1 Clase 14 - 4/10/2018

(x emilopez)

- Ejercicio 1 de la Guía Práctica Anova Factorial
- En
  `Estadistica.Aplicada.2018/02_Disenio_Factorial_y_bloques/Practica_Anova_Factori`

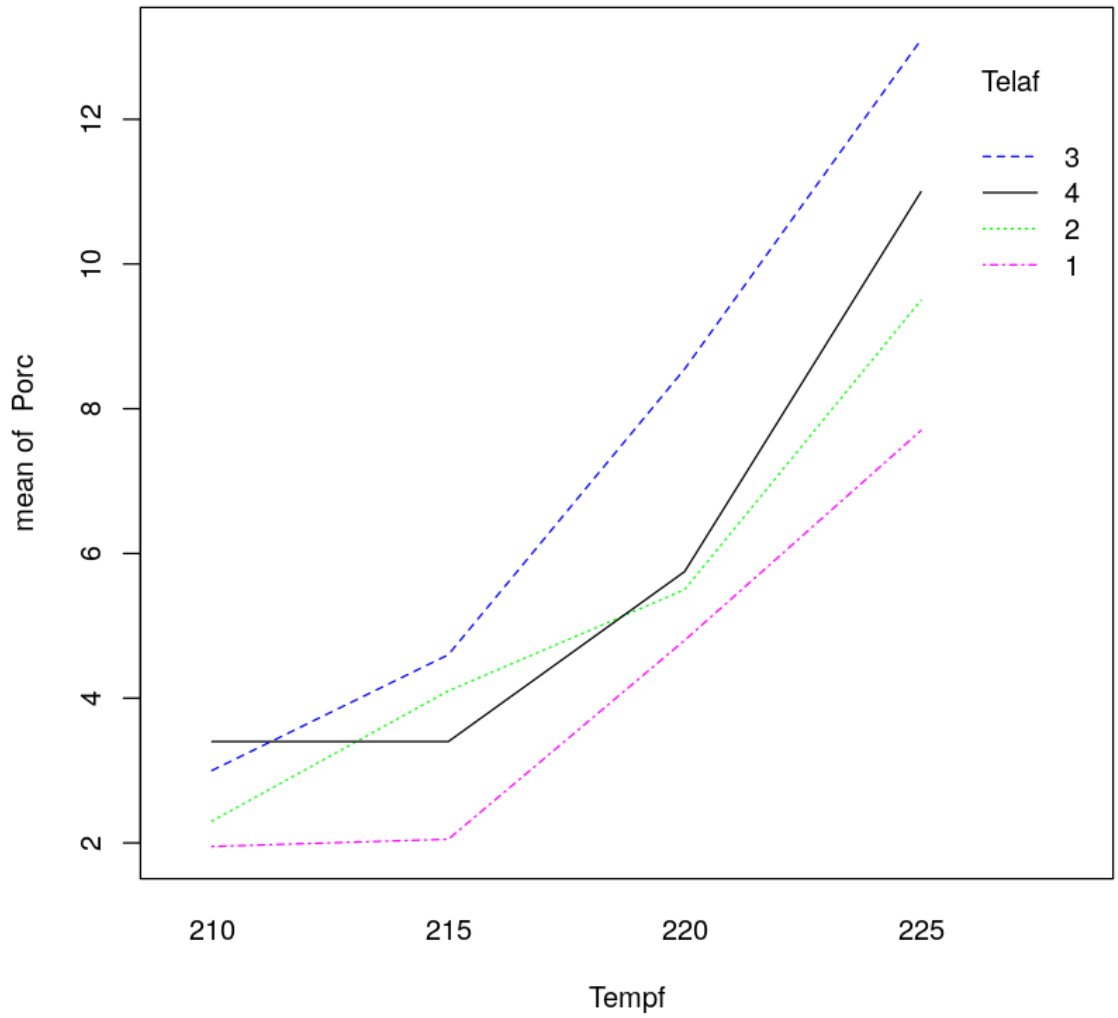
In [17]:

```
datos = read.table("/home/emiliano/EstadisticaAplicada/Estadistica.Aplicada.201
#head(datos)
attach(datos)
Telaf = as.factor(Tela)
Tempf = as.factor(Temp)
```

```
The following objects are masked from datos (pos = 5):

    Porc, Tela, Temp

The following objects are masked from datos (pos = 9):

    Porc, Tela, Temp

The following objects are masked from datos (pos = 11):

    Porc, Tela, Temp
```

In [8]:

```
library(lattice)
interaction.plot(Tempf, Telaf, Porc, col=c('magenta', 'green', 'blue', 'black'))
```



In [9]:

```
modelo = aov(Porc~Telaf*Tempf)
summary(modelo)
```

```
            Df Sum Sq Mean Sq F value   Pr(>F)
Telaf        3  41.88   13.96  279.18 5.05e-14 ***
Tempf        3 283.94   94.65 1892.91  < 2e-16 ***
Telaf:Tempf  9  15.86    1.76   35.24 7.09e-09 ***
Residuals   16   0.80    0.05
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

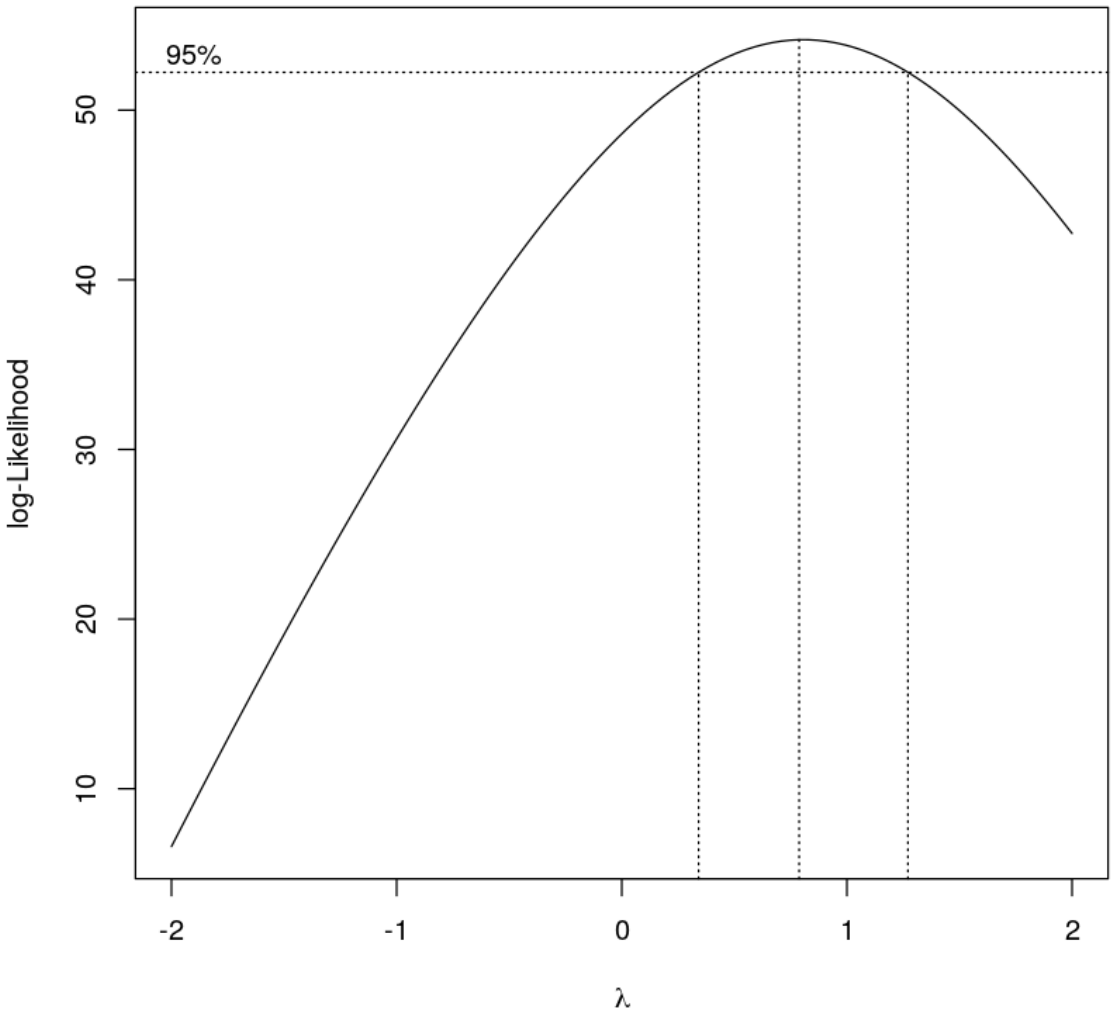
In [18]:

```
shapiro.test(modelo$residuals) # no puedo arreglar mucho teniendo precaucion pq
library(car)
leveneTest(modelo) # no es confiable el test por los pocos datos
library(MASS)
boxcox(modelo) # me dice que no puedo mejorar mucho, no puedo hacer transformac
# entonces, o bien aceptamos como esta o vamos por otro camino porque ninguna t
# aplicar a estos datos para que anova me quede mejor condicionado
```

```
        Shapiro-Wilk normality test

data:  modelo$residuals
W = 0.93155, p-value = 0.04327
```

```
Warning message in anova.lm(lm(resp ~ group)):
“ANOVA F-tests on an essentially perfect fit are unreliable”
```

	Df	F value	Pr(>F)
group	15	5.265436e+28	1.258744e-226
	16	NA	NA


95%
log-Likelihood
10
20
30
40
50
-2
-1
0
1
2
λ

In [11]:

```r
#f) aceptamos enotnces como esta, ahora vamos a hacer el analisis de tendencia

g = 4
contrasts(Tempf) = contr.poly(g, scores = c(210,215,220,225)) # porque no esta
modelo = aov(Porc~Telaf*Tempf)
summary.lm(modelo)
# vemos que el cubico es significativo, estamos testeando 15 cosas al mismo tie
# fijemos con que valor de alpha comparamos, con benferroni alpha_PC = 1 - (1-
# alpha0_que_quiero = 0.05
```

```
Call:
aov(formula = Porc ~ Telaf * Tempf)

Residuals:
    Min      1Q  Median      3Q     Max
-0.3000 -0.1125  0.0000  0.1125  0.3000

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    4.12500    0.07906  52.178  < 2e-16 ***
Telaf2         1.22500    0.11180  10.957 7.59e-09 ***
Telaf3         3.18750    0.11180  28.510 3.82e-15 ***
Telaf4         1.76250    0.11180  15.764 3.62e-11 ***
Tempf.L        4.47214    0.15811  28.284 4.33e-15 ***
Tempf.Q        1.40000    0.15811   8.854 1.45e-07 ***
Tempf.C       -0.55902    0.15811  -3.536  0.00275 **
Telaf2:Tempf.L  0.67082    0.22361   3.000  0.00848 **
Telaf3:Tempf.L  3.18640    0.22361  14.250 1.64e-10 ***
Telaf4:Tempf.L  1.15158    0.22361   5.150 9.68e-05 ***
Telaf2:Tempf.Q -0.30000    0.22361  -1.342  0.19845
Telaf3:Tempf.Q  0.07500    0.22361   0.335  0.74167
Telaf4:Tempf.Q  1.22500    0.22361   5.478 5.06e-05 ***
Telaf2:Tempf.C  1.22984    0.22361   5.500 4.85e-05 ***
Telaf3:Tempf.C  0.16771    0.22361   0.750  0.46414
Telaf4:Tempf.C  0.68200    0.22361   3.050  0.00764 **
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.2236 on 16 degrees of freedom
Multiple R-squared:  0.9977,    Adjusted R-squared:  0.9955
F-statistic: 455.6 on 15 and 16 DF,  p-value: < 2.2e-16
```

In [19]:

```r
alpha = 0.05
(alpha_PC = 1 - (1- alpha)^(1/15))
# 0.003413
# veo que no me puedo sacar de encima el cubico, los p-valores que son menores
# son los que tengo que mirar en la tabla previa
```

0.00341371294659032

In [20]:

```
datos$interaccion = factor(paste0(Telaf, Tempf))
attach(datos)
```

```
The following objects are masked from datos (pos = 3):

    Porc, Tela, Temp

The following objects are masked from datos (pos = 6):

    interaccion, Porc, Tela, Temp

The following objects are masked from datos (pos = 10):

    Porc, Tela, Temp

The following objects are masked from datos (pos = 12):

    Porc, Tela, Temp
```

In [21]:

```
# volvemos a ajustar
m2 = aov(Porc~interaccion)
summary(m2)
```

```
            Df Sum Sq Mean Sq F value Pr(>F)
interaccion 15  341.7   22.78   455.6 <2e-16 ***
Residuals   16    0.8    0.05
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

In [15]:

```
# OJO, DEMORA
source("/home/emiliano/EstadisticaAplicada/practica/mymultcomp.R")
minHSU(Porc, interaccion, alpha=0.05, 0.05, 16) # el mejor es el q encoje poco
# este nos dice que el mejor es 1210 y solamente son equivalentes a 1215 y 2210

# probablemente si uno usa tukey probablemente encontraría alguno mas porque ti
```

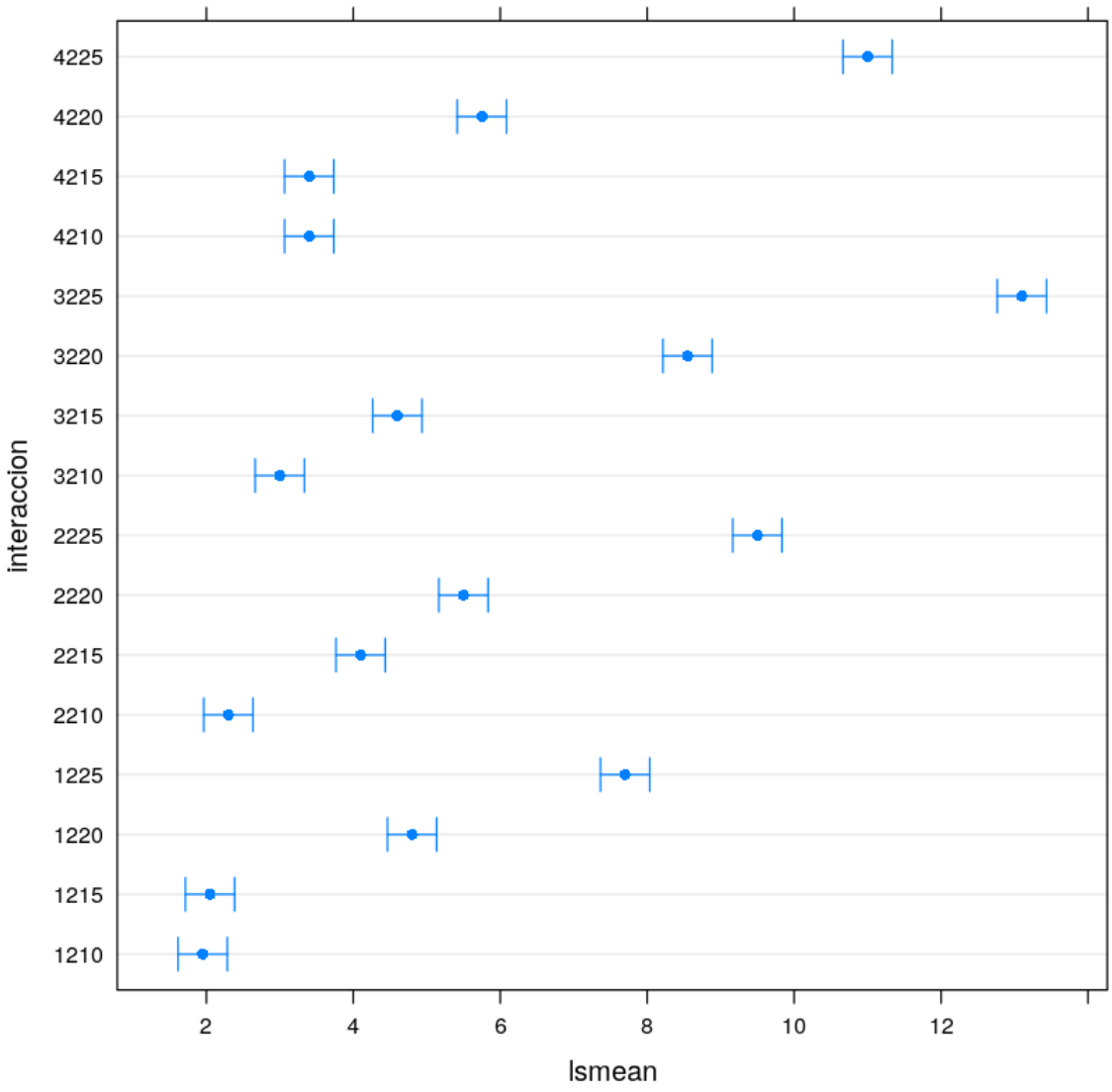
```
[1] "WARNING: esta funcion considera que todos los ni son iguales"
[1] "1210"
[1] "1215"
[1] "2210"
```

NA '1210' '1215' '2210'

In [16]:

```
library(lsmeans)
medias = lsmeans(m2, ~interaccion)
plot(medias)
```

```
The 'lsmeans' package is being deprecated.
Users are encouraged to switch to 'emmeans'.
See help('transition') for more information, including how
to convert 'lsmeans' objects and scripts to work with 'emmeans'.
```



In [ ]:

```

```

In [ ]:

```

```