

Analysis file accompanying Beck and Vasishth's article *Multiple Focus*, to appear in Journal of Semantics

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1 Preliminaries

Load data:

```
> e1datafiller <- read.table(file = "e1datafiller.txt")  
> colnames(e1datafiller) <- c("subject", "itemtype", "item", "rating",
```

```

+      "RT")
> e2datafiller <- read.table(file = "e2datafiller.txt")
> colnames(e2datafiller) <- c("subject", "itemtype", "item", "rating",
+      "RT")
> e1e2 <- read.table("targetcontrol.txt", header = FALSE)
> colnames(e1e2) <- c("Subject", "Expt", "item", "cond", "rating",
+      "RT", "binary")

```

The mean ratings for fillers for each session:

```

> (meanfillere1 <- with(e1datafiller, tapply(rating, IND = list(item),
+      mean)))

```

	1	2	3	4	5	6	7	8
3.933333	3.933333	3.800000	3.933333	3.866667	3.733333	3.933333	4.000000	
	9	10	11	12	13	14	15	16
4.000000	3.800000	3.933333	3.933333	3.933333	3.333333	3.733333	1.133333	
	17	18	19	20				
1.133333	2.866667	1.133333	1.200000					

```

> (meanfillere2 <- with(e2datafiller, tapply(rating, IND = list(item),
+      mean)))

```

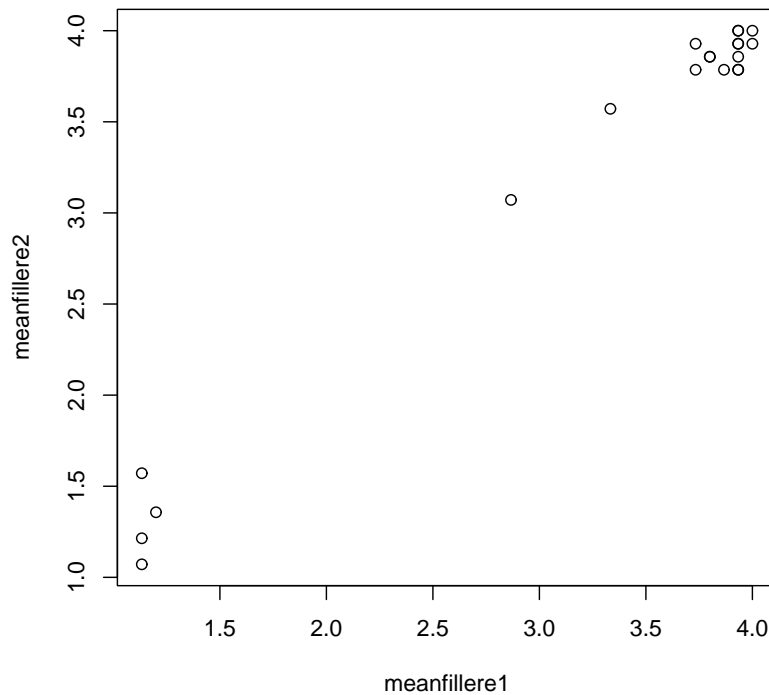
	1	2	3	4	5	6	7	8
4.000000	3.785714	3.857143	3.928571	3.785714	3.928571	4.000000	4.000000	
	9	10	11	12	13	14	15	16
3.928571	3.857143	3.785714	3.928571	3.857143	3.571429	3.785714	1.571429	
	17	18	19	20				
1.071429	3.071429	1.214286	1.357143					

The participants' responses to the fillers (in the two sessions) are, as expected, very steady:

```

> plot(meanfillere1, meanfillere2)

```



2 Data analysis

2.1 Targets versus controls (overall)

First, the mixed-effects model's results:

```
> summary(model.cont <- lmer(rating ~ Expt + (1 | Subject) + (1 |
+ item), e1e2))
```

Linear mixed-effects model fit by REML

Formula: rating ~ Expt + (1 | Subject) + (1 | item)

Data: e1e2

AIC BIC logLik MLdeviance REMLdeviance

688.7 703 -340.3 676.2 680.7

Random effects:

Groups	Name	Variance	Std.Dev.
Subject		0.264248	0.51405
item		0.064184	0.25335
Residual		0.668304	0.81750

number of obs: 261, groups: Subject, 16; item, 9

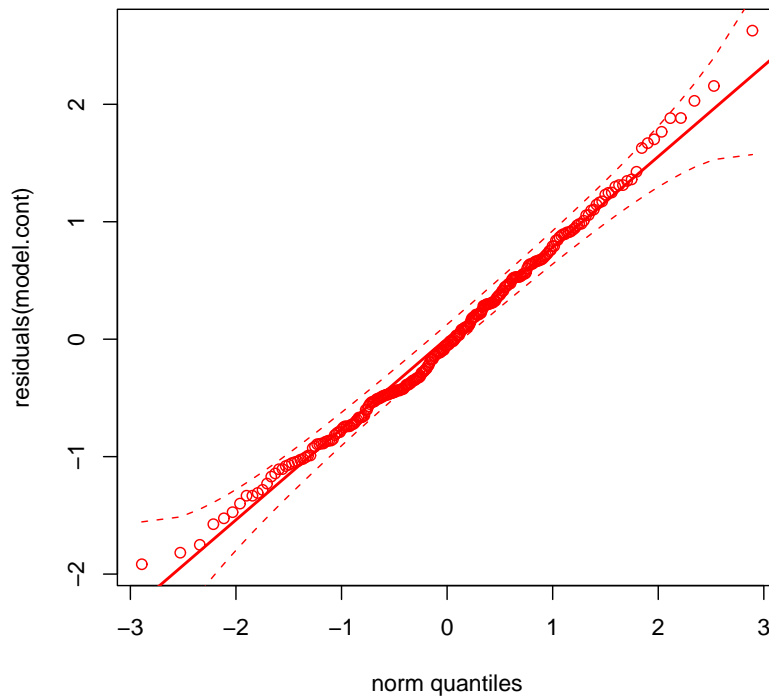
Fixed effects:

	Estimate	Std. Error	t value
(Intercept)	1.9450	0.1698	11.452
ExptE2	0.4183	0.1056	3.962

```
Correlation of Fixed Effects:
      (Intr)
ExptE2 -0.293
```

For each lme analysis we check whether the residuals are approximately normally distributed:

```
> qq.plot(residuals(model.cont))
```



Next, the ANOVA:

```
> e1e2.balanced <- subset(e1e2, (Subject != 109 & Subject != 108 &
+   Subject != 106))
> with(e1e2.balanced, tapply(rating, Expt, mean))
```

```
      E1      E2
1.931624 2.350427
```

```
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)
```

```
      E1 E2
1      9  9
2      9  9
```

```

3    9    9
4    9    9
101  9    9
102  9    9
103  9    9
104  9    9
105  9    9
107  9    9
110  9    9
111  9    9
112  9    9

```

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

```
Error: Subject
```

```
      Df Sum Sq Mean Sq F value Pr(>F)
Residuals 12 76.179    6.348
```

```
Error: Subject:Expt
```

```
      Df  Sum Sq Mean Sq F value  Pr(>F)
Expt    1 10.2607 10.2607  9.1467 0.01058 *
Residuals 12 13.4615   1.1218
```

```
---
```

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Error: Within
```

```
      Df  Sum Sq Mean Sq F value Pr(>F)
Residuals 208 144.444    0.694
```

```
> summary(aov(rating ~ Expt + Error(factor(item)/Expt), e1e2.balanced))
```

```
Error: factor(item)
```

```
      Df  Sum Sq Mean Sq F value Pr(>F)
Residuals  8 18.4615   2.3077
```

```
Error: factor(item):Expt
```

```
      Df  Sum Sq Mean Sq F value Pr(>F)
Expt    1 10.2607 10.2607  3.4522 0.1002
Residuals  8 23.7778   2.9722
```

```
Error: Within
```

```
      Df  Sum Sq Mean Sq F value Pr(>F)
Residuals 216 191.846    0.888
```

2.2 Also vs only

```
> summary(model.cont.1 <- lmer(rating ~ Expt + (1 | Subject), subset(e1e2,
+   item == 1)))
```

```
Linear mixed-effects model fit by REML
```

```
Formula: rating ~ Expt + (1 | Subject)
```

```

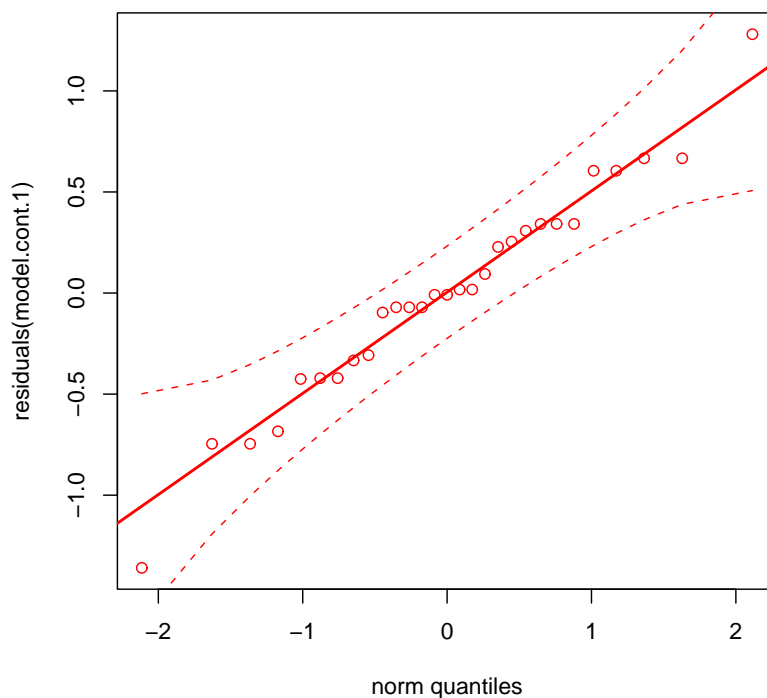
Data: subset(e1e2, item == 1)
   AIC   BIC logLik MLdeviance REMLdeviance
81.05 85.15 -37.52    72.76    75.05
Random effects:
Groups   Name Variance Std.Dev.
Subject    0.41813  0.64663
Residual    0.45167  0.67206
number of obs: 29, groups: Subject, 16

Fixed effects:
              Estimate Std. Error t value
(Intercept)   1.8190     0.2391   7.609
ExptE2         1.5876     0.2562   6.198

Correlation of Fixed Effects:
      (Intr)
ExptE2 -0.510

> qq.plot(residuals(model.cont.1))

```



```

> e1e2.balanced <- subset(e1e2, (item == 1 & Subject != 109 & Subject !=
+   108 & Subject != 106))
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)

```

```

      E1 E2
1      1  1

```

```

2    1    1
3    1    1
4    1    1
101  1    1
102  1    1
103  1    1
104  1    1
105  1    1
107  1    1
110  1    1
111  1    1
112  1    1

```

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

```
Error: Subject
```

```
      Df Sum Sq Mean Sq F value Pr(>F)
Residuals 12 17.1538  1.4295
```

```
Error: Subject:Expt
```

```
      Df Sum Sq Mean Sq F value Pr(>F)
Expt    1 15.3846 15.3846  32.877 9.4e-05 ***
Residuals 12  5.6154  0.4679
```

```
---
```

```
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

2.3 Also vs nobody

```
> summary(model.cont.4 <- lmer(rating ~ Expt + (1 | Subject), subset(e1e2,
+   item == 4)))
```

```
Linear mixed-effects model fit by REML
```

```
Formula: rating ~ Expt + (1 | Subject)
```

```
Data: subset(e1e2, item == 4)
```

```
      AIC      BIC logLik MLdeviance REMLdeviance
81.39 85.49 -37.69      73.1      75.39
```

```
Random effects:
```

```
Groups   Name Variance Std.Dev.
Subject      0.62868  0.7929
Residual      0.35879  0.5990
```

```
number of obs: 29, groups: Subject, 16
```

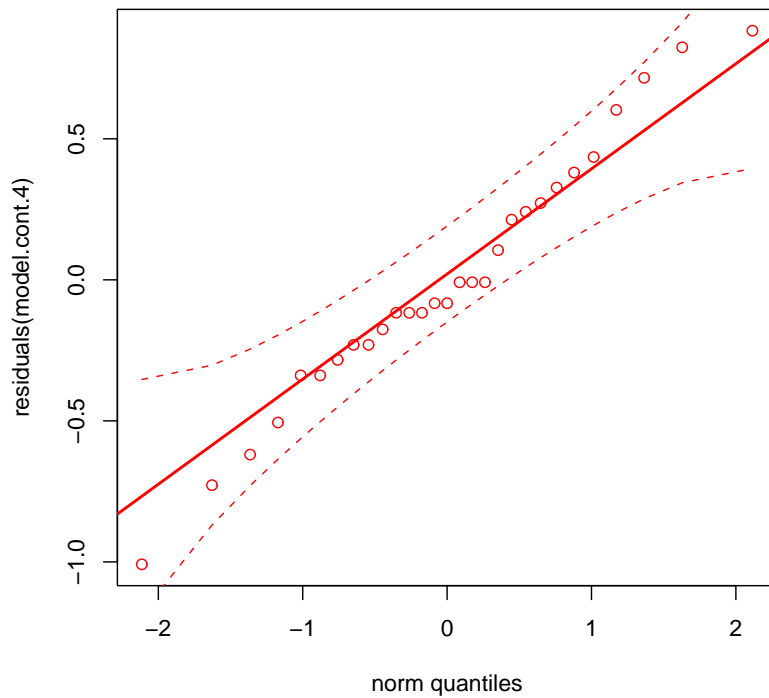
```
Fixed effects:
```

```
      Estimate Std. Error t value
(Intercept)  2.2282     0.2533  8.796
ExptE2        0.1082     0.2303  0.470
```

```
Correlation of Fixed Effects:
```

```
      (Intr)
ExptE2 -0.430
```

```
> qq.plot(residuals(model.cont.4))
```



```
> e1e2.balanced <- subset(e1e2, (item == 4 & Subject != 109 & Subject !=
+ 108 & Subject != 106))
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)
```

	E1	E2
1	1	1
2	1	1
3	1	1
4	1	1
101	1	1
102	1	1
103	1	1
104	1	1
105	1	1
107	1	1
110	1	1
111	1	1
112	1	1

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

```
Error: Subject
      Df Sum Sq Mean Sq F value Pr(>F)
Residuals 12 22.6154  1.8846
```



```
Error: Subject:Expt
      Df Sum Sq Mean Sq F value Pr(>F)
Expt    1 0.0385  0.0385  0.1034 0.7533
Residuals 12 4.4615  0.3718
```

2.4 Also vs even

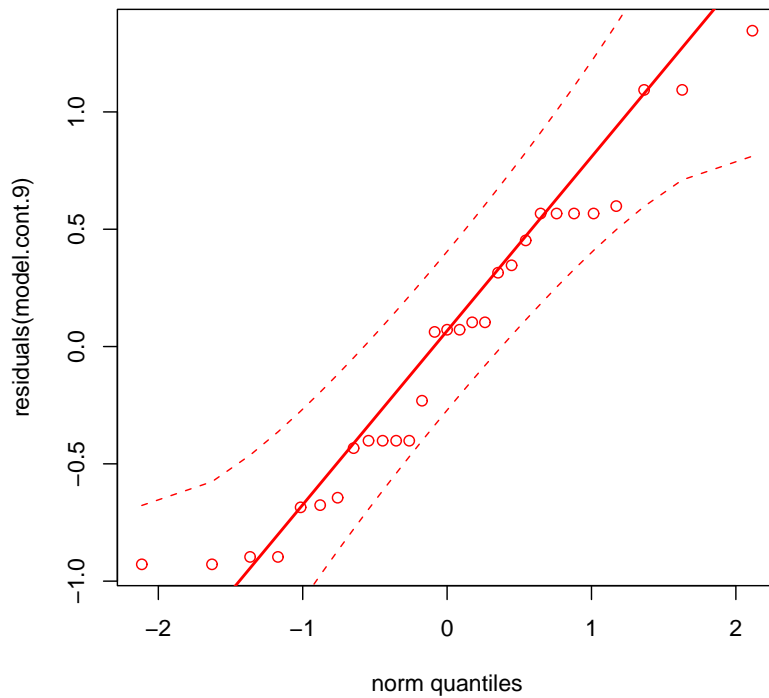
```
> summary(model.cont.9 <- lmer(rating ~ Expt + (1 | Subject), subset(e1e2,
+   item == 9)))
```

```
Linear mixed-effects model fit by REML
Formula: rating ~ Expt + (1 | Subject)
Data: subset(e1e2, item == 9)
      AIC      BIC logLik MLdeviance REMLdeviance
83.64 87.74 -38.82      75.57      77.64
Random effects:
Groups   Name Variance Std.Dev.
Subject      0.30345  0.55086
Residual      0.59557  0.77173
number of obs: 29, groups: Subject, 16
```

```
Fixed effects:
              Estimate Std. Error t value
(Intercept)  2.34870    0.24395   9.628
ExptE2       -0.03158    0.29191  -0.108
```

```
Correlation of Fixed Effects:
      (Intr)
ExptE2 -0.572
```

```
> qq.plot(residuals(model.cont.9))
```



```
> e1e2.balanced <- subset(e1e2, (item == 9 & Subject != 109 & Subject !=
+ 108 & Subject != 106))
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)
```

	E1	E2
1	1	1
2	1	1
3	1	1
4	1	1
101	1	1
102	1	1
103	1	1
104	1	1
105	1	1
107	1	1
110	1	1
111	1	1
112	1	1

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

```
Error: Subject
      Df Sum Sq Mean Sq F value Pr(>F)
Residuals 12 13.6154  1.1346
```

```
Error: Subject:Expt
      Df      Sum Sq   Mean Sq    F value Pr(>F)
Expt    1 1.972e-31 1.972e-31 3.381e-31      1
Residuals 12      7.0000      0.5833
```

2.5 Only vs also

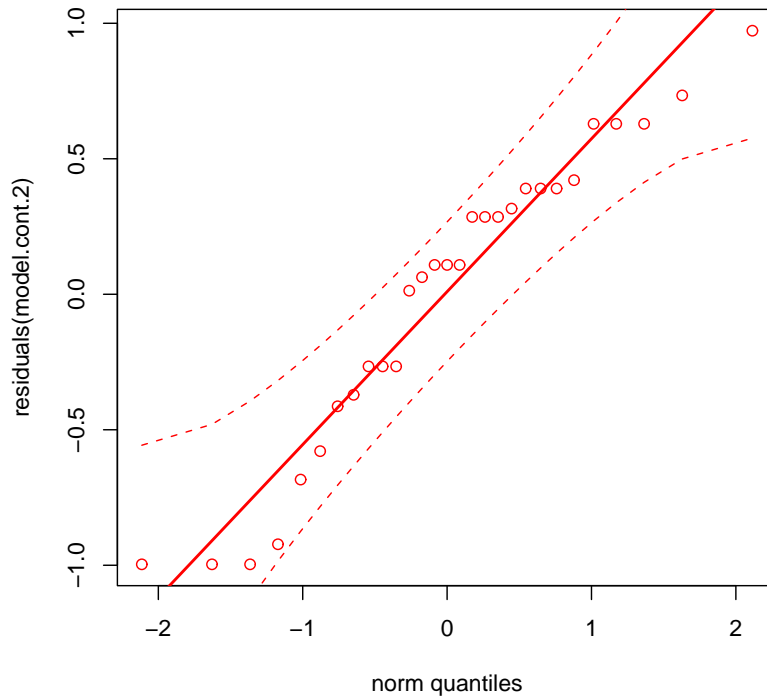
```
> summary(model.cont.2 <- lmer(rating ~ Expt + (1 | Subject), subset(e1e2,
+   item == 2)))
```

```
Linear mixed-effects model fit by REML
Formula: rating ~ Expt + (1 | Subject)
Data: subset(e1e2, item == 2)
AIC      BIC logLik MLdeviance REMLdeviance
86.16 90.26 -40.08      78.25      80.16
Random effects:
Groups   Name Variance Std.Dev.
Subject      0.56450  0.75134
Residual      0.51382  0.71681
number of obs: 29, groups: Subject, 16
```

```
Fixed effects:
              Estimate Std. Error t value
(Intercept)   1.8676      0.2658   7.026
ExptE2         1.1049      0.2739   4.035
```

```
Correlation of Fixed Effects:
      (Intr)
ExptE2 -0.489
```

```
> qq.plot(residuals(model.cont.2))
```



```
> e1e2.balanced <- subset(e1e2, (item == 2 & Subject != 109 & Subject !=
+ 108 & Subject != 106))
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)
```

	E1	E2
1	1	1
2	1	1
3	1	1
4	1	1
101	1	1
102	1	1
103	1	1
104	1	1
105	1	1
107	1	1
110	1	1
111	1	1
112	1	1

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

Error: Subject

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Residuals	12	22.4615	1.8718		

```
Error: Subject:Expt
      Df Sum Sq Mean Sq F value    Pr(>F)
Expt    1  7.5385   7.5385     14 0.002813 **
Residuals 12  6.4615   0.5385
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

2.6 Only vs nobody

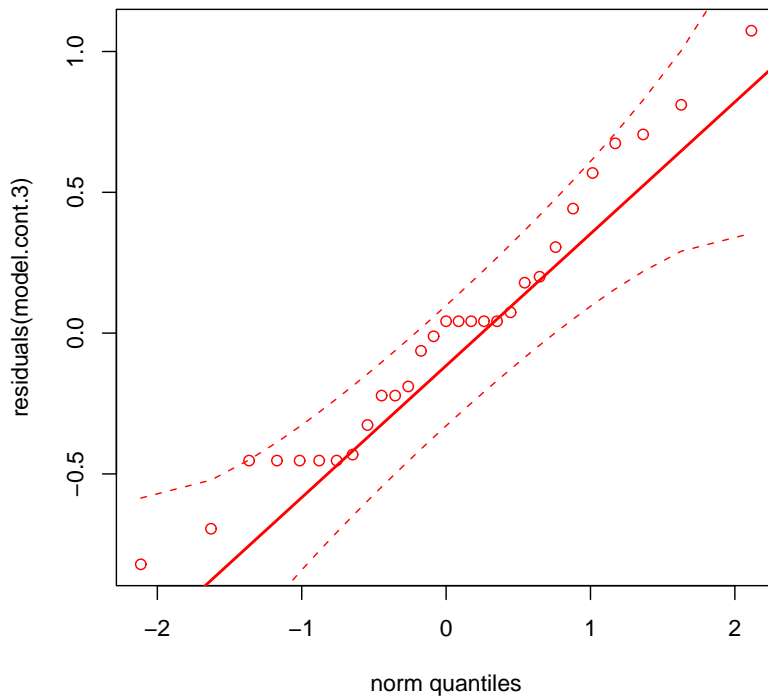
```
> summary(model.cont.3 <- lmer(rating ~ Expt + (1 | Subject), subset(e1e2,
+   item == 3)))
```

```
Linear mixed-effects model fit by REML
Formula: rating ~ Expt + (1 | Subject)
Data: subset(e1e2, item == 3)
AIC      BIC logLik MLdeviance REMLdeviance
79.77 83.87 -36.88      71.38      73.77
Random effects:
Groups   Name Variance Std.Dev.
Subject      0.51794  0.71968
Residual      0.37005  0.60832
number of obs: 29, groups: Subject, 16
```

```
Fixed effects:
              Estimate Std. Error t value
(Intercept)   1.5323      0.2407   6.365
ExptE2         0.4948      0.2332   2.122
```

```
Correlation of Fixed Effects:
      (Intr)
ExptE2 -0.459
```

```
> qq.plot(residuals(model.cont.3))
```



```
> e1e2.balanced <- subset(e1e2, (item == 3 & Subject != 109 & Subject !=
+ 108 & Subject != 106))
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)
```

	E1	E2
1	1	1
2	1	1
3	1	1
4	1	1
101	1	1
102	1	1
103	1	1
104	1	1
105	1	1
107	1	1
110	1	1
111	1	1
112	1	1

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

```
Error: Subject
      Df Sum Sq Mean Sq F value Pr(>F)
Residuals 12 19.3846  1.6154
```

```
Error: Subject:Expt
      Df Sum Sq Mean Sq F value Pr(>F)
Expt    1  1.3846   1.3846    3.6 0.0821 .
Residuals 12  4.6154   0.3846
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

2.7 Only vs even

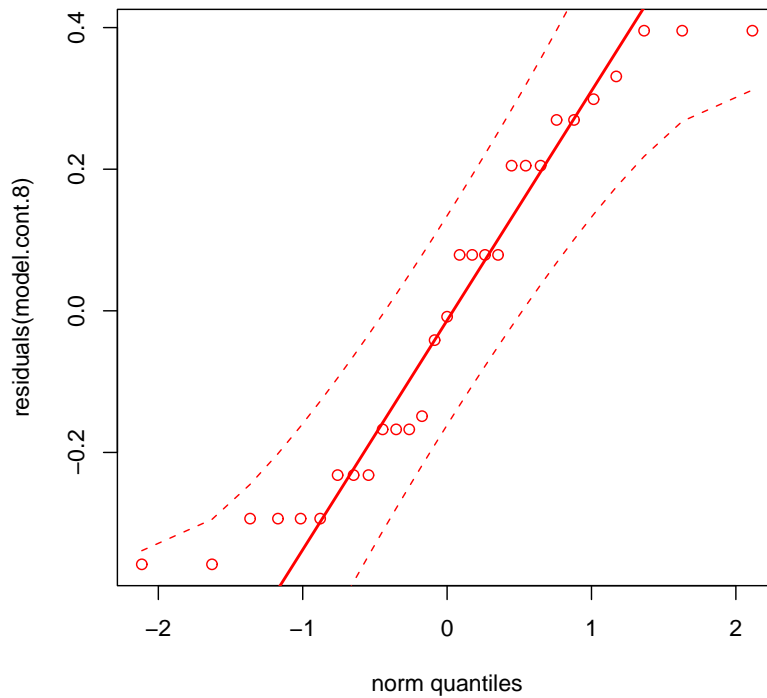
```
> summary(model.cont.8 <- lmer(rating ~ Expt + (1 | Subject), subset(e1e2,
+   item == 8)))
```

```
Linear mixed-effects model fit by REML
Formula: rating ~ Expt + (1 | Subject)
Data: subset(e1e2, item == 8)
AIC      BIC logLik MLdeviance REMLdeviance
62.13 66.23 -28.07      52.38      56.13
Random effects:
Groups   Name Variance Std.Dev.
Subject      0.44924  0.67025
Residual      0.12955  0.35994
number of obs: 29, groups: Subject, 16
```

```
Fixed effects:
              Estimate Std. Error t value
(Intercept)   1.6647      0.1927   8.638
ExptE2         0.3724      0.1394   2.671
```

```
Correlation of Fixed Effects:
      (Intr)
ExptE2 -0.341
```

```
> qq.plot(residuals(model.cont.8))
```



```
> e1e2.balanced <- subset(e1e2, (item == 8 & Subject != 109 & Subject !=
+ 108 & Subject != 106))
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)
```

	E1	E2
1	1	1
2	1	1
3	1	1
4	1	1
101	1	1
102	1	1
103	1	1
104	1	1
105	1	1
107	1	1
110	1	1
111	1	1
112	1	1

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

Error: Subject

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Residuals	12	11.5385	0.9615		


```
Error: Subject:Expt
      Df Sum Sq Mean Sq F value Pr(>F)
Expt    1 0.96154 0.96154    7.5 0.01798 *
Residuals 12 1.53846 0.12821
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

2.8 Even vs only

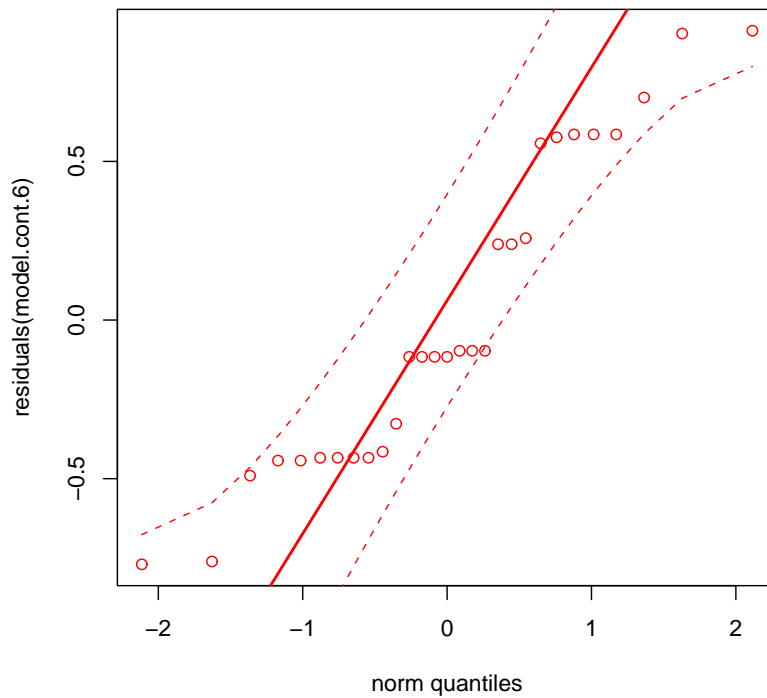
```
> summary(model.cont.6 <- lmer(rating ~ Expt + (1 | Subject), subset(e1e2,
+   item == 6)))
```

```
Linear mixed-effects model fit by REML
Formula: rating ~ Expt + (1 | Subject)
Data: subset(e1e2, item == 6)
    AIC   BIC logLik MLdeviance REMLdeviance
 77.3 81.4 -35.65    68.74      71.3
Random effects:
Groups   Name Variance Std.Dev.
Subject    0.36887  0.60735
Residual    0.39038  0.62480
number of obs: 29, groups: Subject, 16
```

```
Fixed effects:
              Estimate Std. Error t value
(Intercept)   1.6358    0.2233    7.325
ExptE2         0.3181    0.2382    1.335
```

```
Correlation of Fixed Effects:
      (Intr)
ExptE2 -0.507
```

```
> qq.plot(residuals(model.cont.6))
```



```
> e1e2.balanced <- subset(e1e2, (item == 6 & Subject != 109 & Subject !=
+ 108 & Subject != 106))
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)
```

	E1	E2
1	1	1
2	1	1
3	1	1
4	1	1
101	1	1
102	1	1
103	1	1
104	1	1
105	1	1
107	1	1
110	1	1
111	1	1
112	1	1

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

```
Error: Subject
      Df Sum Sq Mean Sq F value Pr(>F)
Residuals 12 12.5385  1.0449
```

```
Error: Subject:Expt
      Df Sum Sq Mean Sq F value Pr(>F)
Expt    1 0.9615  0.9615  2.5424 0.1368
Residuals 12 4.5385  0.3782
```

2.9 Even vs nobody

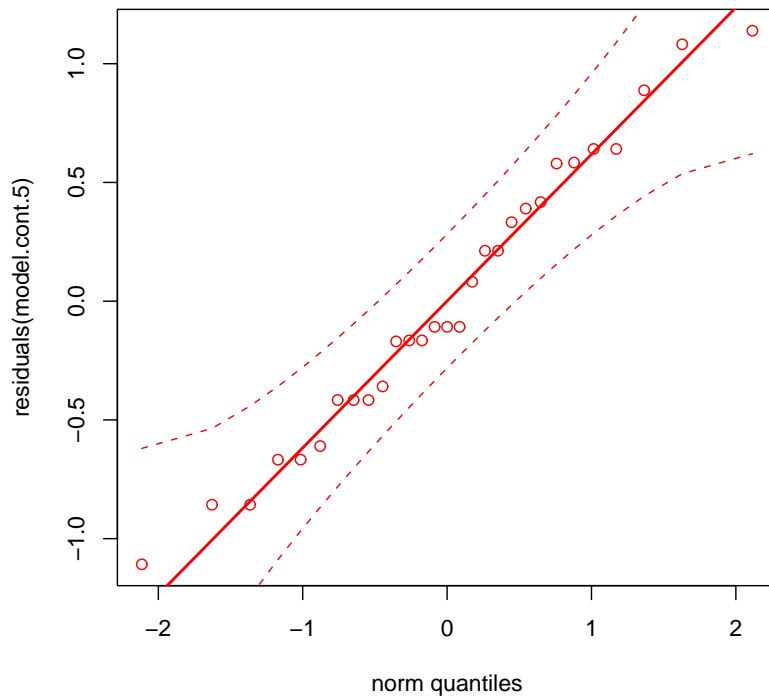
```
> summary(model.cont.5 <- lmer(rating ~ Expt + (1 | Subject), subset(e1e2,
+   item == 5)))
```

```
Linear mixed-effects model fit by REML
Formula: rating ~ Expt + (1 | Subject)
Data: subset(e1e2, item == 5)
AIC      BIC logLik MLdeviance REMLdeviance
78.93 83.03 -36.46      70.5      72.93
Random effects:
Groups   Name Variance Std.Dev.
Subject      0.25274  0.50273
Residual      0.50152  0.70818
number of obs: 29, groups: Subject, 16
```

```
Fixed effects:
              Estimate Std. Error t value
(Intercept)   1.6807      0.2235   7.521
ExptE2         0.6917      0.2678   2.583
```

```
Correlation of Fixed Effects:
      (Intr)
ExptE2 -0.573
```

```
> qq.plot(residuals(model.cont.5))
```



```
> e1e2.balanced <- subset(e1e2, (item == 5 & Subject != 109 & Subject !=
+ 108 & Subject != 106))
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)
```

	E1	E2
1	1	1
2	1	1
3	1	1
4	1	1
101	1	1
102	1	1
103	1	1
104	1	1
105	1	1
107	1	1
110	1	1
111	1	1
112	1	1

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

```
Error: Subject
      Df Sum Sq Mean Sq F value Pr(>F)
Residuals 12 13.4615  1.1218
```

```
Error: Subject:Expt
      Df Sum Sq Mean Sq F value Pr(>F)
Expt    1 3.1154   3.1154   5.8554 0.03233 *
Residuals 12 6.3846   0.5321
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

2.10 Even vs also

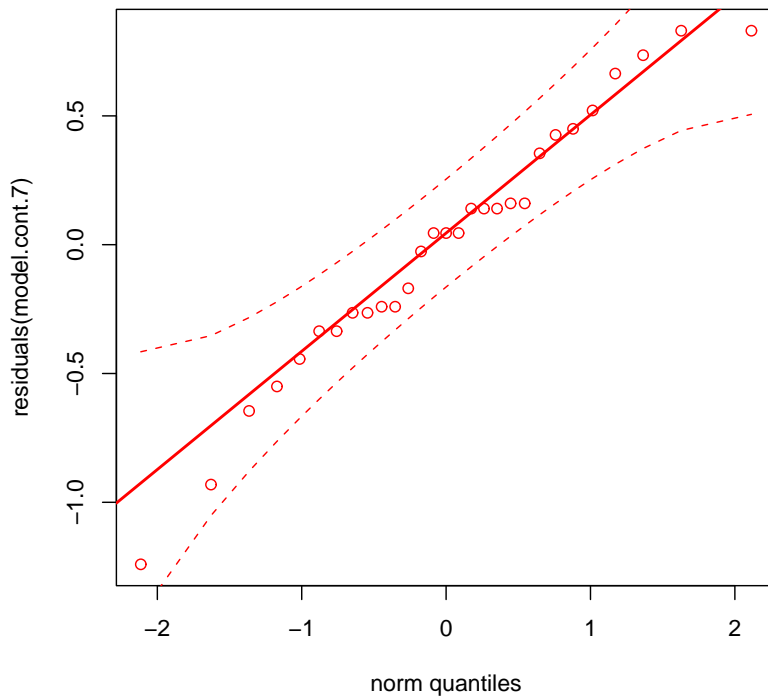
```
> summary(model.cont.7 <- lmer(rating ~ Expt + (1 | Subject), subset(e1e2,
+   item == 7)))
```

```
Linear mixed-effects model fit by REML
Formula: rating ~ Expt + (1 | Subject)
Data: subset(e1e2, item == 7)
AIC      BIC logLik MLdeviance REMLdeviance
75.85 79.95 -34.93      67.19      69.85
Random effects:
Groups   Name Variance Std.Dev.
Subject    0.31624  0.56235
Residual    0.38913  0.62380
number of obs: 29, groups: Subject, 16
```

```
Fixed effects:
              Estimate Std. Error t value
(Intercept)   2.7093      0.2155  12.572
ExptE2        -0.9050      0.2374  -3.813
```

```
Correlation of Fixed Effects:
      (Intr)
ExptE2 -0.524
```

```
> qq.plot(residuals(model.cont.7))
```



```
> e1e2.balanced <- subset(e1e2, (item == 7 & Subject != 109 & Subject !=
+ 108 & Subject != 106))
> e1e2.balanced$Subject <- factor(e1e2.balanced$Subject)
> table(e1e2.balanced$Subject, e1e2.balanced$Expt)
```

	E1	E2
1	1	1
2	1	1
3	1	1
4	1	1
101	1	1
102	1	1
103	1	1
104	1	1
105	1	1
107	1	1
110	1	1
111	1	1
112	1	1

```
> summary(aov(rating ~ Expt + Error(Subject/Expt), e1e2.balanced))
```

```
Error: Subject
      Df Sum Sq Mean Sq F value Pr(>F)
Residuals 12 13.6154  1.1346
```

Error: Subject:Expt

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Expt	1	4.6538	4.6538	11.524	0.005322 **
Residuals	12	4.8462	0.4038		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

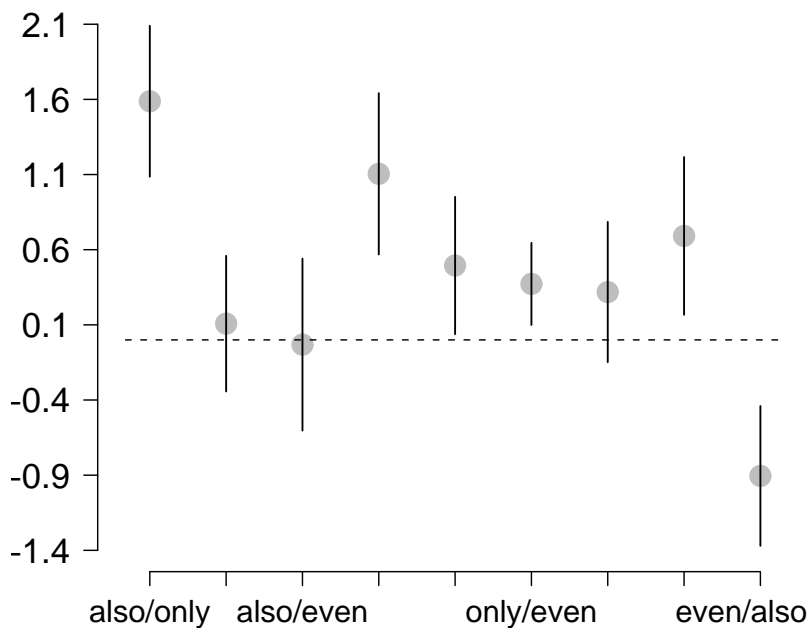
3 Graphical visualization of the results

First we load a file containing the fixed effects coefficients and standard errors corresponding to all the above analyses.

```
> fix <- read.table("fixef.txt")
> colnames(fix) <- c("item", "coef", "se")
> xlab <- c("also/only", "also/nbdy", "also/even", "only/also",
+          "only/nbdy", "only/even", "even/only", "even/nbdy", "even/also")

> y <- fix$coef
> lower <- y - qnorm(0.975) * fix$se
> upper <- y + qnorm(0.975) * fix$se
> min_y <- as.numeric(formatC(min(lower), digits = 2))
> max_y <- as.numeric(formatC(max(upper), digits = 2))
> p <- 9
> z <- c(0, 0, 0, 0, 0, 0, 0, 0, 0.25)
> plot(1:p, y, axes = F, xlab = "", ylab = "", pch = 19, cex = 2,
+      col = "gray", ylim = c(min_y, max_y + 0.05), main = "Coefficients for each comparison, with 95%",
+      cex.main = 2)
> segments(c(1:p), lower, c(1:p), upper, lwd = 1.3, "black")
> axis(1, c(1:p), labels = rep("", 9), las = 1, cex.axis = 1.3)
> axis(1, c(1:p) - z, labels = xlab, tick = FALSE, las = 1, cex.axis = 1.3)
> axis(2, seq(min_y, max_y, by = 0.5), line = 1, las = 1, cex.axis = 1.5)
> abline(a = 0, b = 0, lty = 2, col = gray(0))
```

Efficients for each comparison, with 95



```
> xlab1 <- c("also/only", "also/even", "only/nbdy", "even/only",
+           "even/also")
> xlab2 <- c("also/nbdy", "only/also", "only/even", "even/nbdy")
> newitem <- ifelse(e1e2$item == 1, 1, ifelse(e1e2$item == 4, 2,
+     ifelse(e1e2$item == 9, 3, ifelse(e1e2$item == 2, 4, ifelse(e1e2$item ==
+     3, 5, ifelse(e1e2$item == 8, 6, ifelse(e1e2$item == 6,
+     7, ifelse(e1e2$item == 5, 8, ifelse(e1e2$item == 7, 9,
+     NA)))))))))
> e1e2$newitem <- newitem
> means <- with(e1e2, tapply(rating, IND = list(Expt, newitem),
+   mean))
> CI.E1 <- c()
> CI.E2 <- c()
> for (i in 1:9) {
+   cis <- ci(subset(e1e2, newitem == i & Expt == "E1")$rating)
+   CI.E1 <- rbind(CI.E1, cis)
+   cis <- ci(subset(e1e2, newitem == i & Expt == "E2")$rating)
+   CI.E2 <- rbind(CI.E2, cis)
+ }
> barplot(with(e1e2, tapply(rating, IND = list(Expt, newitem),
+   mean)), axes = F, axisnames = F, ylim = c(1, 4), col = c("gray",
+   "white"), beside = TRUE, xpd = F, xlab = "", ylab = "", cex.lab = 2,
+   main = "Mean ratings for targets versus controls", cex.main = 1.5)
> sequence <- seq(from = 1.5, to = 27, by = 3)
> arrows(sequence, CI.E1$lower, sequence, CI.E1$upper, angle = 90,
+   length = 0.05, code = 3)
> sequence <- seq(from = 2.5, to = 29, by = 3)
> arrows(sequence, CI.E2$lower, sequence, CI.E2$upper, angle = 90,
```



```

+   length = 0.05, code = 3)
> mtext("Ratings", side = 2, line = 2.7, cex = 1.8)
> axis(1, seq(2, 26, by = 6), labels = xlab1, line = -0.5, tick = FALSE,
+   las = 3, cex.axis = 1.1)
> axis(1, seq(5, 26, by = 6), labels = xlab2, line = -0.5, tick = FALSE,
+   las = 3, cex.axis = 1.1)
> min_y <- min(e1e2$rating)
> max_y <- max(e1e2$rating)
> axis(2, seq(min_y, max_y, by = 1), line = 1, las = 1, cex.axis = 1.9)
> legend(19, 3.5, c("Target", "Control"), fill = c("gray", "white",
+   cex = 2))

```

