Using par and cex for graphs

Michael Blasingame
SCRG
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• The function ‘par’ can be used to manipulate the current plot(s)
• For example, it’s most commonly used to allow for multiple plots in one figure
• Code example: par(mfrow = c(1, 3))
• Syntax interpretation: Set my figure window to allow a 1 (row) by 3 (column) plotting space
par(mfrow=c(x,y))
par(new=T)

• Sometimes, you want to be able to plot two different results on the same plot but can’t easily do this in one command due to dataset size
• Example: Plot English and Spanish means of some effect with error bars, different colors, different lines, etc.
• However, R will default to a new plot each time...
par(new=T)

• The command par(new=T) can be useful here
• Syntax interpretation: Keep the plot I just created active—don’t create a new one with this next command
• Example (in this order):
  – plotmeans(data$Correct[data$TaskLang=="ENG”...)
  – par(new=T)
  – plotmeans(data$Correct[data$TaskLang=="SPN”...)}
par(new=T)
par(new=T)

• Quick caveat: par(new=T) only works if the axes are the same! You can’t plot a means plot and then an interaction plot using par(new=T)
par(mar=c(w,x,y,z))

• Sometimes, your axes get crowded
• Using the `par(mar=c(w,x,y,z))` tells the plot how much space the bottom (w), left (x), top (y), and right (z) sides get
• Much of this depends on trial and error (just fiddling a bit until it looks like)
par(mar=c(w,x,y,z))

• You can combine mar with other par features
• Example:
  – par(mfrow=c(1,3),mar=c(5,5,5,2))
• Interpretation: Give me a 1 (row) by 3 (column) plot with extra space on the bottom, left, and top (but not a lot of space on the right)
• Sometimes, we want to override the axes labels, because R isn’t sure what our unique labeling system means.
axis

• The axis parameter can be useful in overriding where labels are put

• Example:
  – axis(1.5,1,"Clear Speech",cex.axis=1.5)
  – axis(1.5,2,"Plain Speech",cex.axis=1.5)

• Interpretation: First number indicates where in the vertical space; second number indicates which tick mark. Third is “label”; fourth is size (more on cex in a minute)
axis
axis

• Quick caveat: you must turn off your x-axis labels using `xaxt='n'`

• Example:
  – `plot(data...., xaxt='n', main="Title"...)`
The `cex` family tells you how big to magnify text.

Default is ‘1’

Family includes:

- `cex`
- `cex.main`
- `cex.axis`
- `cex.lab`
cex

– cex: for legends and other independent functions outside of the ‘plot’ family
– cex.main: for titles (must have a main=“…”)
– cex.axis: for axes (within the ‘axis’ function)
– cex.lab: for labels within the ‘plot’ family
– Example:
  – plot(…. ,cex.lab=1.5,cex.main=2,….)
– Interpretation: magnify the labels by 1.5 and the title by 2
cex

English Learners

speech style

cex.label

cex.axis

cex.main

Percent Correct Word Identification

Clear Speech  Plain Speech

-- English
-- Spanish
legend

• Legends orient the reader to your figure without you having to explain each symbol

• Code:
  –
  legend("bottomleft",lty=c(2,1),col=c("black","dark red"),c("English","Spanish"),cex=1.5)
  – Interpretation: legend(“placement”, symbol used, color of symbols, what the different symbols correspond to, magnification parameter)
  – NB: Placement can be “topright”, “topleft”, “bottomright”, “bottomleft”
legend

• ‘legend’ only works if there is a current plot open!
• Not to be confused with par(new=T)
• Also, notice how ‘cex’ is used (not ‘cex.label’, etc.) because ‘legend’ is its own separate command line (think of it as a mini-figure independent of the rest of the plot)
plotmeans

• Need library(gplots)
• Calculates means of levels within a factor and plots mean + 95% confidence interval
• User can specify CI confidence level (defaults to p = .95) and a variety of other parameters
plotmeans

• Example:
  – `plotmeans(data$DependentVariable~data$Factor, lty=2, col="darkred", main="Title", xlab="Factor", ylab="Response", ylim=c(minDV,maxDV),ci.label=T, n.label=T, p = .95)`
  – Interpretation: `plotmeans` (dependent variable, factor (each level within the factor is separate), line type, color for line, title, factor group, response, y-axis range, #s for CI, n within each level, confidence level)
  – See slide 3 for example combining ‘plotmeans’ and ‘axis’ functions