

Reproducing and extending analyses from class for Feb 1: Let `yy2=c(pair65$heat,pair65$amb)`

```
> y2=cbind(yy2,rep(1:2,ea=9)) #matrix y2 below, 18 x 2
```

y2 [col. 1 labeled yy2

[1,] 244 1	[10,] 225 2
[2,] 255 1	[11,] 247 2
[3,] 253 1	[12,] 249 2
[4,] 254 1	[13,] 253 2
[5,] 251 1	[14,] 245 2
[6,] 269 1	[15,] 259 2
[7,] 248 1	[16,] 242 2
[8,] 252 1	[17,] 255 2
[9,] 292 1	[18,] 286 2

```
> yy2=y2 #This is to save the original version of the data y2 in matrix yy2
```

```
> y2[,1]=rank(y2[,1]) #this replaces the first column of scores in y2 with their ranks; y2 next
```

yy2 #Note: I print y2 w/ Courier New Font, since this aligns columns

```
[1,] 3.0 1
[2,] 13.5 1
[3,] 10.5 1
[4,] 12.0 1
[5,] 8.0 1
[6,] 16.0 1
[7,] 6.0 1
[8,] 9.0 1
[9,] 18.0 1
[10,] 1.0 2
[11,] 5.0 2
[12,] 7.0 2
[13,] 10.5 2
[14,] 4.0 2
[15,] 15.0 2
[16,] 2.0 2
[17,] 13.5 2
[18,] 17.0 2
```

```
str(granova.1w) #the str function is repeatedly useful; get used to using it!
```

```
function (yy, group = NULL, dg = 2, h.rng = 1.25, v.rng = 0.2,
  box = FALSE, jj = 1, kx = 1, px = 1, size.line = -2.5, top.dot = 0.15,
  trmean = FALSE, resid = FALSE, dosqrs = TRUE, ident = FALSE,
  pt.lab = NULL, xlab = NULL, ylab = NULL, main = NULL, ...)
- attr(*, "source")= chr [1:202] "function(yy, group = NULL, dg = 2, h.rng = 1.25, v.rng = .2, box =
FALSE, jj = 1, kx = 1, px = 1, ..."

```

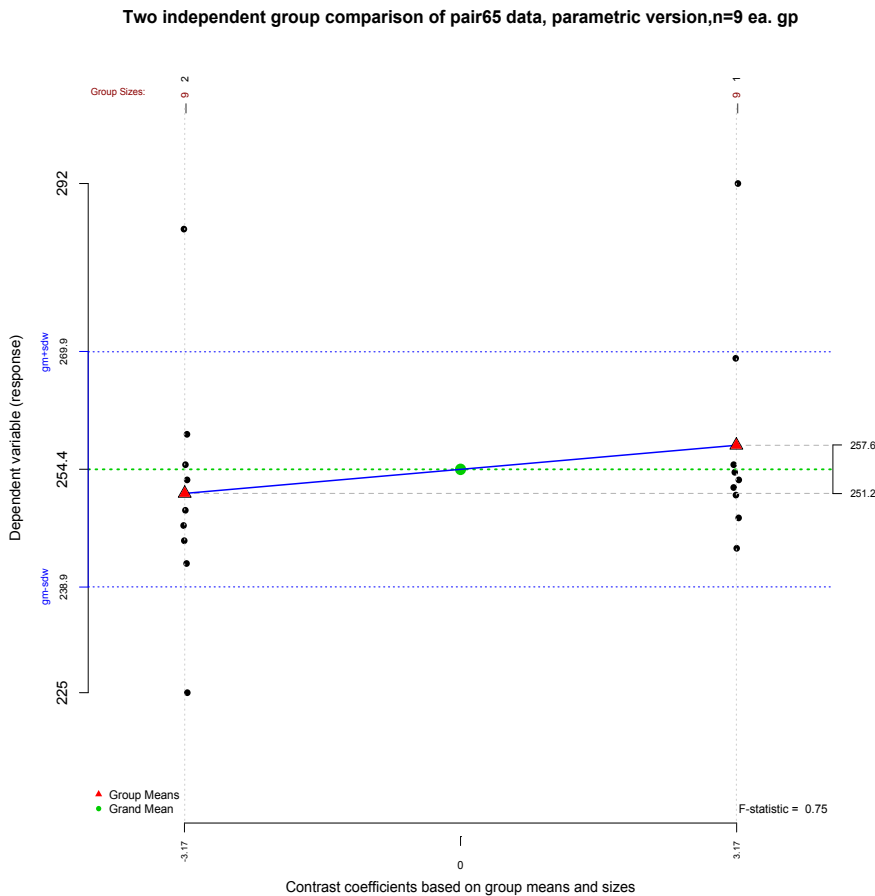
```
> granova.1w(yy2[,1],yy2[,2],dosq=F,main="Two independent group comparison of pair65
data, parametric version,n=9 ea. gp")
```

\$grandsum

Grandmean	df.bet	df.with	MS.bet	MS.with	F.stat	F.prob	SS.bet/SS.tot
254.39	1.00	16.00	180.50	239.24	0.75	0.40	0.04

\$stats

Size	Contrast	Coef	Wt'd Mean	Mean	Trim'd Mean	Var.	St. Dev.
2	9	-3.17	251.22	251.22	250.00	265.19	16.28
1	9	3.17	257.56	257.56	254.57	213.28	



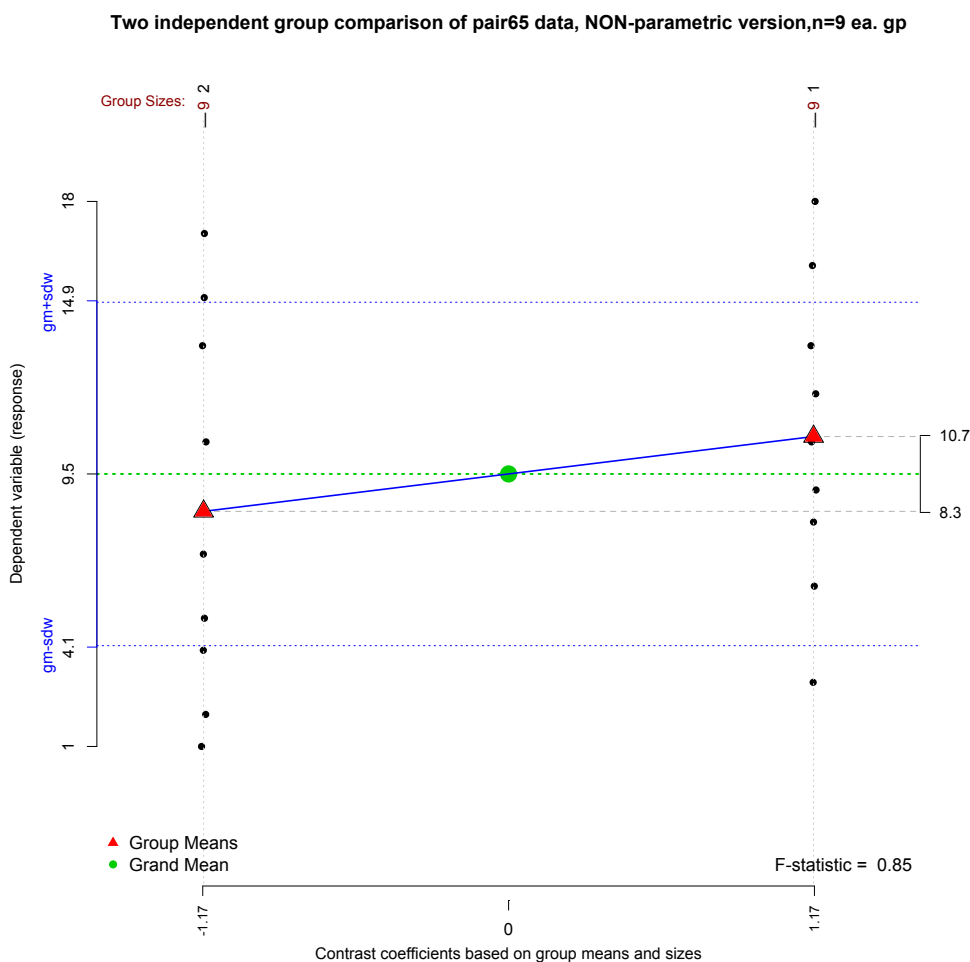
```
granova.1w(y2[,1],y2[,2],dosq=F,kx=1.4,px=1.4,main="Two independent group comparison of pair65 data, NON-parametric version,n=9 ea. gp") $grandsum
```

Grandmean	df.bet	df.with	MS.bet	MS.with	F.stat	F.prob	SS.bet/SS.tot
9.50	1.00	16.00	24.50	28.69	0.85	0.37	0.05

```
$stats
```

Size	Contrast	Coef	Wt'd Mean	Mean	Trim'd Mean	Var.	St. Dev.
2	9	-1.17	8.33	8.33	8.14	34.56	5.88
1	9	1.17	10.67	10.67	10.71	22.81	4.78

**#Note: I reset kx and px to larger than default values to increase font sizes in the next graphic; compare with what you see above. Try changing h.rng and v.rng values from defaults to see how you can control the graphic's appearance and readability, depending on where it will be used.**



You should examine wilcox.test for these data, as in

```
wilcox.test(pair65$heat,pair65$amb,pair=F) #I've used the original pair65 data for input
```

Wilcoxon rank sum test with continuity correction

data: pair65\$heat and pair65\$amb

$W = 51$ ,  $p\text{-value} = 0.3767$  **#NOTE: even though ENTIRELY different methods have been used above for the second granova.1w run, the p values of .37 and .38 (after rounding) are nearly identical. This tells a useful story (that I will not have time to go into, but you may want to).**

alternative hypothesis: true location shift is not equal to 0

Warning message:

```
In wilcox.test.default(pair65$heat, pair65$amb, pair = F) :
```

```
cannot compute exact p-value with ties
```