EXERCISE 1

a. KOLMOGOROV-SMIRNOV: sign α

$0.263 > 0.05$ — There is normal distribution

b. LEVENE STATISTIC: sig α

$0.173 > 0.05$ — There is homoscedasticity

c. DURBIN WATSON = 0.186 (It is not)

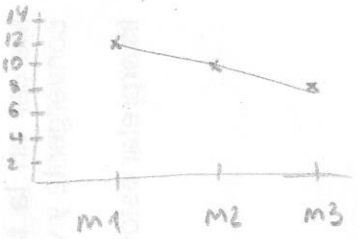
between 1.5 and 2.5 — There is not independence of errors

d. We don't have enough information to know it. As assumption of independence of errors was violated, we should do a non-parametric test to answer this question.

EXERCISE 2

P	MEASURE 1	MEASURE 2	MEASURE 3	$\bar{y}_{i\cdot}$
A	15	10	8	33/3 = 11
B	14	12	10	36/3 = 12
C	9	9	7	25/3 = 8'333
D	13	11	9	33/3 = 11
$\bar{y}_{\cdot j}$	51/4 = 12.75	42/4 = 10.5	34/4 = 8.5	$\bar{y}_{\cdot\cdot}$ = 10.583

a.



b.

	SS	df	MS	F
BETWEEN				
WITHIN				
A	36'167	k-1 = 2	18'083	12'761
SUBJECTS x A (error)	8'5	(n-1)(k-1) 3·2 = 6	1'417	
TOTAL				

$$SS_A = n \sum (\bar{y}_{\cdot j} - \bar{y}_{\cdot\cdot})^2 = 4\left[(12'75 - 10'583)^2 + (10.5 - 10.583)^2 + (8'5 - 10.583)^2\right] = 36'167$$

$$SS_{SxA} = \sum (y_{ij} + \bar{y}_{\cdot\cdot} - \bar{y}_{i\cdot} - \bar{y}_{\cdot j})^2 = (15 + 10'583 - 12'75 - 11)^2 + (14 + 10.583 - 12 - 12'75)^2 +$$
$$+ (9 + 10.583 - 8'333 - 12'75)^2 + (13 + 10'583 - 11 - 12'75)^2 + (10 + 10'583 - 11 - 10'5)^2 +$$
$$+ (12 + 10'583 - 12 - 10'5)^2 + (9 + 10'583 - 8'333 - 10'5)^2 + (11 + 10'583 - 11 - 10'5)^2 +$$
$$+ (8 + 10'583 - 11 - 8'5)^2 + (10 + 10'583 - 12 - 8'5)^2 + (7 + 10'583 - 8'333 - 8'5)^2 +$$
$$+ (9 + 10'583 - 11 - 8'5)^2 = 8'5$$

STAGE 1 ($\varepsilon = 1$)

$F(\alpha, k-1, (n-1)(k-1)) = F(0.05, 2, 6) = 5'14$

Femp Fteal

$12'761 > 5'14$ — H0

STAGE 2 ($\varepsilon = 1/(k-1) = 0.5$)

$F(0.05, 1, 3) = 10'13$

Femp Fteal

$12'761 > 10.13$ — H0

- there are statistically significant differences

EXERCISE 3

X	Y
0	8
0	7
0	7
0	6
1	4
1	3
1	1

$\bar{Y}_0 = \frac{28}{4} = 7$

$\bar{Y}_1 = \frac{8}{3} = 2'667$

a. $\hat{Y} = a + bX \rightarrow \hat{Y} = 7 - 4'333X$

$a = \bar{Y}_0 = 7$

$b = \bar{Y}_1 - \bar{Y}_0 = 2'67 - 7 = -4'333$

b. 7 is the mean in satisfaction for French citizens

For Greek citizen, the mean in satisfaction is 4'333 lower

EXERCISE 4

a

MODEL		SS	df	MS	F	Sig.
1	REG	694,923	1	694.923	21.343	<.05
	RES	520.964	16	32.56		
	TOTAL	1215.887	N-1 17			
2	REG	894.893	2	447.447	20.909	<.05
	RES	320.994	15	21.4		
	TOTAL	1215.887	17			

F_{tca} 0.05, 1, 16 = 4,49

F_{tca}, 0,05, 2, 15 = 3,68

X_1, X_2: $R^2 = \frac{SS_{exp}}{SS_T} \rightarrow 0.736 = \frac{894.893}{SS_T} \rightarrow 0.736\, SS_T = 894.893$

$SS_T = \frac{894.893}{0.736} = 1215'887$

X_1: $R^2 = \frac{SS_{exp}}{SS_T} \rightarrow 0.756^2 = \frac{SS_{exp}}{1215,887} \rightarrow 0.571 \cdot 1215,887 = SS_{exp}$

$694,923 = SS_{exp}$

b $R^2_{Y(2.1)} = R^2_{Y.12} - R^2_{Y1} = 0'736 - 0'571 = 0,165$

$R_{Y(2.1)} = \sqrt{0'165} = -0'406$

because X_2 (stress) presents an inverse relationship with attention (see Pearson)

EXERCISE 5

a. Yes because in "Moment Measurement", in Greenhouse-Geisser, sig < α
,000 < 0.05

b. No because in the "test of between subjects effects" sig > α
0.569 > 0.05

c. Yes because in "Moment Measurement x Treatment", in Greenhouse-Geisser,
sig < α
0.027 < 0.05