1

Task	Dependent Variable
1	MemoryScore
2	JokeScore
3	AttentionScore

Between-Subjects Factors

		Value Label	N
	1	Control	15
GROUP	2	Smoker	15
	3	Drinker	15

Mauchly's Test of Sphericity[a]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Task	.345	43.655	2	.000	.604	.642	.500

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept + GROUP

 Within Subjects Design: Task

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Task	Sphericity Assumed	28661.526	2	14330.763	141.914	.000	.772
	Greenhouse-Geisser	28661.526	1.208	23720.060	141.914	.000	.772
	Huynh-Feldt	28661.526	1.284	22322.878	141.914	.000	.772
	Lower-bound	28661.526	1.000	28661.526	141.914	.000	.772
Task * GROUP	Sphericity Assumed	2728.652	4	682.163	6.755	.000	.243
	Greenhouse-Geisser	2728.652	2.417	1129.106	6.755	.001	.243
	Huynh-Feldt	2728.652	2.568	1062.598	6.755	.001	.243
	Lower-bound	2728.652	2.000	1364.326	6.755	.003	.243
Error(Task)	Sphericity Assumed	8482.489	84	100.982			
	Greenhouse-Geisser	8482.489	50.750	167.144			
	Huynh-Feldt	8482.489	53.926	157.299			
	Lower-bound	8482.489	42.000	201.964			

Tests of Between-Subjects Effects

Measure: MEASURE_1

 Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Intercept	45009.074	1	45009.074	370.321	.000	.898
GROUP	354.548	2	177.274	1.459	.244	.065
Error	5104.711	42	121.541			

1. GROUP

Estimates

Measure: MEASURE_1

GROUP	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Control	16.067	1.643	12.750	19.383
Smoker	18.778	1.643	15.461	22.094
Drinker	19.933	1.643	16.617	23.250

2. Task

Estimates

Measure: MEASURE_1

Task	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	9.644	.688	8.256	11.033
2	38.778	2.488	33.757	43.799
3	6.356	.725	4.893	7.818

Pairwise Comparisons

Measure: MEASURE_1

(I) Task	(J) Task	Mean Difference (I-J)	Std. Error	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
1	2	-29.133[*]	2.499	.000	-35.364	-22.902
	3	3.289[*]	.925	.003	.982	5.596
2	1	29.133[*]	2.499	.000	22.902	35.364
	3	32.422[*]	2.523	.000	26.131	38.713
3	1	-3.289[*]	.925	.003	-5.596	-.982
	2	-32.422[*]	2.523	.000	-38.713	-26.131

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

3. GROUP * Task

Measure: MEASURE_1

GROUP	Task	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Control	1	9.400	1.191	6.996	11.804
	2	28.867	4.310	20.170	37.564
	3	9.933	1.255	7.400	12.467
Smoker	1	9.600	1.191	7.196	12.004
	2	39.933	4.310	31.236	48.630
	3	6.800	1.255	4.267	9.333
Drinker	1	9.933	1.191	7.529	12.338
	2	47.533	4.310	38.836	56.230
	3	2.333	1.255	-.200	4.867

Profile Plots

Estimated Marginal Means of MEASURE_1