In [1]:
```
library(foreign)

setwd("C:/Users/ning/Dropbox/NYU/semester/Fall 2015/multivariate + regressio

datatoread = read.spss("projectdata.sav",to.data.frame=TRUE)

data = data.frame(datatoread)

data[data == 999] = NA # tell the program what 999 means, it means missing d
data = subset(data,select = -c(ID))#drop subject No.
datanames=colnames(data)

datanames
```

```
Warning message:
In read.spss("projectdata.sav", to.data.frame = TRUE): projectdata.sav: U
nrecognized record type 7, subtype 18 encountered in system file
```

Out[1]:
"ACC1" "ACC2" "Conf1" "Conf2" "Post1Taskfeel1" "Post1Taskfeel2"
"Post1Taskfeel3" "Post2Taskfeel1" "Post2Taskfeel2" "SOBitem1pre"
"SOBitem2pre" "SOBitem3pre" "SOBitem4pre" "SOBitem5pre"
"SOBitem1post" "SOBitem2psot" "SOBitem3post" "SOBitem4post"
"SOBitem5post" "gender" "year"

Outlier removal function: basically treat them as miss data, data points that locates outside 95% confidence interval are outliers

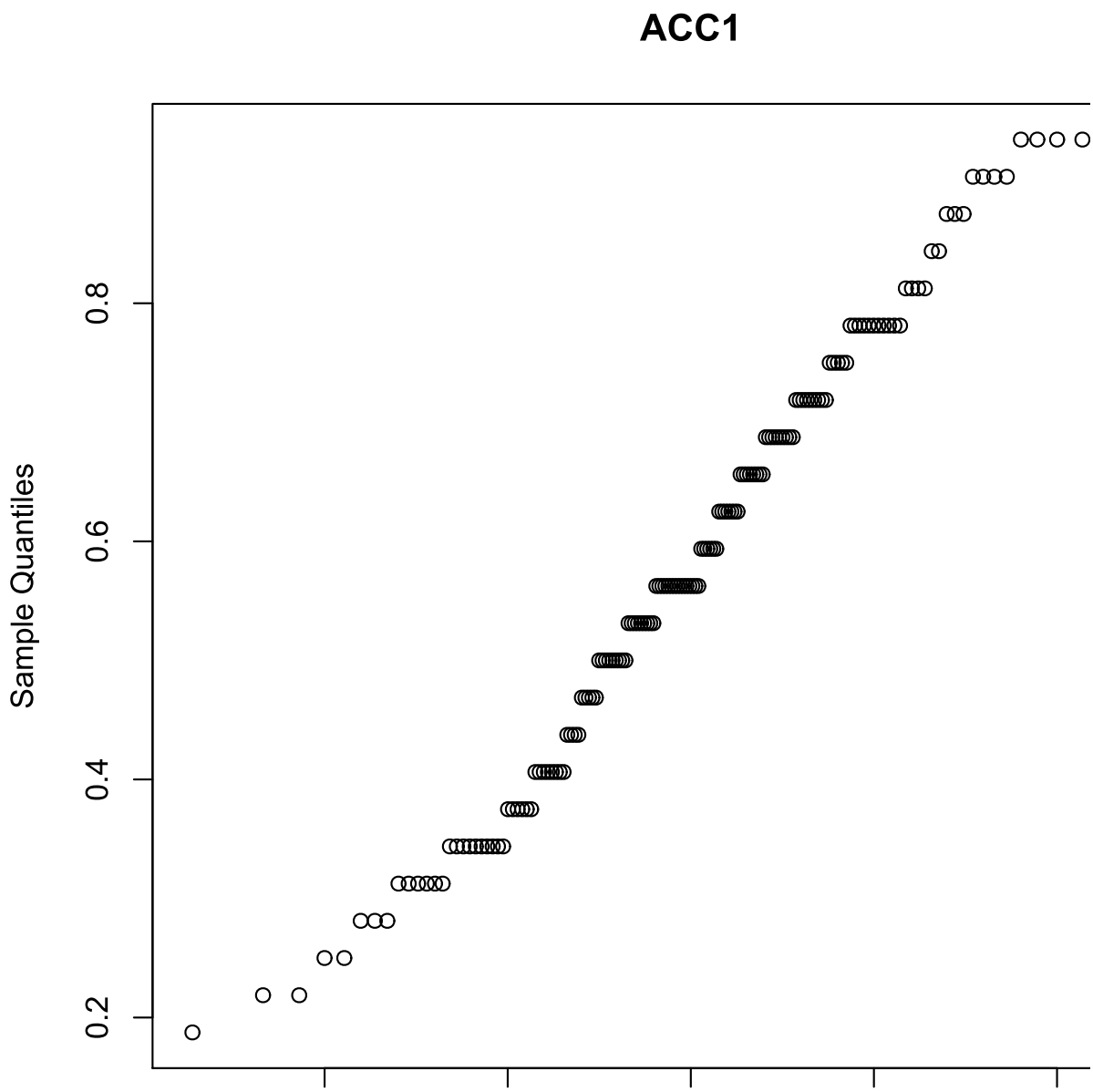
In [2]:
```
remove_outliers = function(x,na.rm=T){
  qnt = quantile(x,probs=c(.25,.75),na.rm = na.rm)
  H = 1.5* IQR(x,na.rm = na.rm)
  y = x
  y[x<(qnt[1] - H)]= NA
  y[x>(qnt[2] + H)]= NA
  return(y)
}

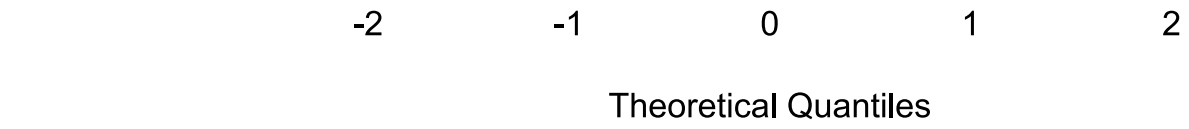
# identify extreme data that locate 3 standard deviation away from the mean
outfun <- function(x){
  outliers = abs(x-mean(x,na.rm=T))>3*sd(x,na.rm=T)
  countoutliers = which(is.na(outliers))
  numofoutliers = length(countoutliers)
  return(list(countoutliers=countoutliers,numofoutliers=numofoutliers))
}
```

In [3]:
```
# empty matrix, preallocation
Table_Table = matrix(NA,nrow = 17, ncol=2)
cnt = 1
```

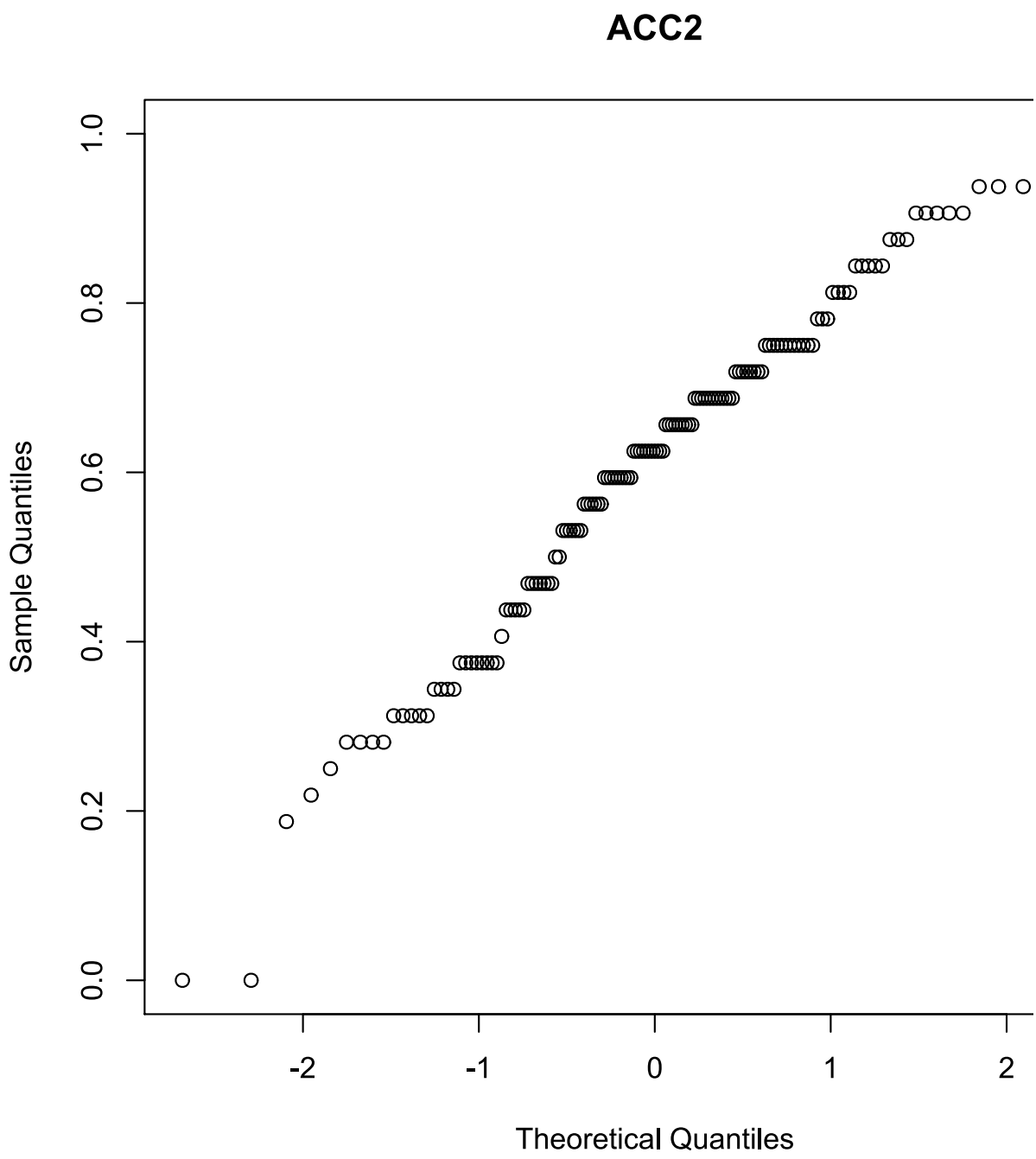
In [4]:
```
# just a better for me to read the results
for (i in datanames){
    if (i == "Conf1" | i == "Conf2" | i == 'year' | i == 'gender') {
        next
    }else{
  k=outfun(data[,i])
  print(c(i,k$numofoutliers,"outliers"))
  Table_Table[cnt,1] = cnt
  Table_Table[cnt,2] = k$numofoutliers
  cnt = cnt + 1
  qqnorm(data[,i],main=i)# show normality
  data[,i]=remove_outliers(data[,i])
  }}
Table_Table = data.frame(Table_Table)
print(Table_Table)
```

```
[1] "ACC1"     "5"        "outliers"
[1] "ACC2"     "21"       "outliers"
```



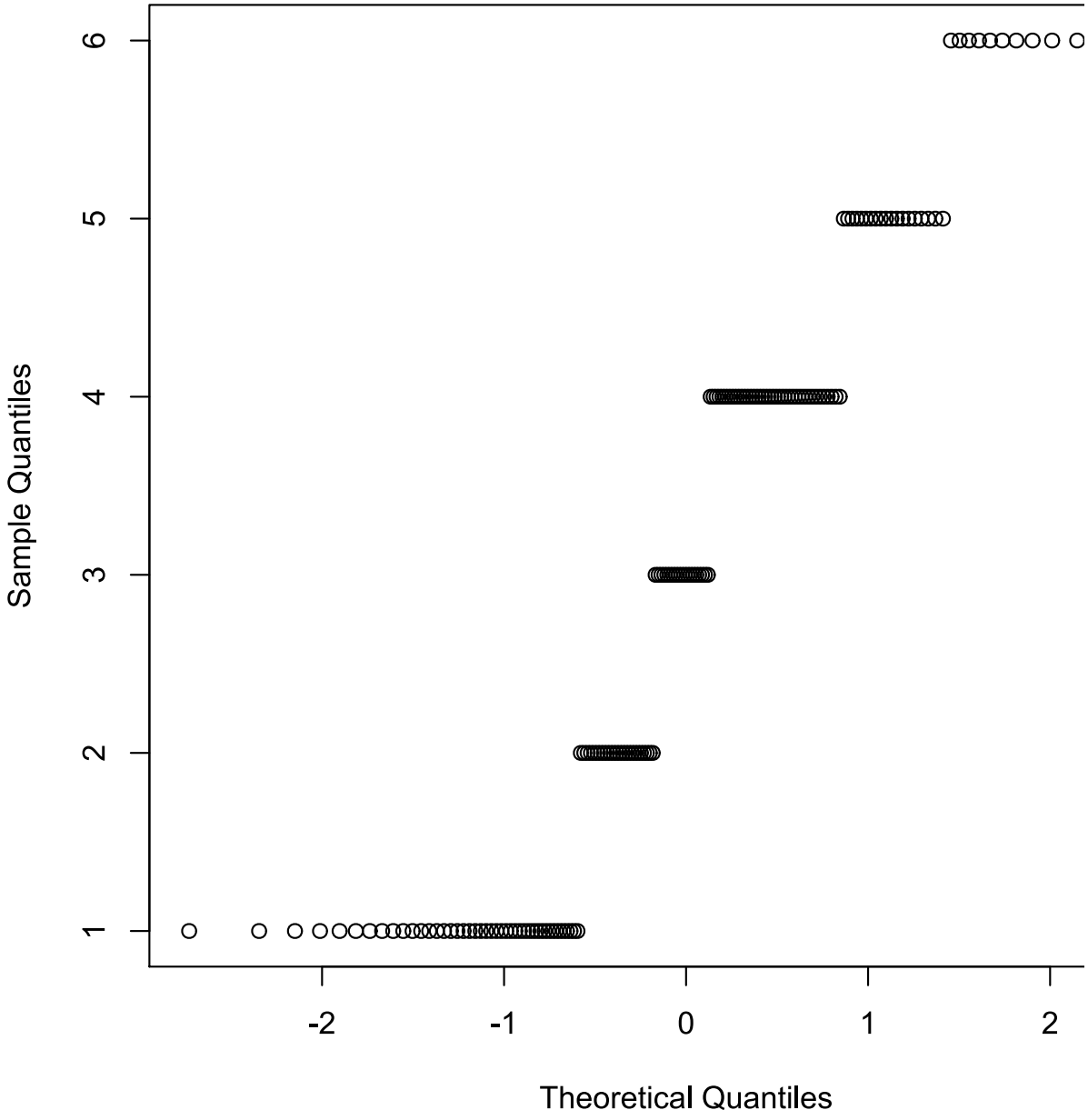



```
[1] "Post1Taskfeel1" "1"              "outliers"
```

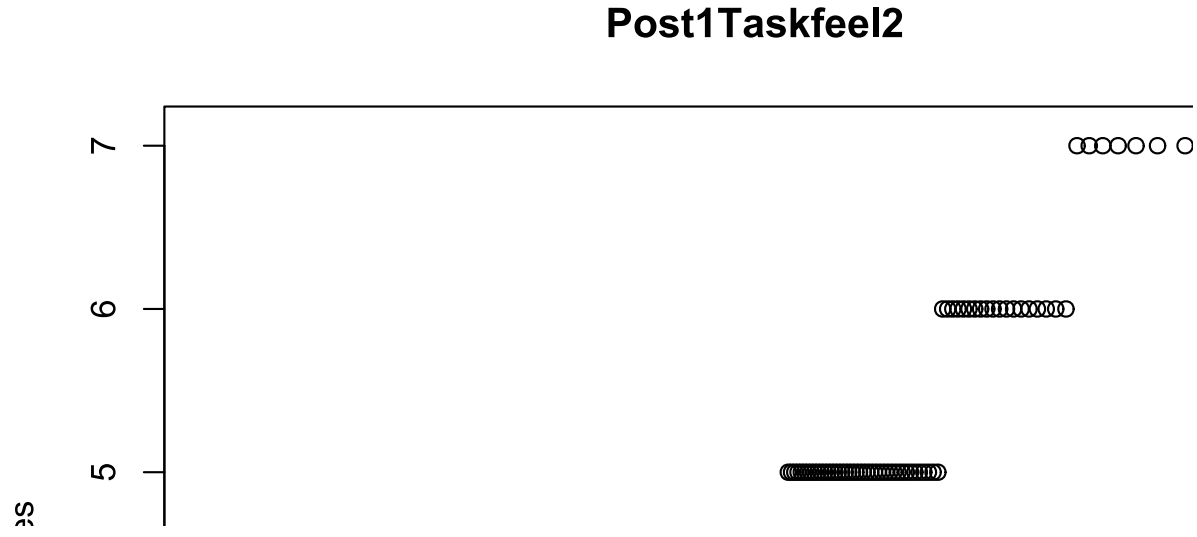


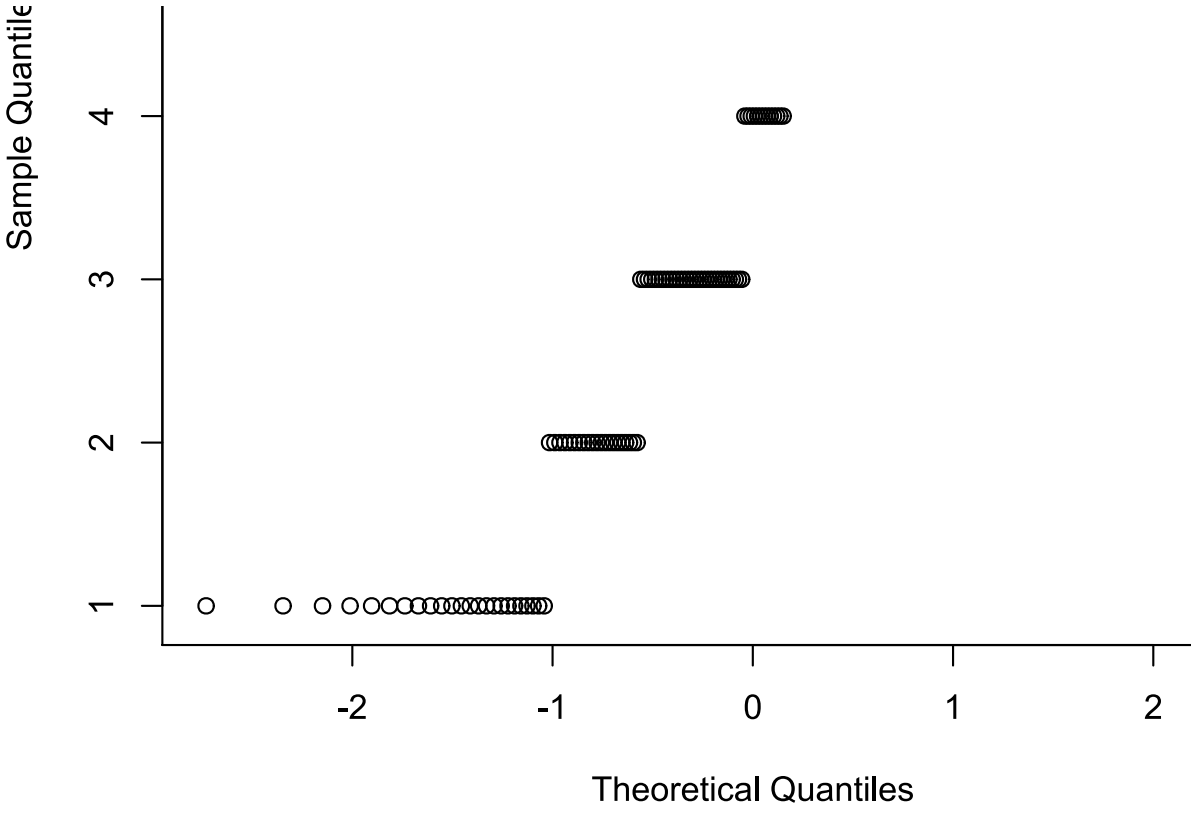

```
[1] "Post1Taskfeel2" "1"              "outliers"
```

Post1Taskfeel1

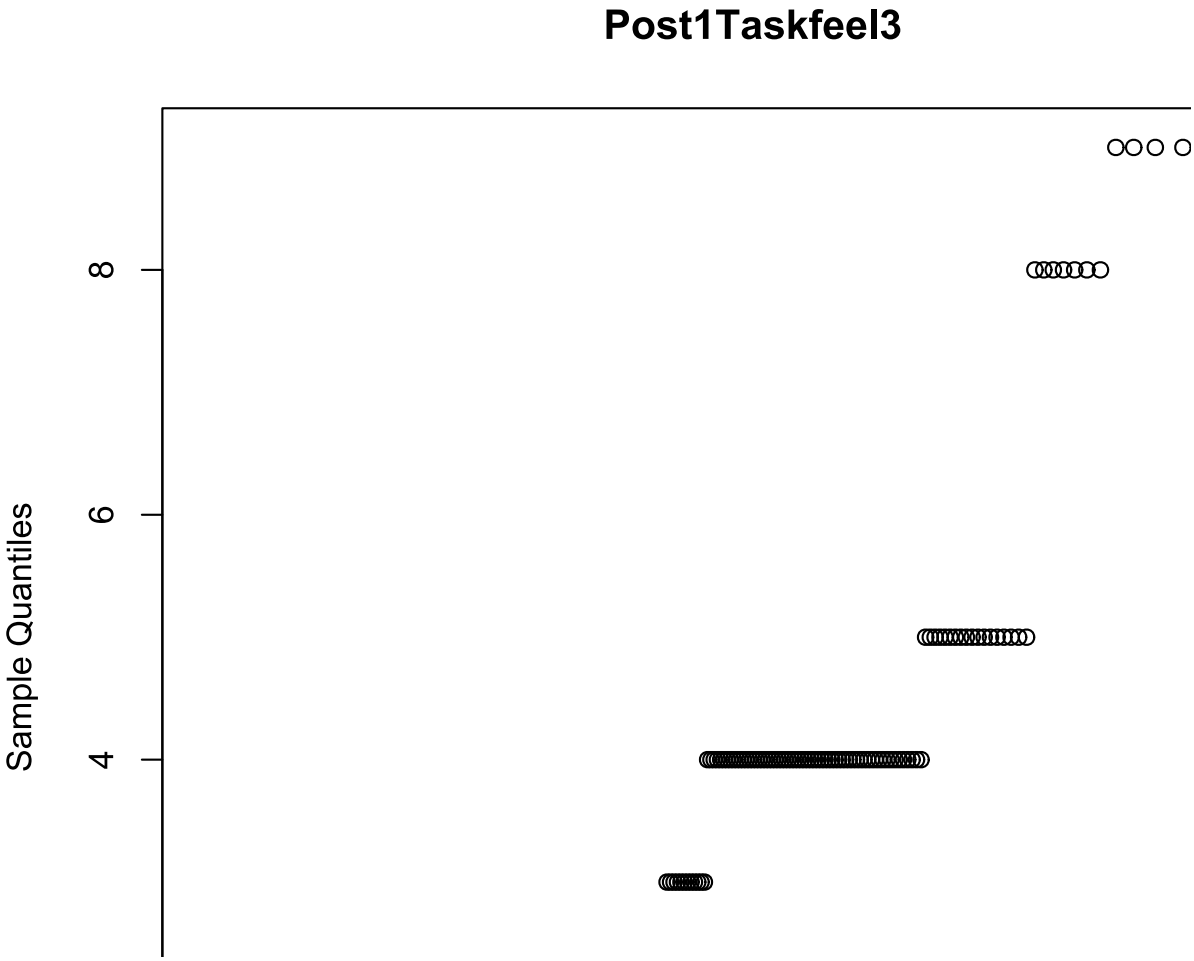


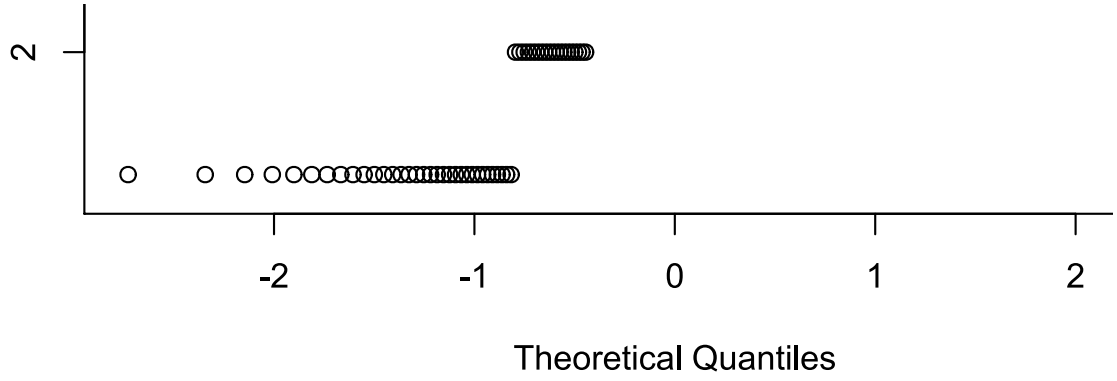

```
[1] "Post1Taskfeel3" "2"              "outliers"
```



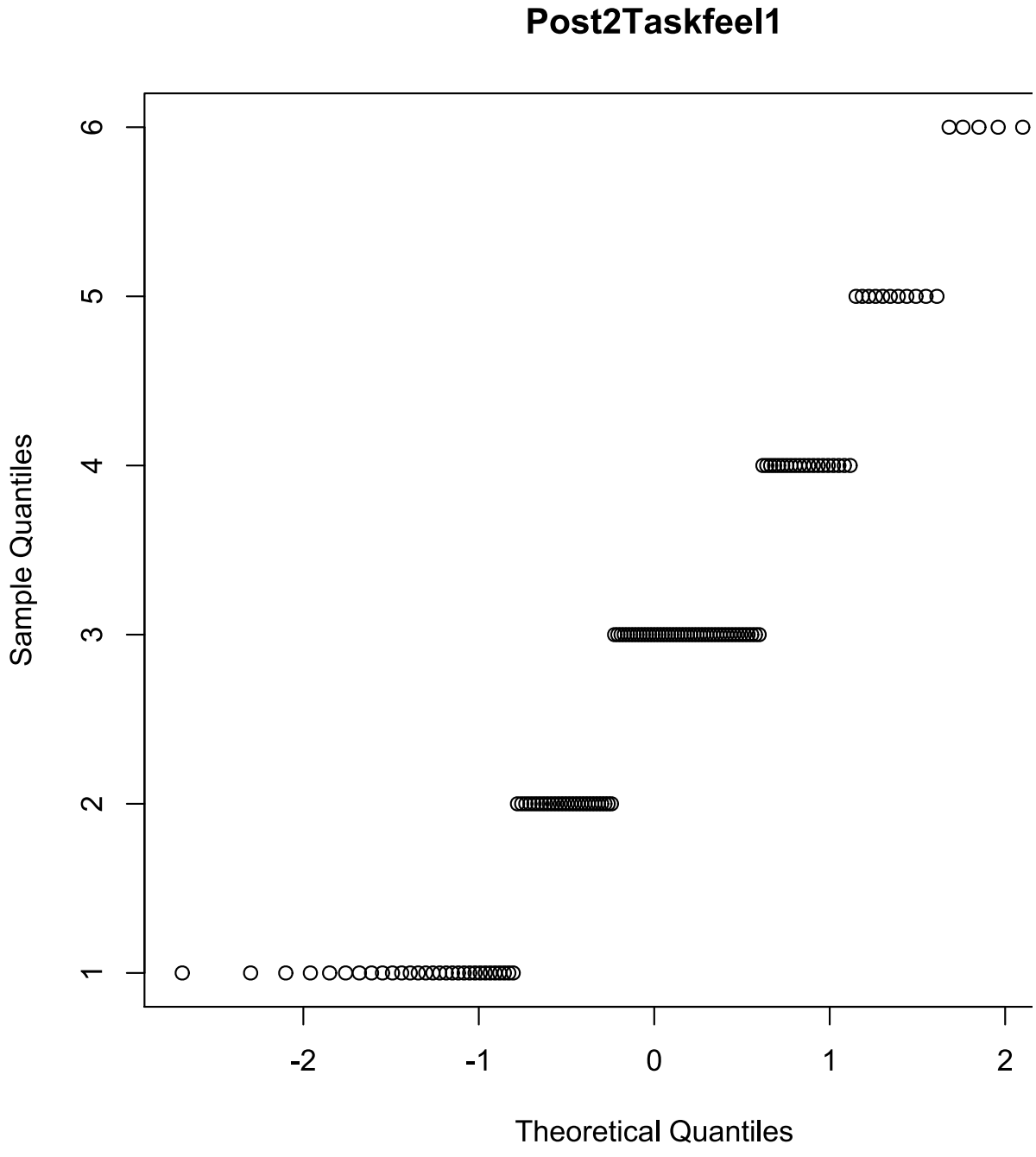



```
[1] "Post2Taskfeel1" "19"             "outliers"
```

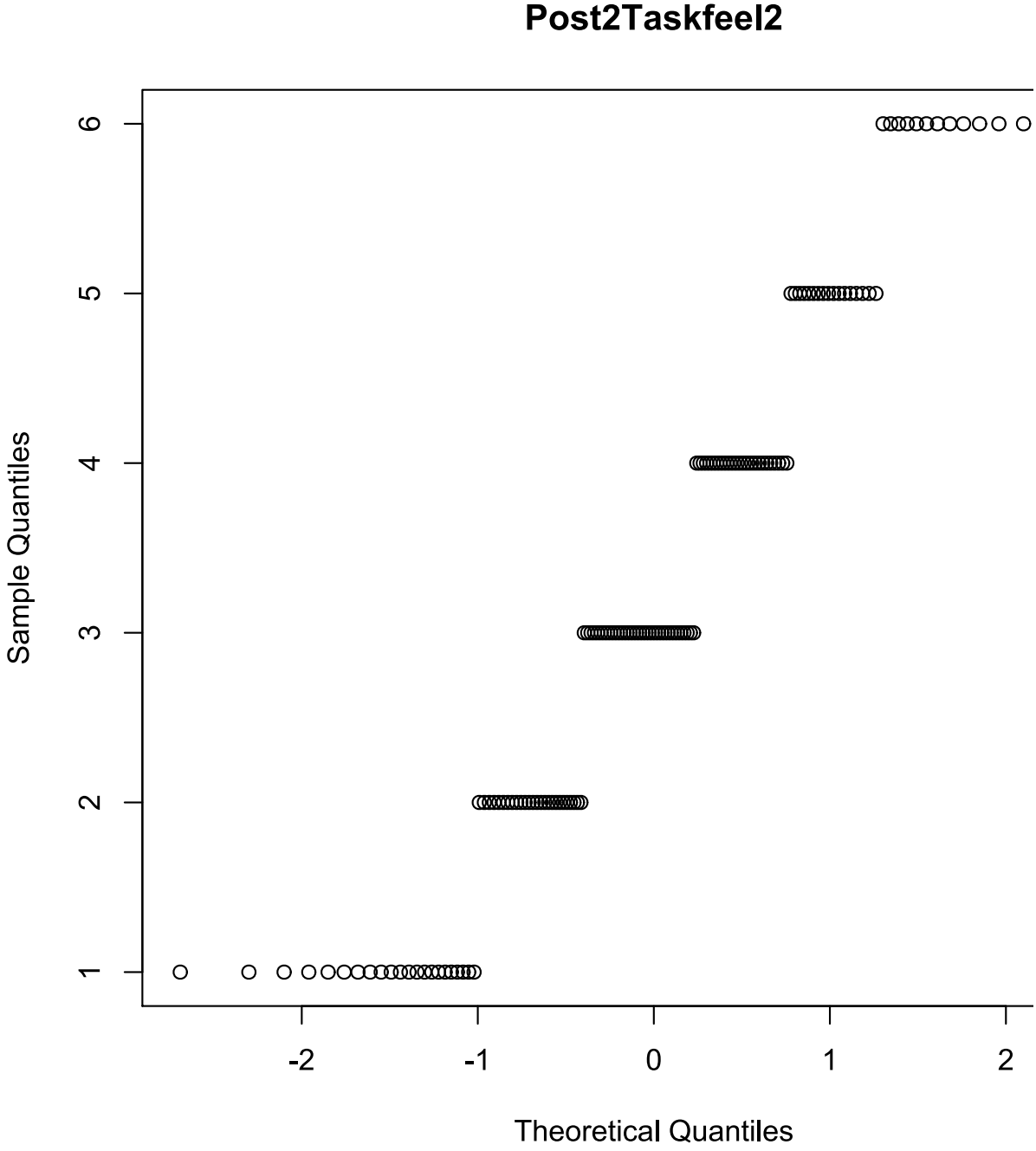




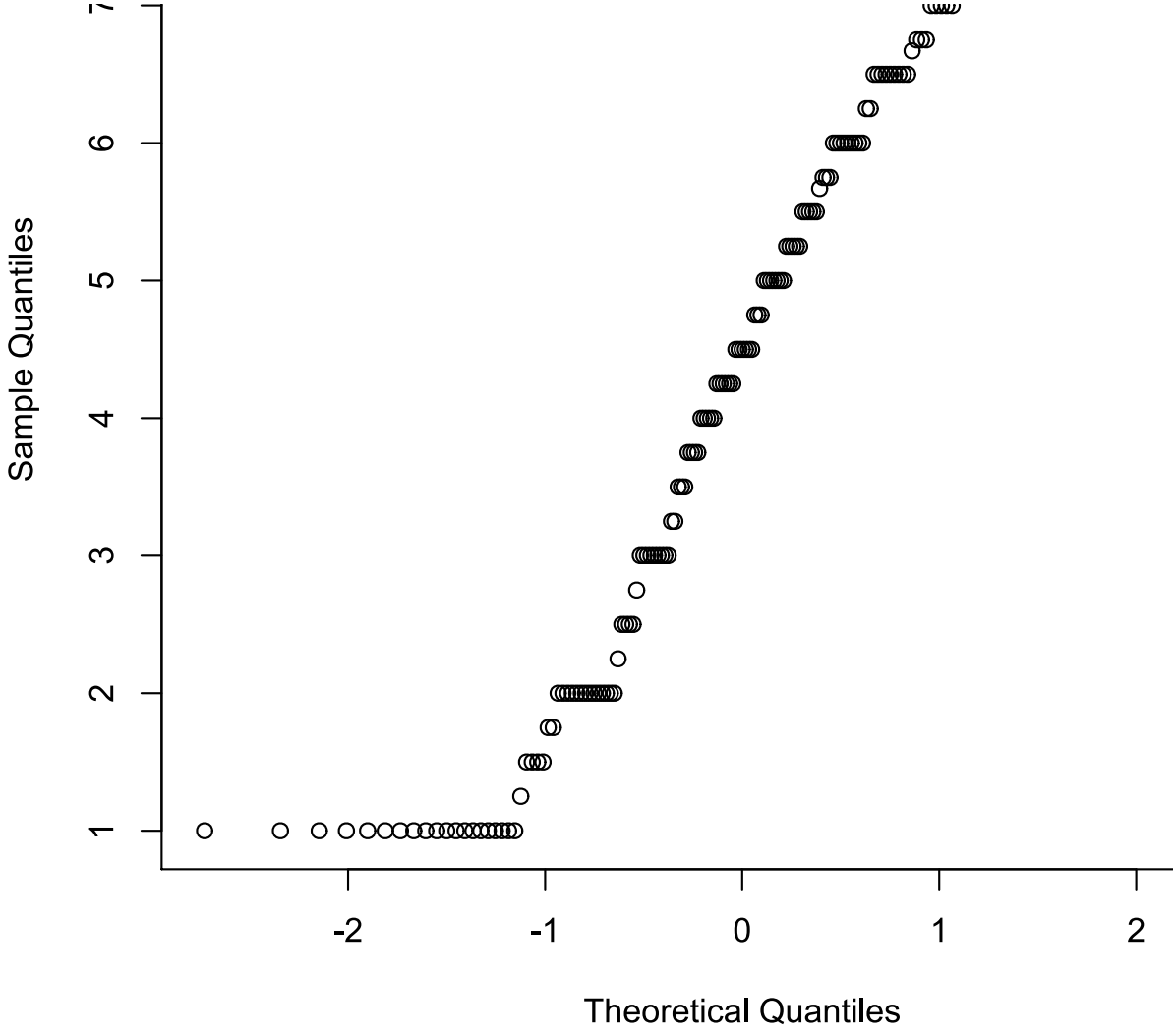

```
[1] "Post2Taskfeel2" "19"             "outliers"
```



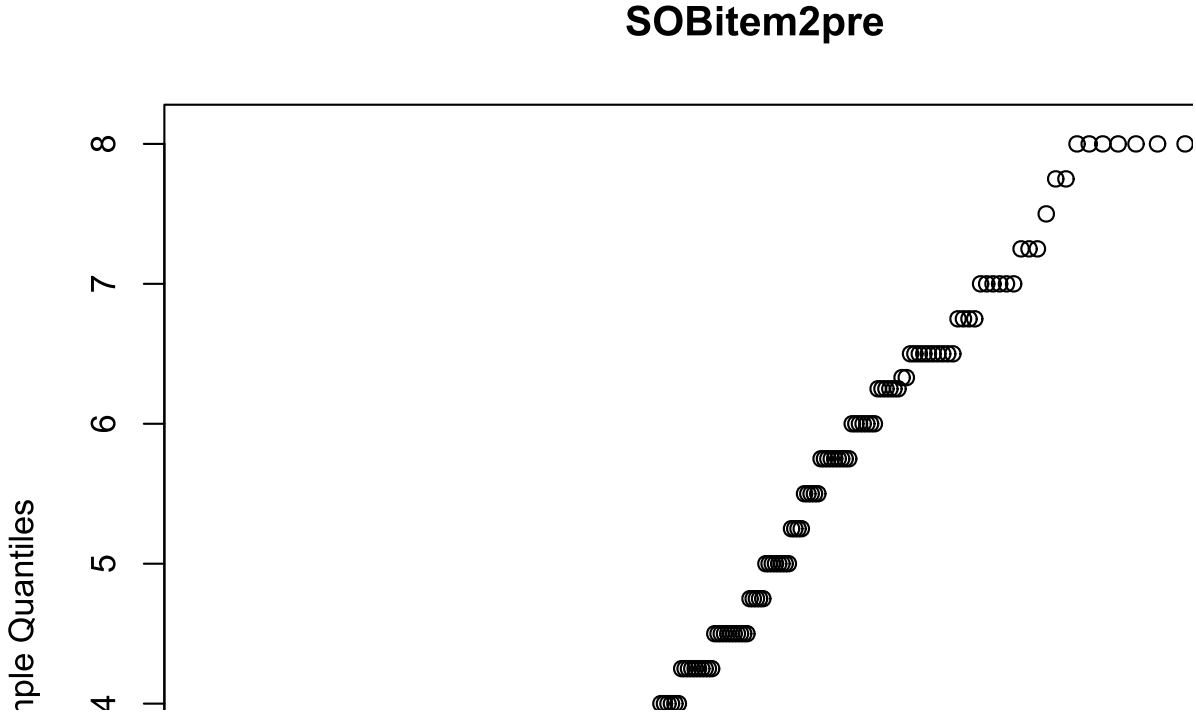
```
[1] "SOBitem1pre" "2"           "outliers"
```

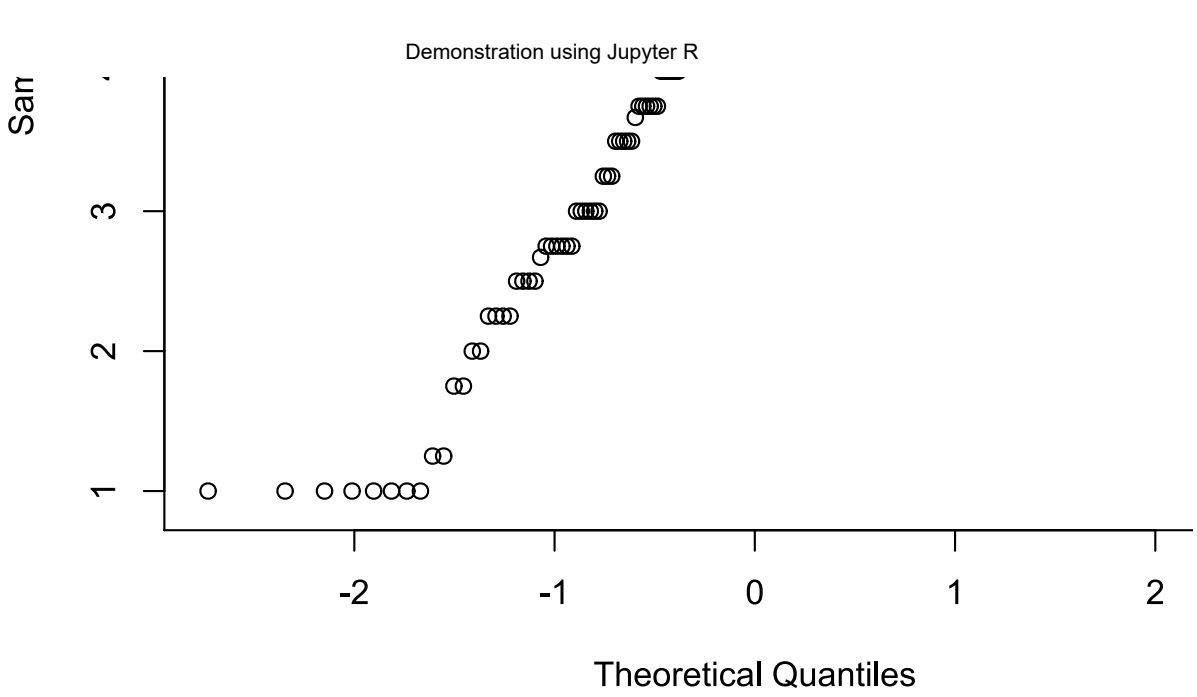



```
[1] "SOBitem2pre" "1"           "outliers"
```

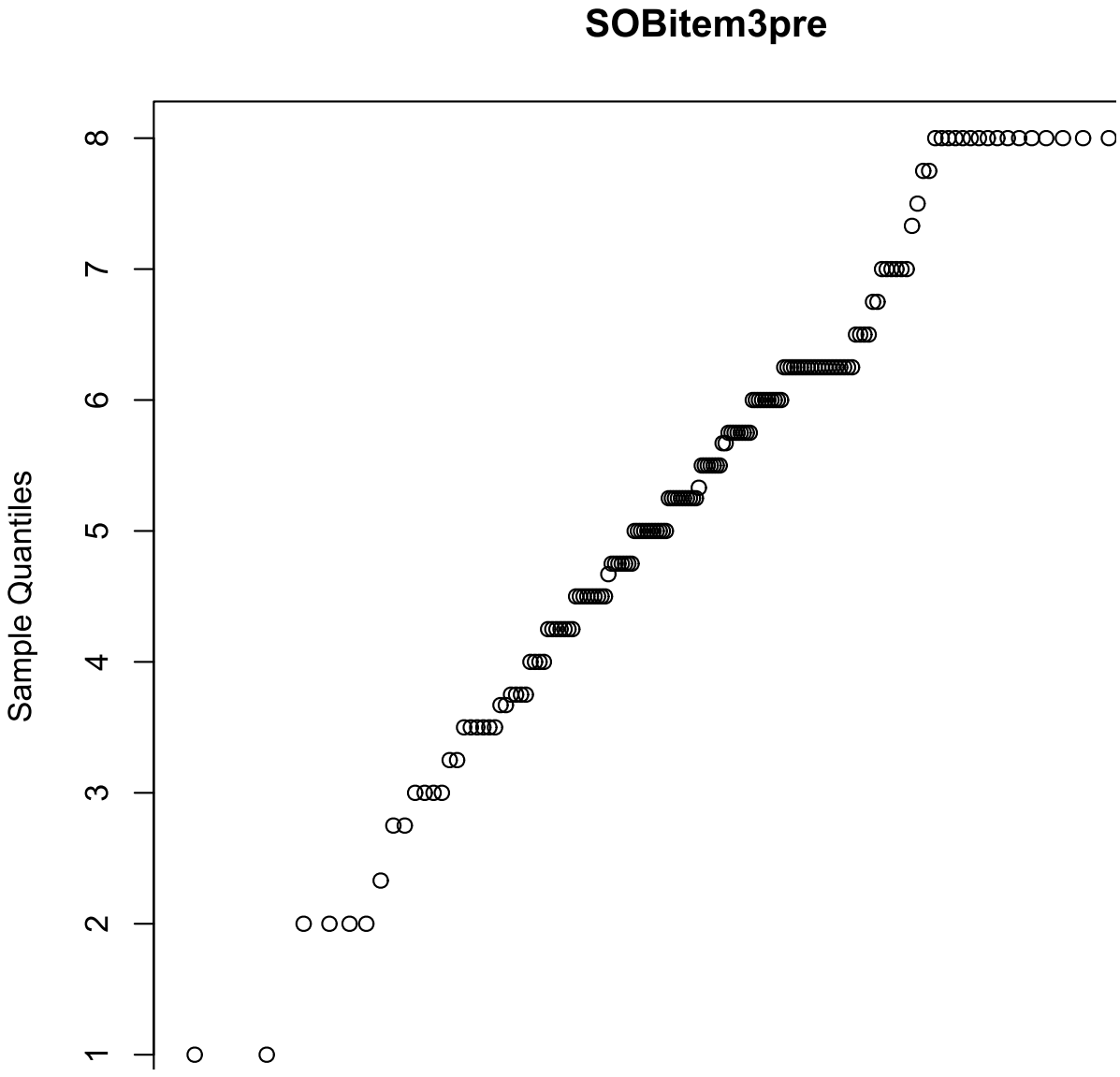


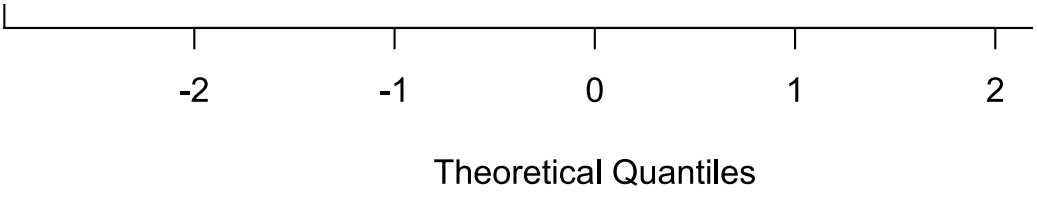

```
[1] "SOBitem3pre" "1"           "outliers"
```



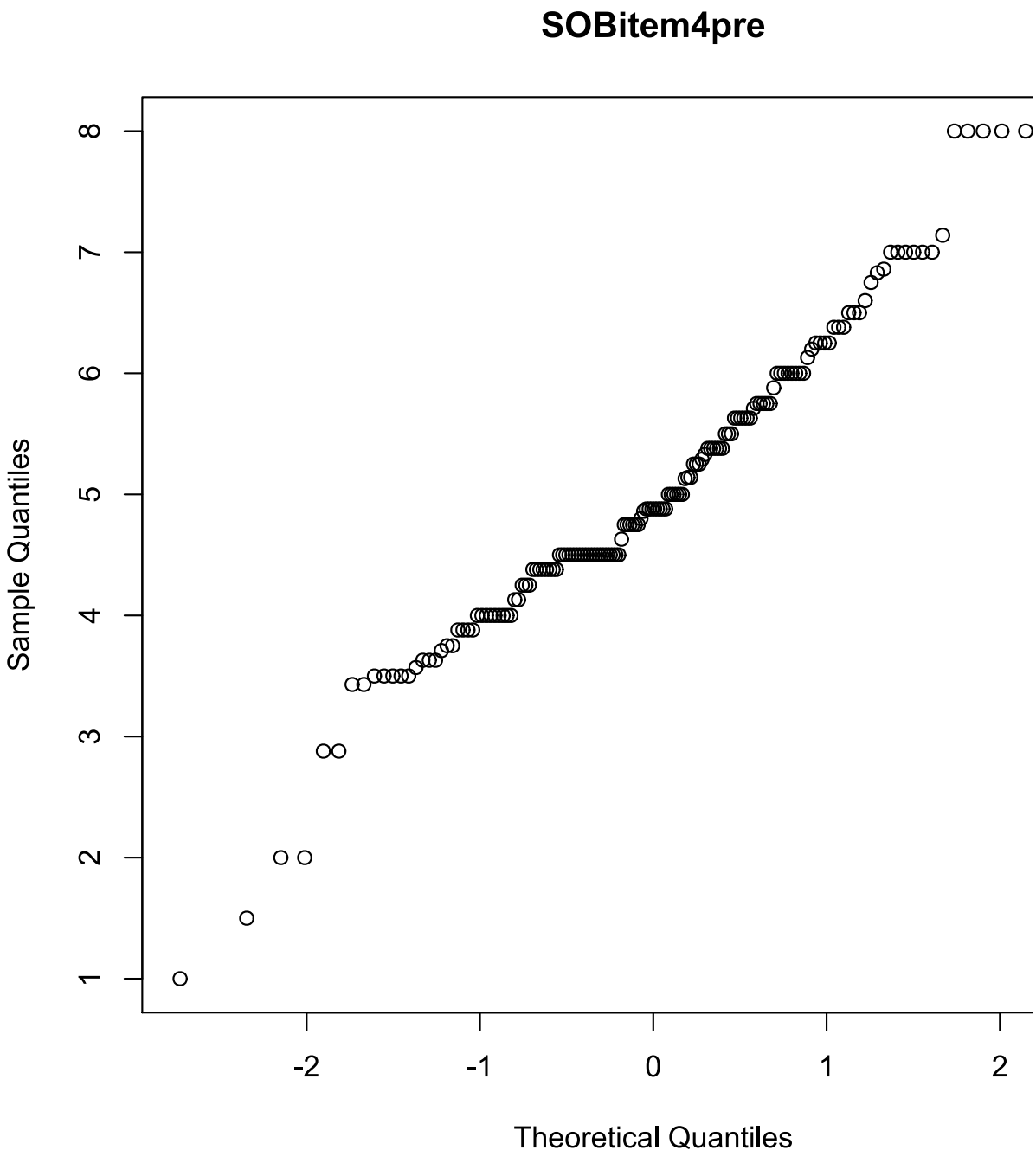



```
[1] "SOBitem4pre" "1"           "outliers"
```

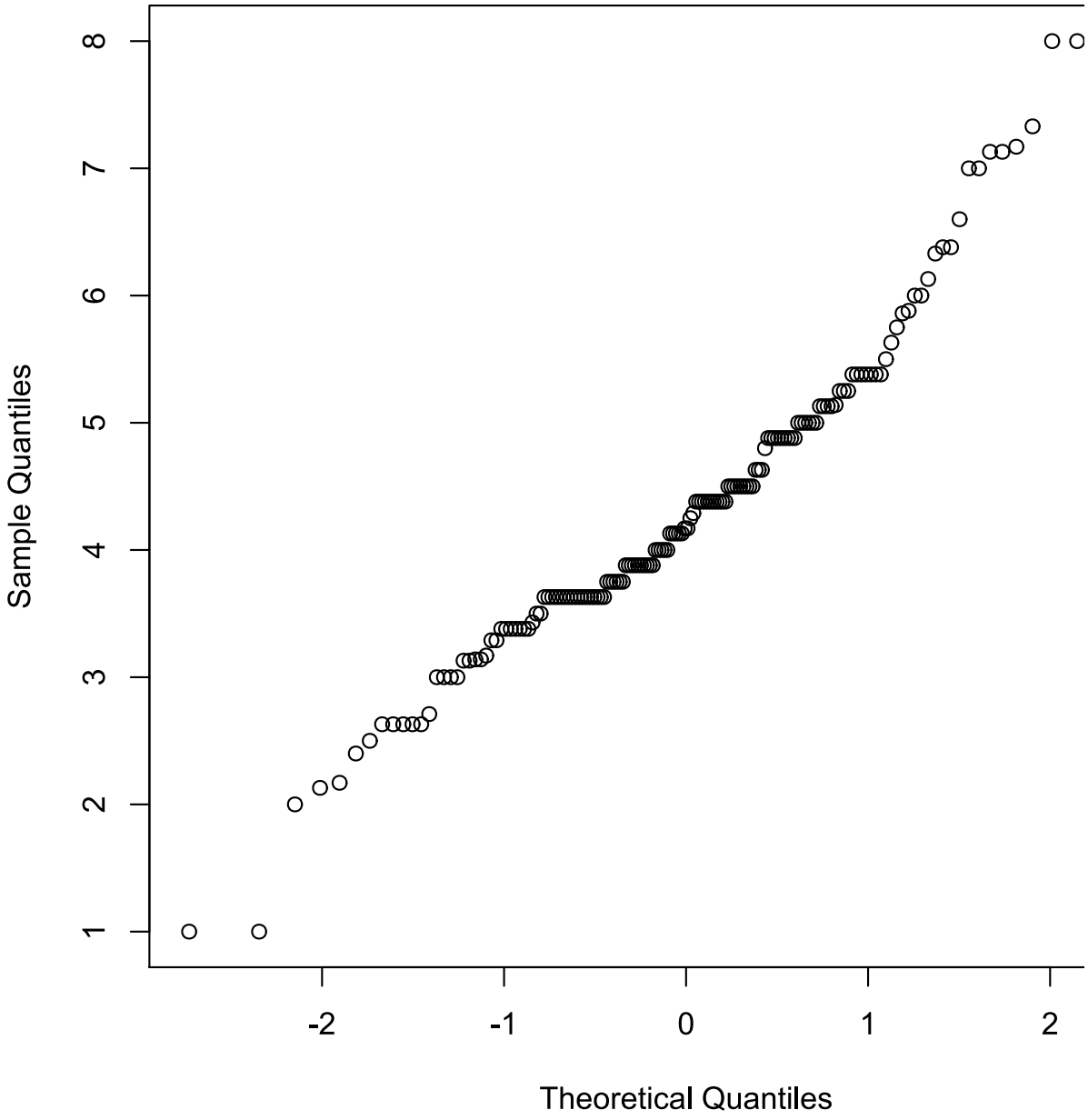




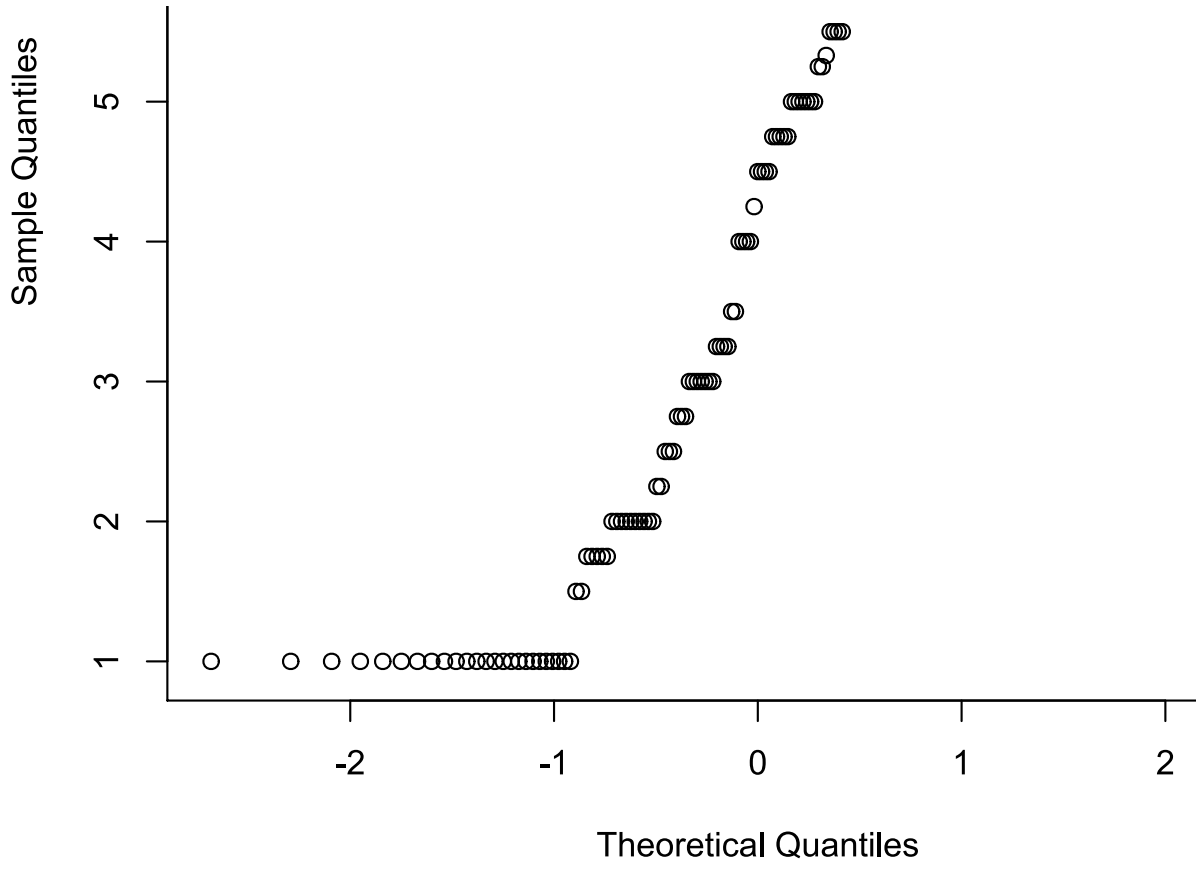

```
[1] "SOBitem5pre" "1"           "outliers"
```



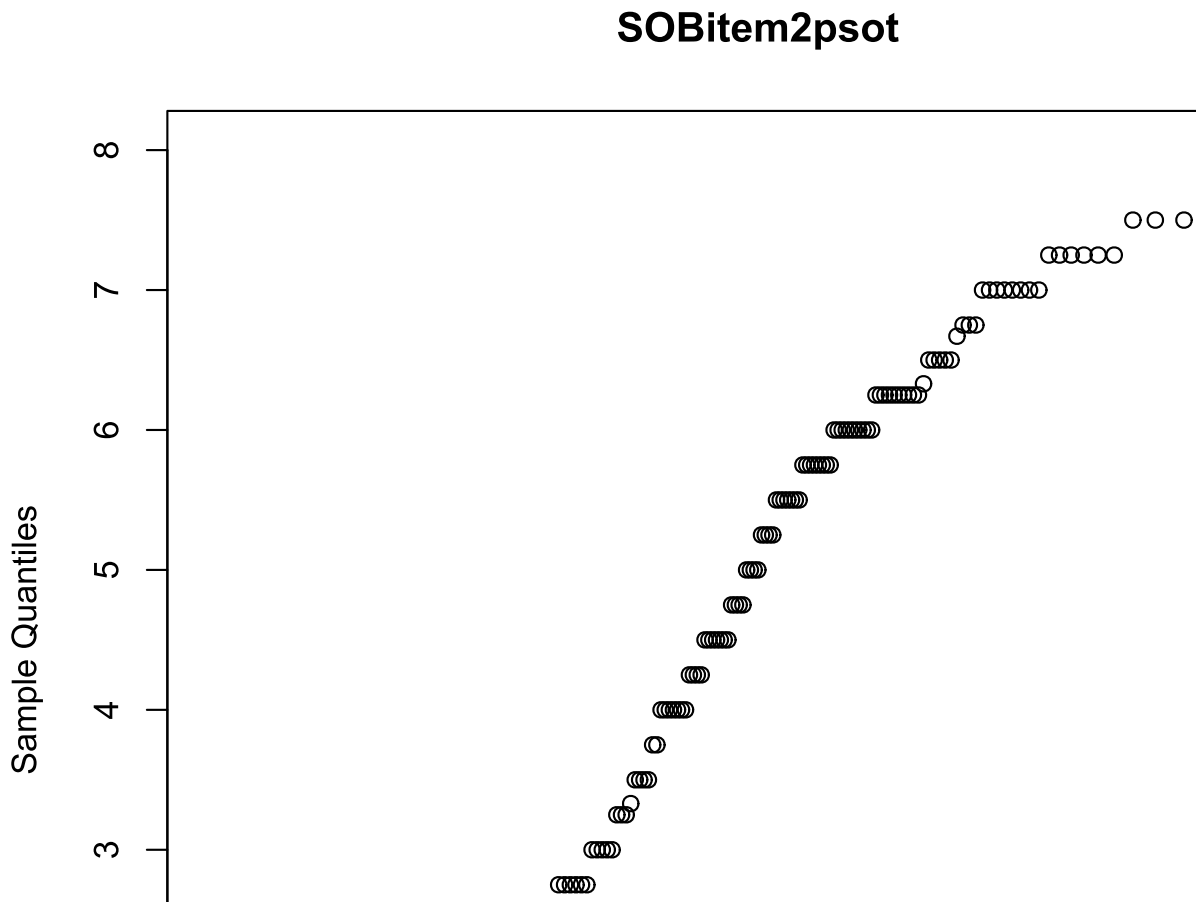

```
[1] "SOBitem1post" "22"          "outliers"
```

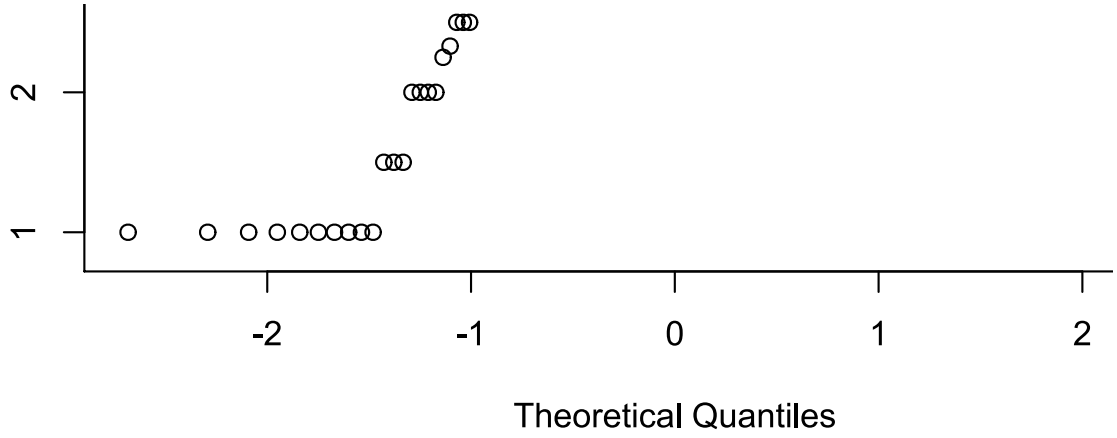



```
[1] "SOBitem2psot" "22"           "outliers"
```

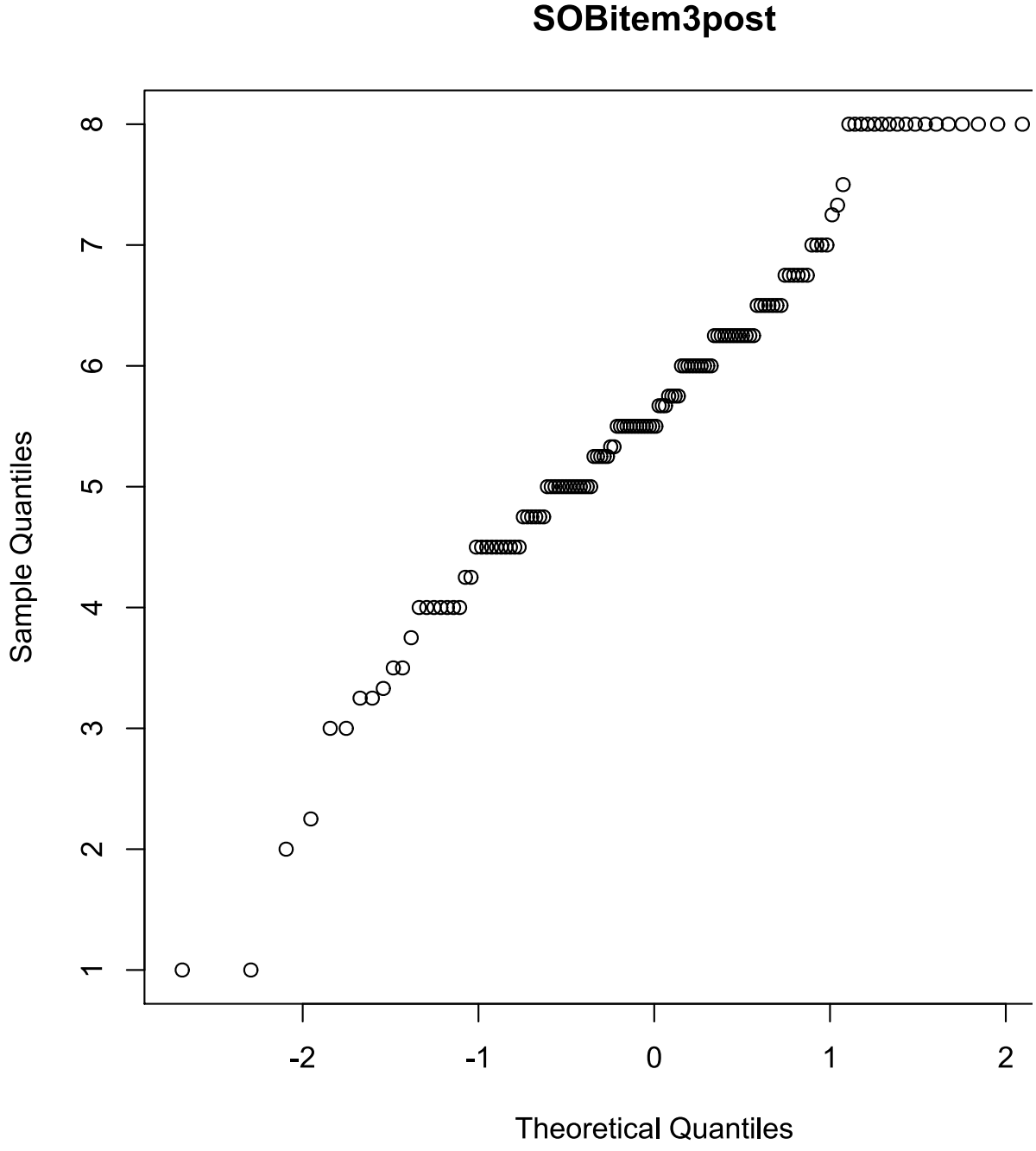



```
[1] "SOBitem3post" "21"           "outliers"
```

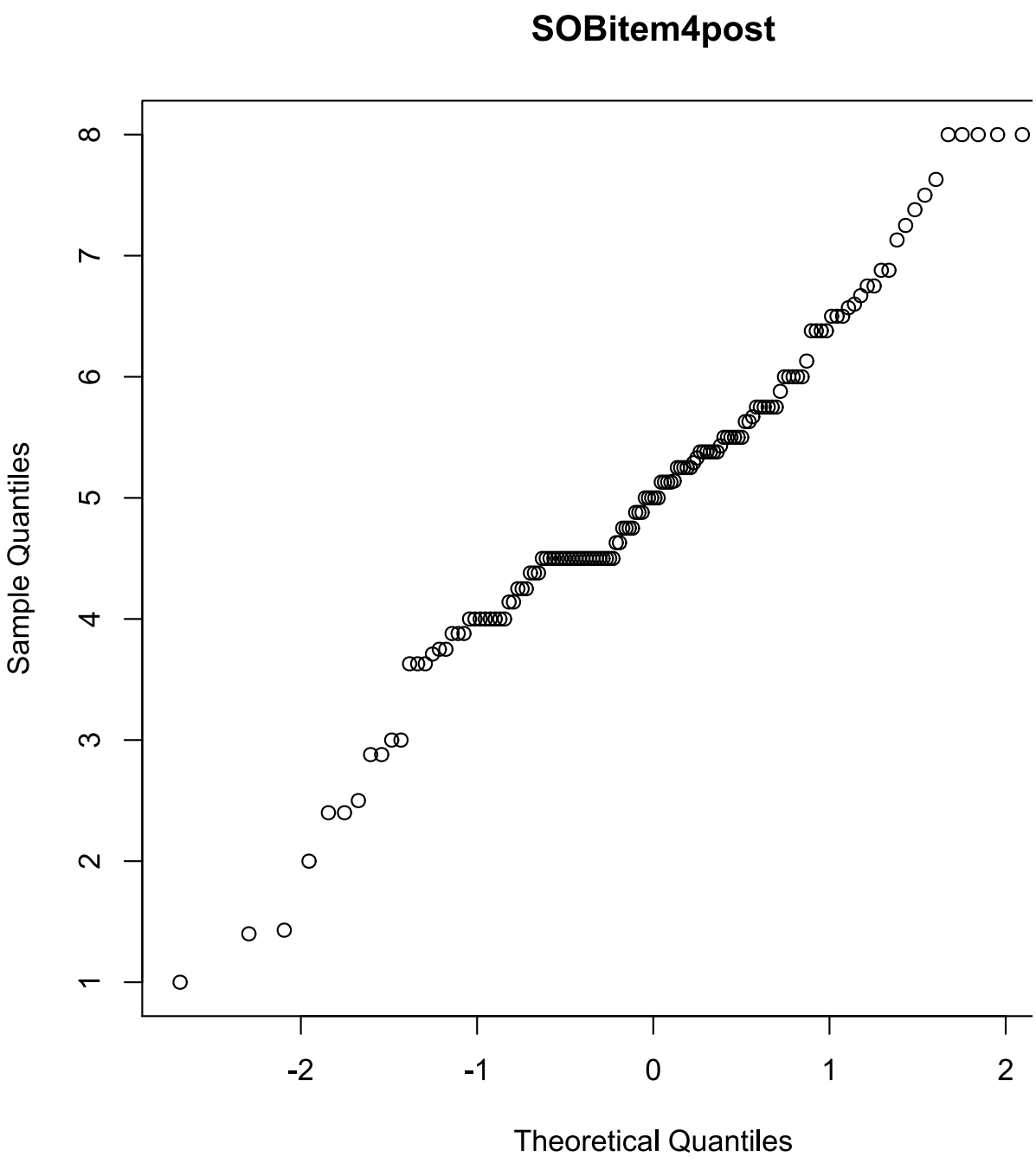





```
[1] "SOBitem4post" "21"           "outliers"
```

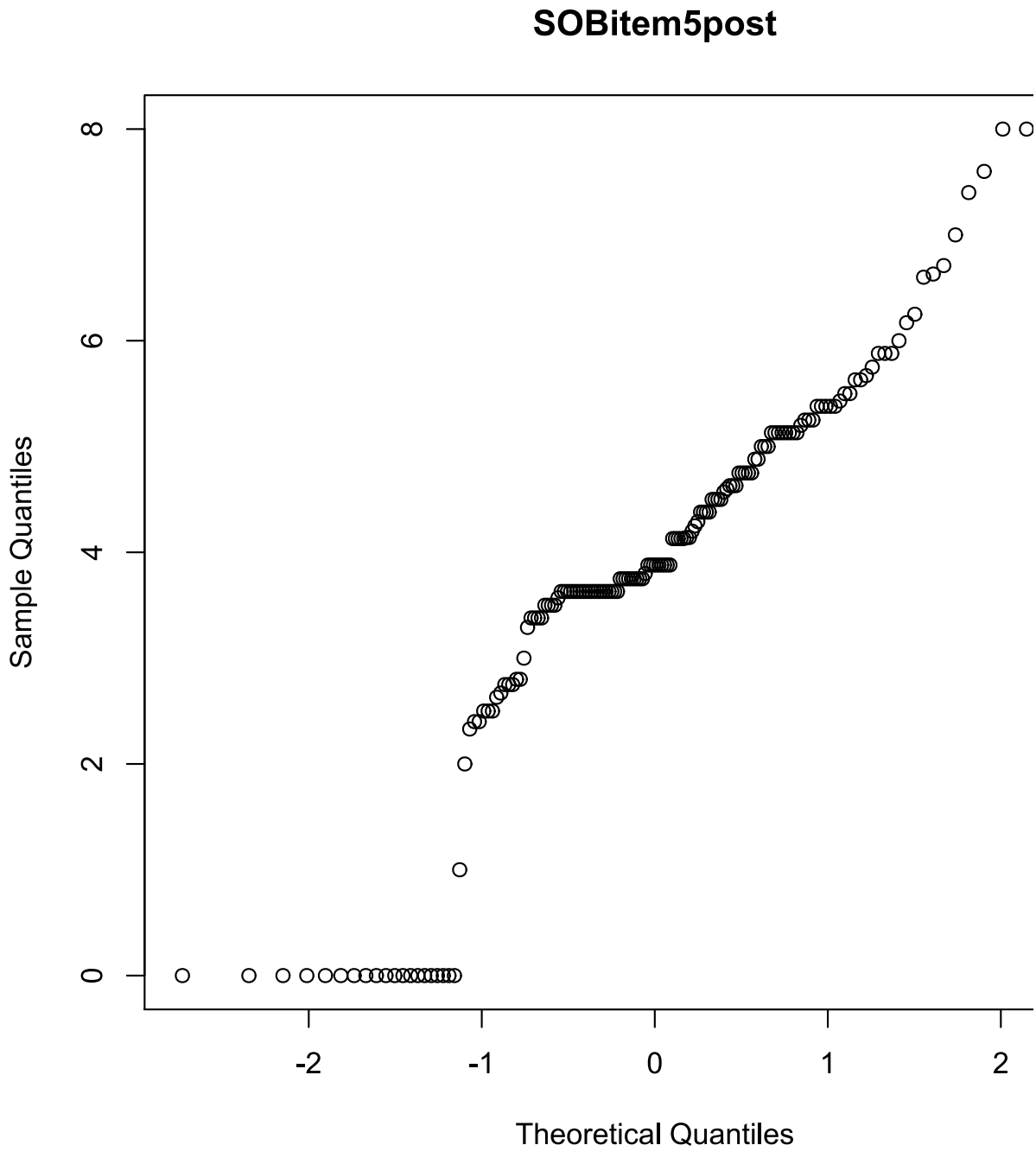


```
[1] "SOBitem5post" "1"            "outliers"
```



	X1	X2
1	1	5
2	2	21
3	3	1
4	4	1
5	5	2
6	6	19
7	7	19
8	8	2
9	9	1

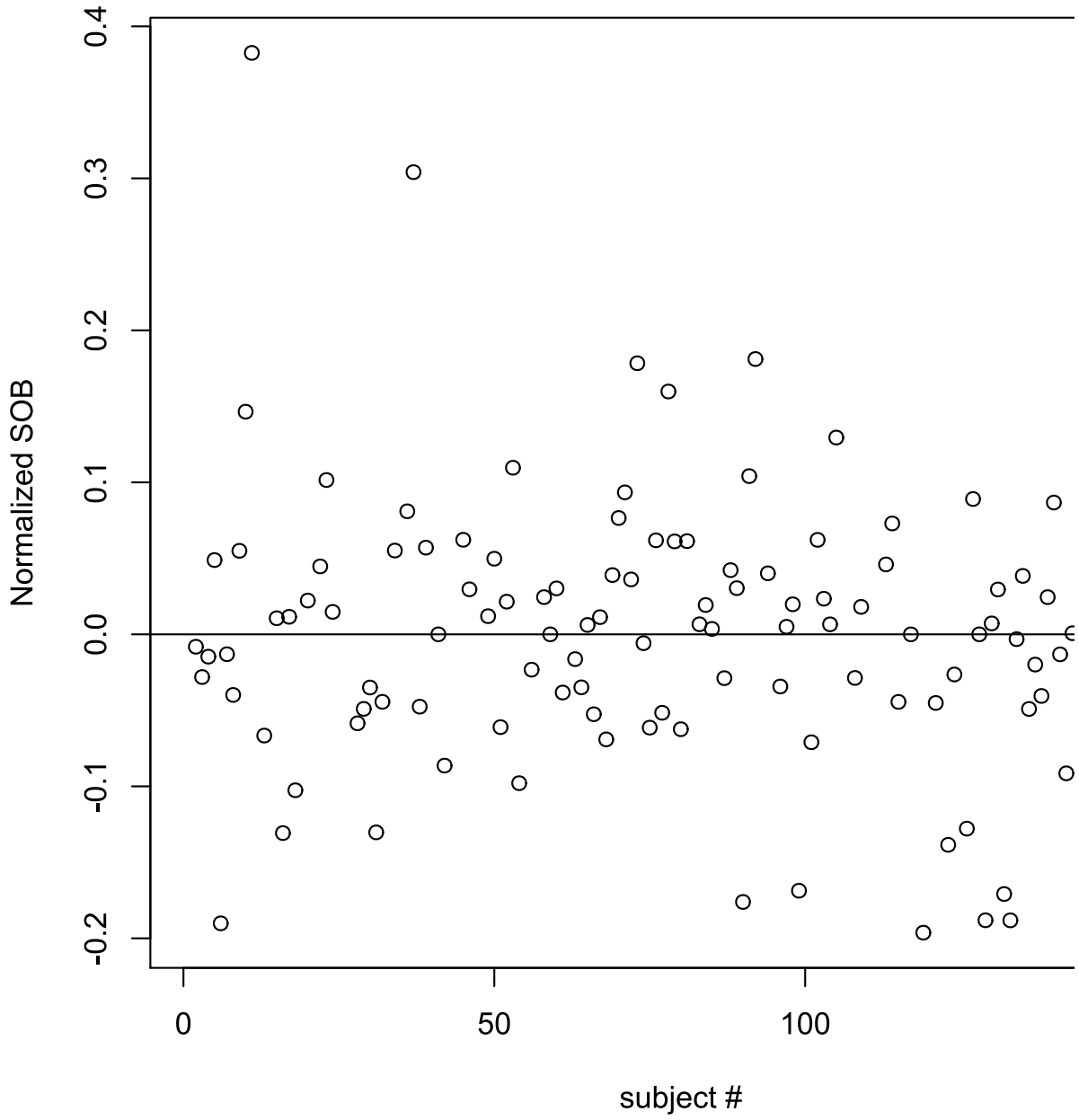
```
10 10  1
11 11  1
12 12  1
13 13 22
14 14 22
15 15 21
16 16 21
17 17  1
```



In [5]:
```
library(psych)
```

In [6]:
```
# compute the Sense of beloning indicator
data$SOB_pre = (data$SOBitem1pre+data$SOBitem2pre+data$SOBitem3pre
                +data$SOBitem4pre+data$SOBitem5pre)/5
data$SOB_post=(data$SOBitem1post+data$SOBitem2psot+data$SOBitem3post
               +data$SOBitem4post+data$SOBitem5post)/5
data$SOB_indicator = (data$SOB_post - data$SOB_pre)/(data$SOB_post + data$SO
# positive means effort based and negative means ability based sense of belo
```

In [7]:
```
plot(data$SOB_indicator,xlab='subject #',ylab='Normalized SOB')
abline(0,0)
```



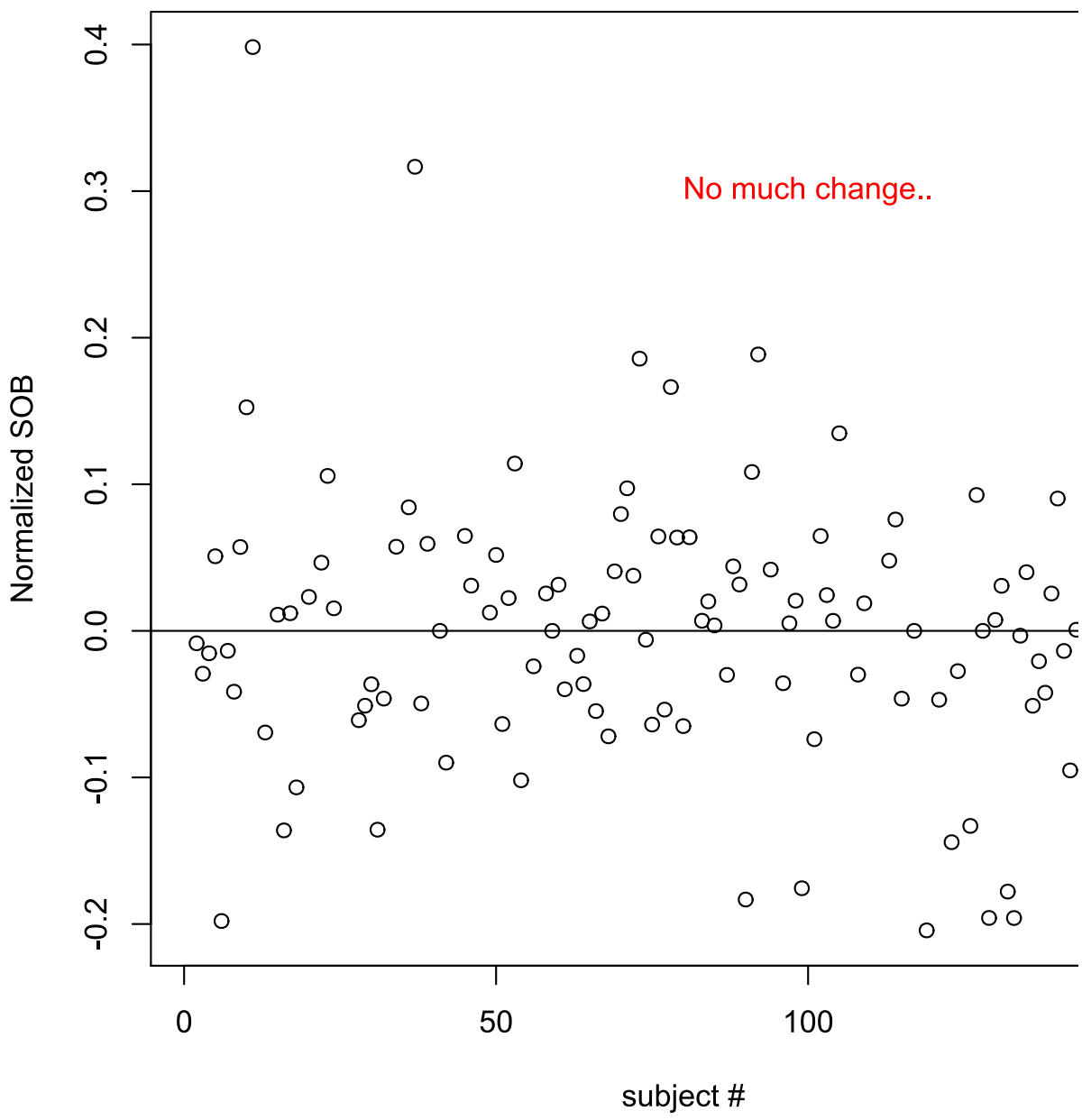
Compute the self-estimate for day 1 and day 2 separately

In [8]:
```
norm_vec <- function(x) sqrt(sum(x^2,na.rm =T)) # function for normalization
V1 = data$Post1Taskfeel1+data$Post1Taskfeel2+data$Post1Taskfeel3 # day1 self
V2 = data$Post2Taskfeel1+data$Post2Taskfeel2 # day2 self-feeling
data$self_estimate = ((V1 - mean(V1,na.rm=T)) / norm_vec(V1))- ((data$ACC1 -
data$self_estimate2 = ((V2 - mean(V2,na.rm=T)) / norm_vec(V2))- ((data$ACC2
```

Normalize other variables

In [9]:
```
data$ACC1 = data$ACC1 - mean(data$ACC1,na.rm = T)
data$ACC2 = data$ACC2 - mean(data$ACC2,na.rm = T)
#data$Conf1 = data$Conf1 - mean(data$Conf1,na.rm = T)
#data$Conf2 = data$Conf2 - mean(data$Conf2,na.rm = T)
data$SOB_indicator = data$SOB_indicator / norm_vec(data$SOB_indicator) # res
```

In [10]:
```
plot(data$SOB_indicator,xlab='subject #',ylab='Normalized SOB')
abline(0,0)
text(100,0.3,'No much change..',col='red')
```



Descriptive stats

In [11]:
```
describe(data)
cor.ci(data)
```

Out[11]:

	vars	n	mean	sd	median	trimmed	m
ACC1	1	154	2.306006e-17	0.1869272	-0.0192776	-0.002392517	0
ACC2	2	136	1.307899e-17	0.1855243	0.01194853	0.003141711	0
Conf1	3	154	2.980519	0.7273443	3	3	0
Conf2	4	136	3.161765	0.6579495	3	3.209091	0
Post1Taskfeel1	5	158	3.012658	1.643312	3	2.921875	1
Post1Taskfeel2	6	158	3.753165	1.818821	4	3.742188	1
Post1Taskfeel3	7	144	3.090278	1.408829	4	3.112069	1
Post2Taskfeel1	8	140	2.828571	1.393422	3	2.723214	1
Post2Taskfeel2	9	140	3.228571	1.533055	3	3.160714	1
SOBitem1pre	10	157	4.393885	2.290147	4.5	4.372756	2
SOBitem2pre	11	158	4.75	1.870804	4.75	4.792969	2
SOBitem3pre	12	156	5.457308	1.5109	5.5	5.47627	1
SOBitem4pre	13	147	4.996735	0.9890795	4.88	4.962605	1
SOBitem5pre	14	148	4.2325	0.9974941	4.13	4.19925	1
SOBitem1post	15	137	4.164818	2.379037	4.5	4.088559	3
SOBitem2psot	16	137	4.72927	1.913808	5	4.841532	2
SOBitem3post	17	135	5.743185	1.340997	5.67	5.747706	1
SOBitem4post	18	127	5.01622	1.082561	5	5.006408	0
SOBitem5post	19	134	4.283507	1.128622	4.13	4.250556	0
gender	20	124	0.6048387	0.4908686	1	0.63	0
year	21	124	1.620968	0.8124313	2	1.62	1
SOB_pre	22	141	4.717589	1.000148	4.676	4.710903	1
SOB_post	23	126	4.752698	1.032226	4.789	4.730039	1
SOB_indicator	24	119	-4.334291e-05	0.09205745	0.002491729	-0.0009959665	0
self_estimate	25	141	0.002516085	0.02633706	0.00265576	0.002151162	0
self_estimate2	26	134	0.0002866498	0.02938986	-0.002183953	-0.0003938063	0

Out[11]:

```
Call:cor.ci(x = data)

 Coefficients and bootstrapped confidence intervals
              ACC1  ACC2  Conf1 Conf2 Ps1T1 Ps1T2 Ps1T3 Ps2T1 Ps2T2 SOBt
m1pr
ACC1           1.00
ACC2           0.77  1.00
Conf1          0.63  0.57  1.00
Conf2          0.57  0.54  0.76  1.00
Post1Taskfeel1  0.59  0.42  0.38  0.36  1.00
Post1Taskfeel2  0.48  0.43  0.32  0.27  0.49  1.00
Post1Taskfeel3  0.51  0.31  0.31  0.27  0.73  0.51  1.00
Post2Taskfeel1  0.56  0.43  0.51  0.46  0.54  0.31  0.57  1.00
Post2Taskfeel2  0.30  0.48  0.28  0.23  0.36  0.25  0.38  0.53  1.00
SOBitem1pre    -0.02 -0.07 -0.03 -0.01  0.06  0.08  0.05 -0.03 -0.08  1.0
0
SOBitem2pre    -0.04 -0.01 -0.09 -0.12  0.06  0.17  0.02 -0.08  0.03  0.7
4
SOBitem3pre     0.01  0.03  0.05 -0.06 -0.13  0.08 -0.02 -0.05 -0.07  0.0
4
SOBitem4pre     0.00  0.09 -0.03 -0.03 -0.04  0.16  0.08 -0.01 -0.05  0.3
9
SOBitem5pre    -0.15 -0.18 -0.07 -0.10  0.05  0.14  0.13 -0.01  0.01  0.5
3
SOBitem1post   -0.07 -0.07  0.00  0.03  0.08  0.07  0.05  0.06  0.04  0.7
7
SOBitem2psot   -0.14 -0.07 -0.03 -0.02  0.13  0.11  0.08  0.00  0.08  0.5
9
SOBitem3post   -0.21 -0.11 -0.08 -0.08 -0.33 -0.18 -0.32 -0.24 -0.19  0.1
2
SOBitem4post   -0.15 -0.14 -0.05 -0.01 -0.12 -0.14 -0.07 -0.04 -0.01  0.4
9
SOBitem5post   -0.26 -0.27 -0.24 -0.15 -0.04 -0.09 -0.01  0.01 -0.01  0.3
9
gender          0.32  0.18  0.42  0.30  0.18  0.11  0.19  0.33  0.21  0.1
2
year           -0.11 -0.18 -0.08 -0.08 -0.05 -0.03 -0.09 -0.02  0.02 -0.0
1
SOB_pre        -0.04  0.02 -0.05 -0.09  0.03  0.20  0.14 -0.02 -0.03  0.8
2
SOB_post       -0.14 -0.11 -0.04  0.00  0.04 -0.01  0.02  0.06  0.04  0.7
0
SOB_indicator  -0.15 -0.12  0.07  0.12  0.00 -0.17 -0.16  0.03  0.06 -0.1
3
self_estimate  -0.19 -0.14 -0.09 -0.09  0.55  0.59  0.61  0.20  0.24  0.1
6
self_estimate2 -0.11 -0.25  0.00 -0.04  0.20 -0.01  0.32  0.62  0.61 -0.0
1
              SOBtm2pr
ACC1
ACC2
Conf1
Conf2
```

```
Post1Taskfeel1
Post1Taskfeel2
Post1Taskfeel3
Post2Taskfeel1
Post2Taskfeel2
SOBitem1pre
SOBitem2pre     1.00
SOBitem3pre     0.12
SOBitem4pre     0.43
SOBitem5pre     0.52
SOBitem1post    0.56
SOBitem2psot    0.72
SOBitem3post    0.08
SOBitem4post    0.32
SOBitem5post    0.36
gender          0.07
year            0.08
SOB_pre         0.84
SOB_post        0.61
SOB_indicator  -0.21
self_estimate   0.19
self_estimate2 -0.05
               SOBtm3pr SOBtm4pr SOBtm5pr SOBtm1ps SOBtm2ps SOBtm3ps SOBt
m4ps
SOBitem3pre     1.00
SOBitem4pre     0.45     1.00
SOBitem5pre     0.09     0.41     1.00
SOBitem1post   -0.09     0.33     0.41     1.00
SOBitem2psot   -0.08     0.28     0.43     0.70     1.00
SOBitem3post    0.53     0.19    -0.12    -0.05    -0.03     1.00
SOBitem4post    0.14     0.38     0.18     0.52     0.39     0.36     1.0
0
SOBitem5post   -0.14     0.09     0.49     0.50     0.51    -0.03     0.4
8
gender          0.21     0.03     0.03     0.08     0.03     0.23     0.1
4
year           -0.33    -0.07    -0.07     0.08     0.10    -0.22    -0.0
3
SOB_pre         0.28     0.74     0.65     0.59     0.58     0.11     0.4
5
SOB_post       -0.07     0.42     0.39     0.86     0.80     0.14     0.7
5
SOB_indicator  -0.43    -0.29    -0.26     0.31     0.31     0.08     0.3
7
self_estimate  -0.03     0.10     0.32     0.20     0.31    -0.21     0.0
1
self_estimate2 -0.09    -0.14     0.11     0.12     0.10    -0.20     0.0
9
               SOBtm5ps gendr year  SOB_pr
SOBitem3pre
SOBitem4pre
SOBitem5pre
SOBitem1post
```

```
SOBitem2psot
SOBitem3post
SOBitem4post
SOBitem5post    1.00
gender         -0.01     1.00
year            0.08    -0.07  1.00
SOB_pre         0.33     0.05 -0.05  1.00
SOB_post        0.70     0.12  0.08  0.67
SOB_indicator   0.44     0.04  0.15 -0.36
self_estimate   0.21    -0.08  0.02  0.26
self_estimate2  0.22     0.16  0.16 -0.07
               SOB_ps SOB_n slf_s slf_2
SOB_post        1.00
SOB_indicator   0.44   1.00
self_estimate   0.19  -0.02  1.00
self_estimate2  0.13   0.14  0.38  1.00

 scale correlations and bootstrapped confidence intervals
                  lower.emp lower.norm estimate upper.norm upper.emp    p
ACC1-ACC2              0.70       0.69     0.77       0.84      0.83 0.00
ACC1-Conf1             0.52       0.51     0.63       0.71      0.71 0.00
ACC1-Conf2             0.44       0.44     0.57       0.65      0.64 0.00
ACC1-Ps1T1             0.47       0.46     0.59       0.71      0.71 0.00
ACC1-Ps1T2             0.34       0.32     0.48       0.62      0.61 0.00
ACC1-Ps1T3             0.37       0.37     0.51       0.65      0.63 0.00
ACC1-Ps2T1             0.43       0.42     0.56       0.66      0.65 0.00
ACC1-Ps2T2             0.15       0.13     0.30       0.47      0.46 0.00
ACC1-SOBtm1pr         -0.18      -0.19    -0.02       0.14      0.12 0.75
ACC1-SOBtm2pr         -0.18      -0.19    -0.04       0.11      0.10 0.61
ACC1-SOBtm3pr         -0.16      -0.15     0.01       0.17      0.16 0.91
ACC1-SOBtm4pr         -0.11      -0.14     0.00       0.17      0.14 0.87
ACC1-SOBtm5pr         -0.28      -0.31    -0.15       0.04      0.04 0.14
ACC1-SOBtm1ps         -0.24      -0.27    -0.07       0.12      0.14 0.44
ACC1-SOBtm2ps         -0.33      -0.32    -0.14       0.04      0.05 0.13
ACC1-SOBtm3ps         -0.35      -0.38    -0.21      -0.04     -0.04 0.02
ACC1-SOBtm4ps         -0.28      -0.30    -0.15       0.01     -0.01 0.06
ACC1-SOBtm5ps         -0.40      -0.41    -0.26      -0.12     -0.13 0.00
ACC1-gendr             0.16       0.13     0.32       0.45      0.44 0.00
ACC1-year             -0.26      -0.28    -0.11       0.07      0.07 0.24
ACC1-SOB_pr           -0.18      -0.18    -0.04       0.12      0.09 0.70
ACC1-SOB_ps           -0.33      -0.32    -0.14       0.05      0.04 0.14
ACC1-SOB_n            -0.35      -0.35    -0.15       0.05      0.06 0.15
ACC1-slf_s            -0.32      -0.34    -0.19       0.01     -0.01 0.07
ACC1-slf_2            -0.28      -0.30    -0.11       0.08      0.09 0.25
ACC2-Conf1             0.47       0.44     0.57       0.69      0.68 0.00
ACC2-Conf2             0.42       0.41     0.54       0.65      0.63 0.00
ACC2-Ps1T1             0.29       0.26     0.42       0.58      0.57 0.00
ACC2-Ps1T2             0.27       0.26     0.43       0.57      0.58 0.00
ACC2-Ps1T3             0.17       0.15     0.31       0.46      0.45 0.00
ACC2-Ps2T1             0.28       0.27     0.43       0.56      0.55 0.00
ACC2-Ps2T2             0.36       0.34     0.48       0.60      0.60 0.00
ACC2-SOBtm1pr         -0.21      -0.23    -0.07       0.08      0.10 0.35
ACC2-SOBtm2pr         -0.14      -0.16    -0.01       0.16      0.18 1.00
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ACC2-SOBtm3pr	-0.10	-0.11	0.03	0.16	0.15	0.76
ACC2-SOBtm4pr	-0.07	-0.06	0.09	0.25	0.23	0.21
ACC2-SOBtm5pr	-0.32	-0.34	-0.18	0.02	0.00	0.08
ACC2-SOBtm1ps	-0.26	-0.27	-0.07	0.12	0.12	0.43
ACC2-SOBtm2ps	-0.23	-0.25	-0.07	0.12	0.12	0.47
ACC2-SOBtm3ps	-0.28	-0.31	-0.11	0.06	0.06	0.19
ACC2-SOBtm4ps	-0.29	-0.30	-0.14	0.01	0.01	0.07
ACC2-SOBtm5ps	-0.40	-0.42	-0.27	-0.12	-0.13	0.00
ACC2-gendr	0.01	-0.01	0.18	0.35	0.35	0.07
ACC2-year	-0.32	-0.35	-0.18	0.02	0.02	0.08
ACC2-SOB_pr	-0.10	-0.12	0.02	0.17	0.17	0.73
ACC2-SOB_ps	-0.26	-0.28	-0.11	0.06	0.07	0.21
ACC2-SOB_n	-0.34	-0.32	-0.12	0.09	0.05	0.26
ACC2-slf_s	-0.29	-0.31	-0.14	0.04	0.04	0.12
ACC2-slf_2	-0.40	-0.42	-0.25	-0.07	-0.07	0.01
Conf1-Conf2	0.68	0.67	0.76	0.83	0.84	0.00
Conf1-Ps1T1	0.23	0.25	0.38	0.50	0.49	0.00
Conf1-Ps1T2	0.15	0.14	0.32	0.47	0.46	0.00
Conf1-Ps1T3	0.16	0.16	0.31	0.45	0.44	0.00
Conf1-Ps2T1	0.41	0.39	0.51	0.62	0.63	0.00
Conf1-Ps2T2	0.14	0.12	0.28	0.44	0.44	0.00
Conf1-SOBtm1pr	-0.21	-0.20	-0.03	0.14	0.13	0.69
Conf1-SOBtm2pr	-0.23	-0.24	-0.09	0.06	0.04	0.23
Conf1-SOBtm3pr	-0.11	-0.11	0.05	0.19	0.18	0.60
Conf1-SOBtm4pr	-0.13	-0.15	-0.03	0.11	0.11	0.76
Conf1-SOBtm5pr	-0.25	-0.24	-0.07	0.12	0.09	0.47
Conf1-SOBtm1ps	-0.20	-0.19	0.00	0.19	0.17	0.98
Conf1-SOBtm2ps	-0.20	-0.22	-0.03	0.15	0.11	0.72
Conf1-SOBtm3ps	-0.25	-0.25	-0.08	0.09	0.10	0.33
Conf1-SOBtm4ps	-0.18	-0.18	-0.05	0.10	0.11	0.55
Conf1-SOBtm5ps	-0.37	-0.38	-0.24	-0.07	-0.10	0.01
Conf1-gendr	0.26	0.24	0.42	0.55	0.57	0.00
Conf1-year	-0.22	-0.23	-0.08	0.10	0.10	0.42
Conf1-SOB_pr	-0.18	-0.19	-0.05	0.07	0.06	0.37
Conf1-SOB_ps	-0.20	-0.21	-0.04	0.14	0.12	0.73
Conf1-SOB_n	-0.13	-0.13	0.07	0.29	0.29	0.44
Conf1-slf_s	-0.23	-0.25	-0.09	0.08	0.08	0.32
Conf1-slf_2	-0.16	-0.17	0.00	0.19	0.22	0.93
Conf2-Ps1T1	0.21	0.21	0.36	0.50	0.49	0.00
Conf2-Ps1T2	0.10	0.09	0.27	0.42	0.43	0.00
Conf2-Ps1T3	0.10	0.10	0.27	0.45	0.46	0.00
Conf2-Ps2T1	0.33	0.33	0.46	0.59	0.60	0.00
Conf2-Ps2T2	0.05	0.05	0.23	0.40	0.40	0.01
Conf2-SOBtm1pr	-0.17	-0.18	-0.01	0.14	0.15	0.83
Conf2-SOBtm2pr	-0.27	-0.30	-0.12	0.05	0.05	0.17
Conf2-SOBtm3pr	-0.21	-0.21	-0.06	0.09	0.08	0.41
Conf2-SOBtm4pr	-0.17	-0.18	-0.03	0.12	0.11	0.74
Conf2-SOBtm5pr	-0.28	-0.27	-0.10	0.08	0.07	0.29
Conf2-SOBtm1ps	-0.17	-0.16	0.03	0.20	0.19	0.84
Conf2-SOBtm2ps	-0.21	-0.21	-0.02	0.16	0.15	0.78
Conf2-SOBtm3ps	-0.25	-0.26	-0.08	0.08	0.07	0.31
Conf2-SOBtm4ps	-0.12	-0.14	-0.01	0.11	0.12	0.85
Conf2-SOBtm5ps	-0.33	-0.31	-0.15	0.02	0.00	0.08

Conf2-gendr	0.13	0.10	0.30	0.47	0.48	0.00
Conf2-year	-0.22	-0.23	-0.08	0.08	0.07	0.35
Conf2-SOB_pr	-0.25	-0.26	-0.09	0.06	0.06	0.22
Conf2-SOB_ps	-0.15	-0.16	0.00	0.15	0.15	0.97
Conf2-SOB_n	-0.10	-0.09	0.12	0.34	0.32	0.26
Conf2-slf_s	-0.25	-0.24	-0.09	0.07	0.05	0.28
Conf2-slf_2	-0.18	-0.21	-0.04	0.16	0.20	0.78
Ps1T1-Ps1T2	0.32	0.33	0.49	0.62	0.62	0.00
Ps1T1-Ps1T3	0.64	0.64	0.73	0.80	0.79	0.00
Ps1T1-Ps2T1	0.38	0.38	0.54	0.67	0.66	0.00
Ps1T1-Ps2T2	0.23	0.21	0.36	0.51	0.51	0.00
Ps1T1-SOBtm1pr	-0.10	-0.11	0.06	0.20	0.19	0.54
Ps1T1-SOBtm2pr	-0.10	-0.09	0.06	0.19	0.17	0.51
Ps1T1-SOBtm3pr	-0.30	-0.29	-0.13	0.04	0.02	0.13
Ps1T1-SOBtm4pr	-0.19	-0.20	-0.04	0.12	0.12	0.64
Ps1T1-SOBtm5pr	-0.08	-0.10	0.05	0.20	0.22	0.51
Ps1T1-SOBtm1ps	-0.08	-0.09	0.08	0.22	0.23	0.41
Ps1T1-SOBtm2ps	-0.02	-0.04	0.13	0.27	0.27	0.14
Ps1T1-SOBtm3ps	-0.48	-0.48	-0.33	-0.18	-0.19	0.00
Ps1T1-SOBtm4ps	-0.29	-0.26	-0.12	0.04	0.01	0.14
Ps1T1-SOBtm5ps	-0.20	-0.20	-0.04	0.11	0.10	0.55
Ps1T1-gendr	0.00	-0.01	0.18	0.34	0.35	0.06
Ps1T1-year	-0.22	-0.23	-0.05	0.13	0.13	0.57
Ps1T1-SOB_pr	-0.09	-0.11	0.03	0.15	0.14	0.79
Ps1T1-SOB_ps	-0.10	-0.11	0.04	0.18	0.19	0.67
Ps1T1-SOB_n	-0.17	-0.19	0.00	0.21	0.19	0.90
Ps1T1-slf_s	0.43	0.43	0.55	0.66	0.65	0.00
Ps1T1-slf_2	0.03	0.01	0.20	0.38	0.38	0.04
Ps1T2-Ps1T3	0.37	0.37	0.51	0.65	0.63	0.00
Ps1T2-Ps2T1	0.12	0.12	0.31	0.48	0.47	0.00
Ps1T2-Ps2T2	0.10	0.10	0.25	0.42	0.43	0.00
Ps1T2-SOBtm1pr	-0.07	-0.08	0.08	0.23	0.24	0.35
Ps1T2-SOBtm2pr	0.04	0.04	0.17	0.33	0.33	0.01
Ps1T2-SOBtm3pr	-0.06	-0.08	0.08	0.22	0.21	0.35
Ps1T2-SOBtm4pr	0.04	0.01	0.16	0.30	0.32	0.03
Ps1T2-SOBtm5pr	0.03	-0.02	0.14	0.32	0.36	0.08
Ps1T2-SOBtm1ps	-0.09	-0.11	0.07	0.23	0.21	0.49
Ps1T2-SOBtm2ps	-0.07	-0.06	0.11	0.29	0.27	0.19
Ps1T2-SOBtm3ps	-0.37	-0.37	-0.18	-0.01	-0.03	0.04
Ps1T2-SOBtm4ps	-0.29	-0.31	-0.14	0.03	0.01	0.10
Ps1T2-SOBtm5ps	-0.29	-0.26	-0.09	0.08	0.08	0.31
Ps1T2-gendr	-0.05	-0.05	0.11	0.26	0.24	0.17
Ps1T2-year	-0.20	-0.20	-0.03	0.17	0.15	0.85
Ps1T2-SOB_pr	0.07	0.05	0.20	0.37	0.39	0.01
Ps1T2-SOB_ps	-0.21	-0.20	-0.01	0.17	0.16	0.87
Ps1T2-SOB_n	-0.34	-0.35	-0.17	0.01	0.05	0.06
Ps1T2-slf_s	0.49	0.49	0.59	0.69	0.68	0.00
Ps1T2-slf_2	-0.18	-0.19	-0.01	0.18	0.16	0.97
Ps1T3-Ps2T1	0.42	0.41	0.57	0.69	0.68	0.00
Ps1T3-Ps2T2	0.23	0.22	0.38	0.54	0.52	0.00
Ps1T3-SOBtm1pr	-0.09	-0.12	0.05	0.21	0.19	0.56
Ps1T3-SOBtm2pr	-0.11	-0.13	0.02	0.19	0.18	0.71
Ps1T3-SOBtm3pr	-0.21	-0.21	-0.02	0.14	0.10	0.69

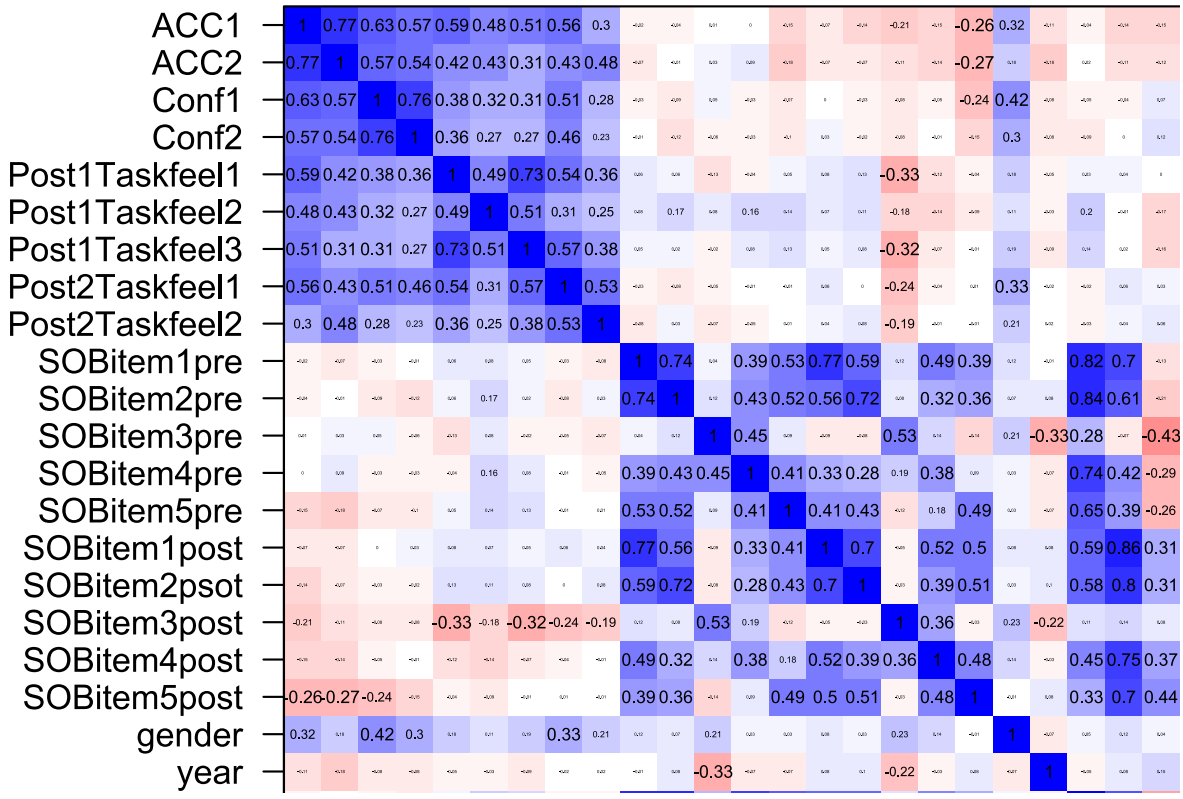
Ps1T3-SOBtm4pr	-0.08	-0.10	0.08	0.24	0.21	0.40
Ps1T3-SOBtm5pr	-0.03	-0.05	0.13	0.28	0.28	0.18
Ps1T3-SOBtm1ps	-0.11	-0.12	0.05	0.20	0.18	0.65
Ps1T3-SOBtm2ps	-0.08	-0.11	0.08	0.26	0.26	0.43
Ps1T3-SOBtm3ps	-0.48	-0.50	-0.32	-0.17	-0.18	0.00
Ps1T3-SOBtm4ps	-0.20	-0.21	-0.07	0.11	0.07	0.54
Ps1T3-SOBtm5ps	-0.18	-0.18	-0.01	0.15	0.13	0.85
Ps1T3-gendr	0.02	0.00	0.19	0.36	0.39	0.05
Ps1T3-year	-0.24	-0.27	-0.09	0.09	0.07	0.31
Ps1T3-SOB_pr	0.00	-0.03	0.14	0.31	0.29	0.11
Ps1T3-SOB_ps	-0.14	-0.14	0.02	0.17	0.18	0.83
Ps1T3-SOB_n	-0.34	-0.35	-0.16	0.07	0.06	0.19
Ps1T3-slf_s	0.52	0.52	0.61	0.70	0.70	0.00
Ps1T3-slf_2	0.16	0.14	0.32	0.47	0.47	0.00
Ps2T1-Ps2T2	0.37	0.34	0.53	0.70	0.69	0.00
Ps2T1-SOBtm1pr	-0.21	-0.21	-0.03	0.15	0.11	0.73
Ps2T1-SOBtm2pr	-0.24	-0.24	-0.08	0.08	0.06	0.31
Ps2T1-SOBtm3pr	-0.20	-0.20	-0.05	0.10	0.09	0.49
Ps2T1-SOBtm4pr	-0.14	-0.17	-0.01	0.15	0.14	0.92
Ps2T1-SOBtm5pr	-0.16	-0.17	-0.01	0.16	0.15	0.94
Ps2T1-SOBtm1ps	-0.12	-0.12	0.06	0.24	0.23	0.51
Ps2T1-SOBtm2ps	-0.18	-0.18	0.00	0.18	0.16	1.00
Ps2T1-SOBtm3ps	-0.37	-0.40	-0.24	-0.09	-0.10	0.00
Ps2T1-SOBtm4ps	-0.17	-0.18	-0.04	0.14	0.12	0.84
Ps2T1-SOBtm5ps	-0.15	-0.15	0.01	0.19	0.18	0.82
Ps2T1-gendr	0.16	0.15	0.33	0.49	0.48	0.00
Ps2T1-year	-0.19	-0.21	-0.02	0.17	0.16	0.83
Ps2T1-SOB_pr	-0.17	-0.19	-0.02	0.14	0.14	0.79
Ps2T1-SOB_ps	-0.14	-0.12	0.06	0.25	0.25	0.48
Ps2T1-SOB_n	-0.11	-0.13	0.03	0.22	0.23	0.60
Ps2T1-slf_s	0.01	0.04	0.20	0.36	0.34	0.02
Ps2T1-slf_2	0.52	0.51	0.62	0.72	0.72	0.00
Ps2T2-SOBtm1pr	-0.24	-0.23	-0.08	0.08	0.09	0.35
Ps2T2-SOBtm2pr	-0.09	-0.12	0.03	0.19	0.18	0.64
Ps2T2-SOBtm3pr	-0.22	-0.23	-0.07	0.06	0.07	0.25
Ps2T2-SOBtm4pr	-0.18	-0.21	-0.05	0.10	0.12	0.50
Ps2T2-SOBtm5pr	-0.12	-0.15	0.01	0.17	0.16	0.88
Ps2T2-SOBtm1ps	-0.13	-0.16	0.04	0.23	0.27	0.69
Ps2T2-SOBtm2ps	-0.09	-0.11	0.08	0.26	0.28	0.40
Ps2T2-SOBtm3ps	-0.38	-0.36	-0.19	-0.07	-0.08	0.01
Ps2T2-SOBtm4ps	-0.14	-0.16	-0.01	0.15	0.17	0.94
Ps2T2-SOBtm5ps	-0.16	-0.18	-0.01	0.16	0.18	0.91
Ps2T2-gendr	0.02	0.02	0.21	0.37	0.39	0.03
Ps2T2-year	-0.17	-0.15	0.02	0.19	0.16	0.79
Ps2T2-SOB_pr	-0.17	-0.19	-0.03	0.13	0.13	0.71
Ps2T2-SOB_ps	-0.13	-0.14	0.04	0.21	0.22	0.68
Ps2T2-SOB_n	-0.10	-0.11	0.06	0.24	0.21	0.47
Ps2T2-slf_s	0.10	0.10	0.24	0.38	0.38	0.00
Ps2T2-slf_2	0.49	0.50	0.61	0.70	0.70	0.00
SOBtm1pr-SOBtm2pr	0.65	0.64	0.74	0.80	0.81	0.00
SOBtm1pr-SOBtm3pr	-0.14	-0.12	0.04	0.19	0.17	0.66
SOBtm1pr-SOBtm4pr	0.24	0.23	0.39	0.51	0.51	0.00
SOBtm1pr-SOBtm5pr	0.40	0.41	0.53	0.63	0.62	0.00

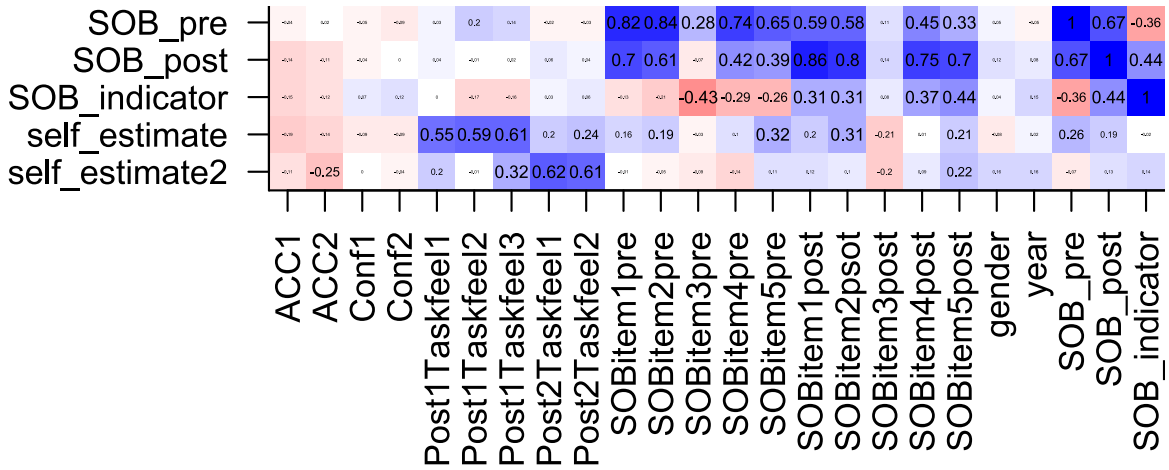
SOBtm1pr-SOBtm1ps	0.70	0.69	0.77	0.85	0.85	0.00
SOBtm1pr-SOBtm2ps	0.49	0.49	0.59	0.69	0.68	0.00
SOBtm1pr-SOBtm3ps	-0.04	-0.06	0.12	0.29	0.28	0.19
SOBtm1pr-SOBtm4ps	0.39	0.36	0.49	0.62	0.62	0.00
SOBtm1pr-SOBtm5ps	0.27	0.26	0.39	0.53	0.53	0.00
SOBtm1pr-gendr	-0.05	-0.06	0.12	0.28	0.27	0.20
SOBtm1pr-year	-0.16	-0.17	-0.01	0.14	0.15	0.85
SOBtm1pr-SOB_pr	0.76	0.76	0.82	0.86	0.85	0.00
SOBtm1pr-SOB_ps	0.61	0.61	0.70	0.79	0.79	0.00
SOBtm1pr-SOB_n	-0.28	-0.29	-0.13	0.06	0.06	0.18
SOBtm1pr-slf_s	0.00	0.01	0.16	0.29	0.28	0.04
SOBtm1pr-slf_2	-0.19	-0.18	-0.01	0.17	0.15	0.93
SOBtm2pr-SOBtm3pr	-0.03	-0.04	0.12	0.25	0.25	0.14
SOBtm2pr-SOBtm4pr	0.29	0.29	0.43	0.53	0.52	0.00
SOBtm2pr-SOBtm5pr	0.40	0.39	0.52	0.63	0.63	0.00
SOBtm2pr-SOBtm1ps	0.44	0.43	0.56	0.67	0.67	0.00
SOBtm2pr-SOBtm2ps	0.62	0.63	0.72	0.80	0.79	0.00
SOBtm2pr-SOBtm3ps	-0.08	-0.10	0.08	0.24	0.23	0.40
SOBtm2pr-SOBtm4ps	0.17	0.16	0.32	0.44	0.46	0.00
SOBtm2pr-SOBtm5ps	0.20	0.22	0.36	0.50	0.50	0.00
SOBtm2pr-gendr	-0.12	-0.11	0.07	0.22	0.21	0.50
SOBtm2pr-year	-0.07	-0.07	0.08	0.24	0.25	0.29
SOBtm2pr-SOB_pr	0.79	0.79	0.84	0.88	0.88	0.00
SOBtm2pr-SOB_ps	0.46	0.47	0.61	0.71	0.70	0.00
SOBtm2pr-SOB_n	-0.37	-0.40	-0.21	0.02	0.01	0.08
SOBtm2pr-slf_s	0.06	0.06	0.19	0.32	0.31	0.01
SOBtm2pr-slf_2	-0.20	-0.21	-0.05	0.12	0.13	0.57
SOBtm3pr-SOBtm4pr	0.32	0.33	0.45	0.56	0.55	0.00
SOBtm3pr-SOBtm5pr	-0.08	-0.10	0.09	0.25	0.24	0.40
SOBtm3pr-SOBtm1ps	-0.27	-0.26	-0.09	0.08	0.05	0.28
SOBtm3pr-SOBtm2ps	-0.25	-0.24	-0.08	0.07	0.04	0.28
SOBtm3pr-SOBtm3ps	0.33	0.35	0.53	0.68	0.66	0.00
SOBtm3pr-SOBtm4ps	-0.07	-0.08	0.14	0.34	0.35	0.21
SOBtm3pr-SOBtm5ps	-0.38	-0.37	-0.14	0.05	0.05	0.15
SOBtm3pr-gendr	0.04	0.05	0.21	0.36	0.34	0.01
SOBtm3pr-year	-0.47	-0.48	-0.33	-0.18	-0.17	0.00
SOBtm3pr-SOB_pr	0.13	0.12	0.28	0.42	0.42	0.00
SOBtm3pr-SOB_ps	-0.32	-0.30	-0.07	0.15	0.10	0.50
SOBtm3pr-SOB_n	-0.55	-0.57	-0.43	-0.29	-0.30	0.00
SOBtm3pr-slf_s	-0.16	-0.18	-0.03	0.11	0.12	0.63
SOBtm3pr-slf_2	-0.27	-0.26	-0.09	0.06	0.04	0.22
SOBtm4pr-SOBtm5pr	0.27	0.27	0.41	0.54	0.53	0.00
SOBtm4pr-SOBtm1ps	0.17	0.15	0.33	0.47	0.46	0.00
SOBtm4pr-SOBtm2ps	0.14	0.12	0.28	0.41	0.41	0.00
SOBtm4pr-SOBtm3ps	0.05	0.02	0.19	0.36	0.36	0.03
SOBtm4pr-SOBtm4ps	0.18	0.19	0.38	0.55	0.53	0.00
SOBtm4pr-SOBtm5ps	-0.09	-0.10	0.09	0.27	0.28	0.35
SOBtm4pr-gendr	-0.18	-0.17	0.03	0.22	0.19	0.82
SOBtm4pr-year	-0.22	-0.25	-0.07	0.12	0.13	0.46
SOBtm4pr-SOB_pr	0.65	0.65	0.74	0.79	0.79	0.00
SOBtm4pr-SOB_ps	0.25	0.24	0.42	0.57	0.55	0.00
SOBtm4pr-SOB_n	-0.40	-0.43	-0.29	-0.12	-0.13	0.00
SOBtm4pr-slf_s	-0.03	-0.05	0.10	0.23	0.22	0.21

SOBtm4pr-slf_2	-0.31	-0.30	-0.14	0.01	-0.01	0.08
SOBtm5pr-SOBtm1ps	0.29	0.28	0.41	0.56	0.56	0.00
SOBtm5pr-SOBtm2ps	0.30	0.28	0.43	0.56	0.55	0.00
SOBtm5pr-SOBtm3ps	-0.36	-0.33	-0.12	0.07	0.04	0.20
SOBtm5pr-SOBtm4ps	0.05	0.05	0.18	0.33	0.33	0.01
SOBtm5pr-SOBtm5ps	0.34	0.35	0.49	0.64	0.63	0.00
SOBtm5pr-gendr	-0.16	-0.16	0.03	0.21	0.20	0.80
SOBtm5pr-year	-0.23	-0.25	-0.07	0.12	0.13	0.50
SOBtm5pr-SOB_pr	0.54	0.54	0.65	0.73	0.73	0.00
SOBtm5pr-SOB_ps	0.28	0.28	0.39	0.52	0.53	0.00
SOBtm5pr-SOB_n	-0.39	-0.39	-0.26	-0.10	-0.10	0.00
SOBtm5pr-slf_s	0.19	0.16	0.32	0.46	0.47	0.00
SOBtm5pr-slf_2	-0.06	-0.06	0.11	0.28	0.27	0.19
SOBtm1ps-SOBtm2ps	0.61	0.60	0.70	0.79	0.78	0.00
SOBtm1ps-SOBtm3ps	-0.21	-0.22	-0.05	0.13	0.12	0.62
SOBtm1ps-SOBtm4ps	0.40	0.39	0.52	0.63	0.63	0.00
SOBtm1ps-SOBtm5ps	0.36	0.36	0.50	0.63	0.64	0.00
SOBtm1ps-gendr	-0.13	-0.12	0.08	0.25	0.24	0.50
SOBtm1ps-year	-0.07	-0.10	0.08	0.26	0.27	0.38
SOBtm1ps-SOB_pr	0.48	0.48	0.59	0.70	0.71	0.00
SOBtm1ps-SOB_ps	0.82	0.82	0.86	0.89	0.89	0.00
SOBtm1ps-SOB_n	0.17	0.16	0.31	0.46	0.46	0.00
SOBtm1ps-slf_s	0.04	0.02	0.20	0.35	0.36	0.03
SOBtm1ps-slf_2	-0.03	-0.05	0.12	0.30	0.27	0.17
SOBtm2ps-SOBtm3ps	-0.22	-0.20	-0.03	0.14	0.14	0.75
SOBtm2ps-SOBtm4ps	0.26	0.24	0.39	0.52	0.50	0.00
SOBtm2ps-SOBtm5ps	0.39	0.40	0.51	0.63	0.62	0.00
SOBtm2ps-gendr	-0.14	-0.16	0.03	0.20	0.20	0.82
SOBtm2ps-year	-0.06	-0.07	0.10	0.27	0.24	0.25
SOBtm2ps-SOB_pr	0.47	0.47	0.58	0.68	0.68	0.00
SOBtm2ps-SOB_ps	0.73	0.73	0.80	0.85	0.85	0.00
SOBtm2ps-SOB_n	0.17	0.15	0.31	0.47	0.48	0.00
SOBtm2ps-slf_s	0.16	0.15	0.31	0.46	0.46	0.00
SOBtm2ps-slf_2	-0.07	-0.08	0.10	0.28	0.26	0.28
SOBtm3ps-SOBtm4ps	0.21	0.21	0.36	0.50	0.48	0.00
SOBtm3ps-SOBtm5ps	-0.23	-0.25	-0.03	0.17	0.18	0.73
SOBtm3ps-gendr	0.04	0.03	0.23	0.41	0.39	0.02
SOBtm3ps-year	-0.37	-0.37	-0.22	-0.06	-0.07	0.01
SOBtm3ps-SOB_pr	-0.07	-0.09	0.11	0.30	0.31	0.27
SOBtm3ps-SOB_ps	-0.03	-0.05	0.14	0.32	0.32	0.15
SOBtm3ps-SOB_n	-0.08	-0.09	0.08	0.23	0.24	0.39
SOBtm3ps-slf_s	-0.39	-0.38	-0.21	-0.06	-0.08	0.01
SOBtm3ps-slf_2	-0.39	-0.37	-0.20	-0.04	-0.06	0.02
SOBtm4ps-SOBtm5ps	0.29	0.28	0.48	0.65	0.66	0.00
SOBtm4ps-gendr	-0.06	-0.05	0.14	0.33	0.33	0.15
SOBtm4ps-year	-0.19	-0.21	-0.03	0.17	0.20	0.80
SOBtm4ps-SOB_pr	0.31	0.30	0.45	0.59	0.59	0.00
SOBtm4ps-SOB_ps	0.67	0.66	0.75	0.81	0.81	0.00
SOBtm4ps-SOB_n	0.23	0.22	0.37	0.50	0.52	0.00
SOBtm4ps-slf_s	-0.13	-0.14	0.01	0.16	0.17	0.87
SOBtm4ps-slf_2	-0.06	-0.08	0.09	0.28	0.25	0.26
SOBtm5ps-gendr	-0.22	-0.22	-0.01	0.18	0.17	0.85
SOBtm5ps-year	-0.11	-0.10	0.08	0.25	0.27	0.40

SOBtm5ps-SOB_pr	0.16	0.17	0.33	0.47	0.45	0.00
SOBtm5ps-SOB_ps	0.62	0.60	0.70	0.79	0.79	0.00
SOBtm5ps-SOB_n	0.31	0.30	0.44	0.57	0.56	0.00
SOBtm5ps-slf_s	0.06	0.05	0.21	0.35	0.36	0.01
SOBtm5ps-slf_2	0.07	0.07	0.22	0.38	0.39	0.01
gendr-year	-0.25	-0.24	-0.07	0.10	0.08	0.41
gendr-SOB_pr	-0.12	-0.14	0.05	0.22	0.21	0.66
gendr-SOB_ps	-0.11	-0.08	0.12	0.29	0.26	0.26
gendr-SOB_n	-0.18	-0.17	0.04	0.26	0.23	0.66
gendr-slf_s	-0.22	-0.24	-0.08	0.12	0.13	0.51
gendr-slf_2	-0.02	-0.04	0.16	0.37	0.37	0.12
year-SOB_pr	-0.21	-0.22	-0.05	0.13	0.15	0.58
year-SOB_ps	-0.07	-0.10	0.08	0.26	0.28	0.36
year-SOB_n	-0.07	-0.06	0.15	0.36	0.35	0.17
year-slf_s	-0.15	-0.16	0.02	0.19	0.19	0.83
year-slf_2	0.00	-0.01	0.16	0.31	0.32	0.07
SOB_pr-SOB_ps	0.53	0.53	0.67	0.79	0.79	0.00
SOB_pr-SOB_n	-0.50	-0.52	-0.36	-0.16	-0.16	0.00
SOB_pr-slf_s	0.12	0.09	0.26	0.39	0.39	0.00
SOB_pr-slf_2	-0.24	-0.24	-0.07	0.10	0.07	0.39
SOB_ps-SOB_n	0.31	0.30	0.44	0.57	0.55	0.00
SOB_ps-slf_s	0.06	0.04	0.19	0.31	0.29	0.01
SOB_ps-slf_2	-0.02	-0.05	0.13	0.33	0.34	0.15
SOB_n-slf_s	-0.20	-0.20	-0.02	0.19	0.19	0.96
SOB_n-slf_2	-0.01	-0.03	0.14	0.33	0.35	0.11
slf_s-slf_2	0.22	0.20	0.38	0.54	0.54	0.00

Correlation plot





Step wise regression

Day 1

In [12]:
```
ylims=c(-0.02,0.01)
lmDay1.one = lm(self_estimate~ACC1,data=data)
lmDay1.two = lm(self_estimate ~ Conf1+ACC1,data=data)
# interaction
data$ACCconf1 = data$ACC1 * data$Conf1
lmDay1.three = lm(self_estimate ~ Conf1+ACC1+ACCconf1,data=data)
# direct prediction with moderator SOB
lmDay1.four = lm(data$self_estimate~data$Conf1+data$ACC1+data$ACCconf1+data$
# interactions
data$ACCSOB1=data$ACC1*data$SOB_indicator
data$confSOB1 = data$Conf1*data$SOB_indicator
data$ACCconfSOB1 = data$ACC1*data$SOB_indicator*data$SOB_indicator
lmDay1.five = lm(self_estimate~Conf1+ACC1+SOB_indicator+ACCconf1+confSOB1+AC
```

Summary of the regression models: summary(...)

In [13]:
```
summary(lmDay1.five)
```

Out[13]:
```
Call:
lm(formula = self_estimate ~ Conf1 + ACC1 + SOB_indicator + ACCconf1 +
    confSOB1 + ACCSOB1, data = data)

Residuals:
      Min        1Q    Median        3Q       Max
-0.071179 -0.018880 -0.000361  0.017844  0.062958

Coefficients:
                Estimate Std. Error t value Pr(>|t|)
(Intercept)    0.0018877  0.0159111   0.119    0.906
Conf1         -0.0004374  0.0052101  -0.084    0.933
ACC1          -0.1291825  0.0715670  -1.805    0.074 .
SOB_indicator  0.0336194  0.1302845   0.258    0.797
ACCconf1       0.0328579  0.0235498   1.395    0.166
confSOB1      -0.0176898  0.0438967  -0.403    0.688
ACCSOB1       -0.0895377  0.1941552  -0.461    0.646
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.02654 on 101 degrees of freedom
  (51 observations deleted due to missingness)
Multiple R-squared:  0.07606,   Adjusted R-squared:  0.02118
F-statistic: 1.386 on 6 and 101 DF,  p-value: 0.2276
```

More R^2 explained as stepping through?

In [14]:
```
anova(lmDay1.one,lmDay1.two,lmDay1.three,test="F")
anova(lmDay1.four,lmDay1.five,test="F")
```

Out[14]:

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	139	0.09377054	NA	NA	NA	NA
2	138	0.09371736	1	5.318032e-05	0.07924004	0.7787547
3	137	0.09194473	1	0.001772633	2.641268	0.1064187

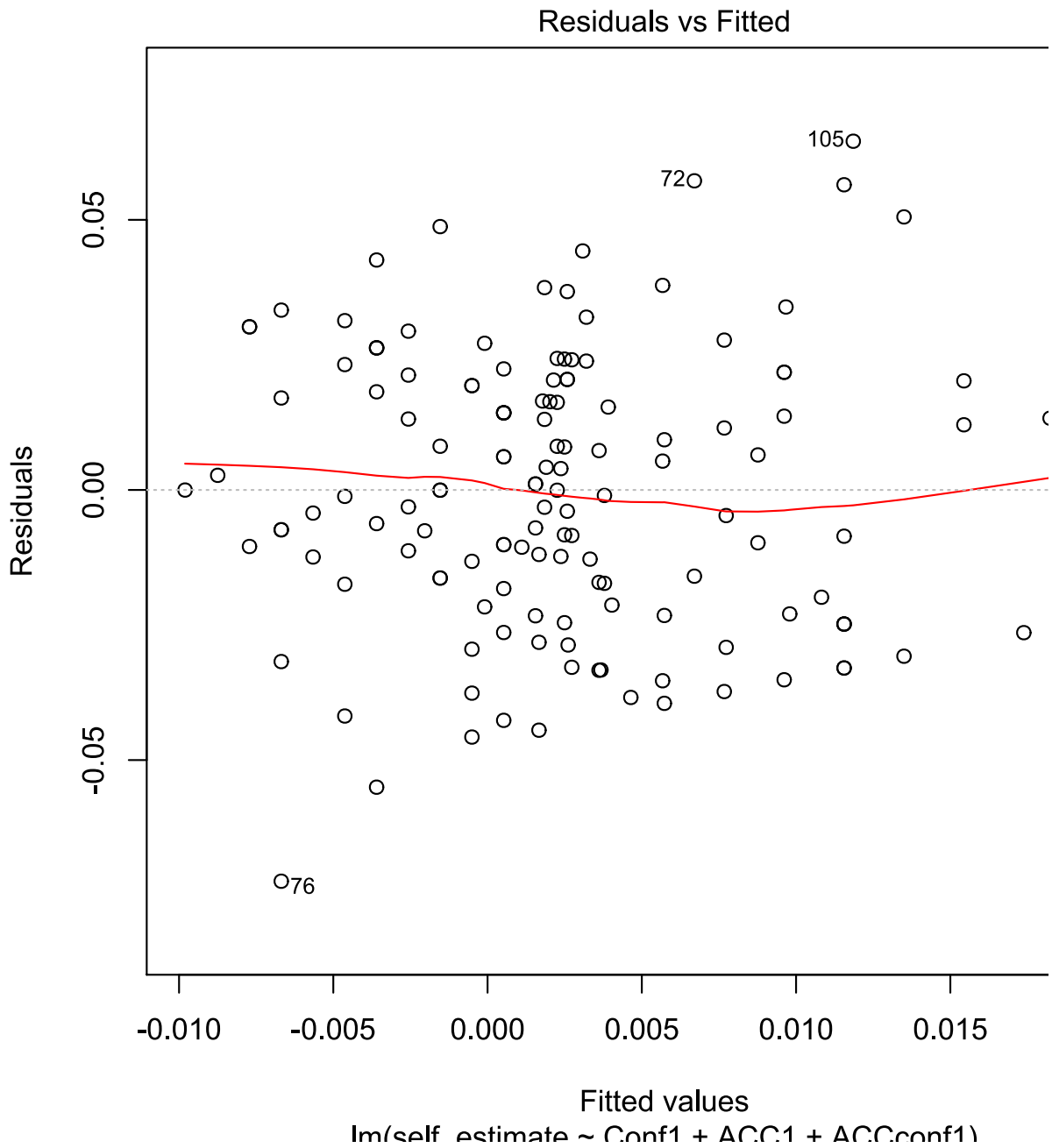
```
Warning message:
In anova.lmlist(object, ...): models with response '"self_estimate"' remo
ved because response differs from model 1
```

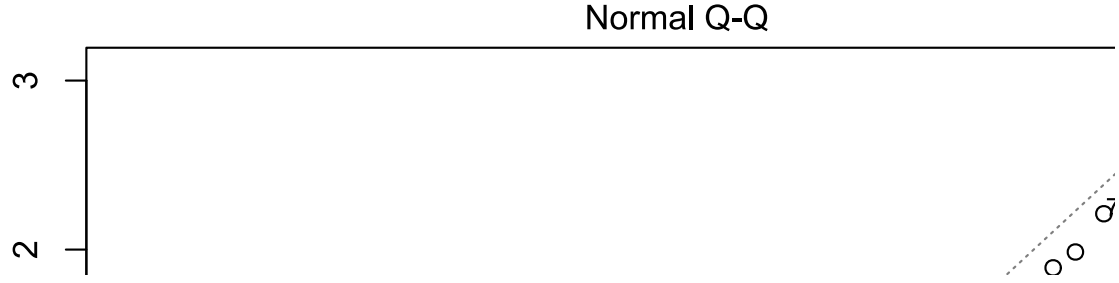
Out[14]:

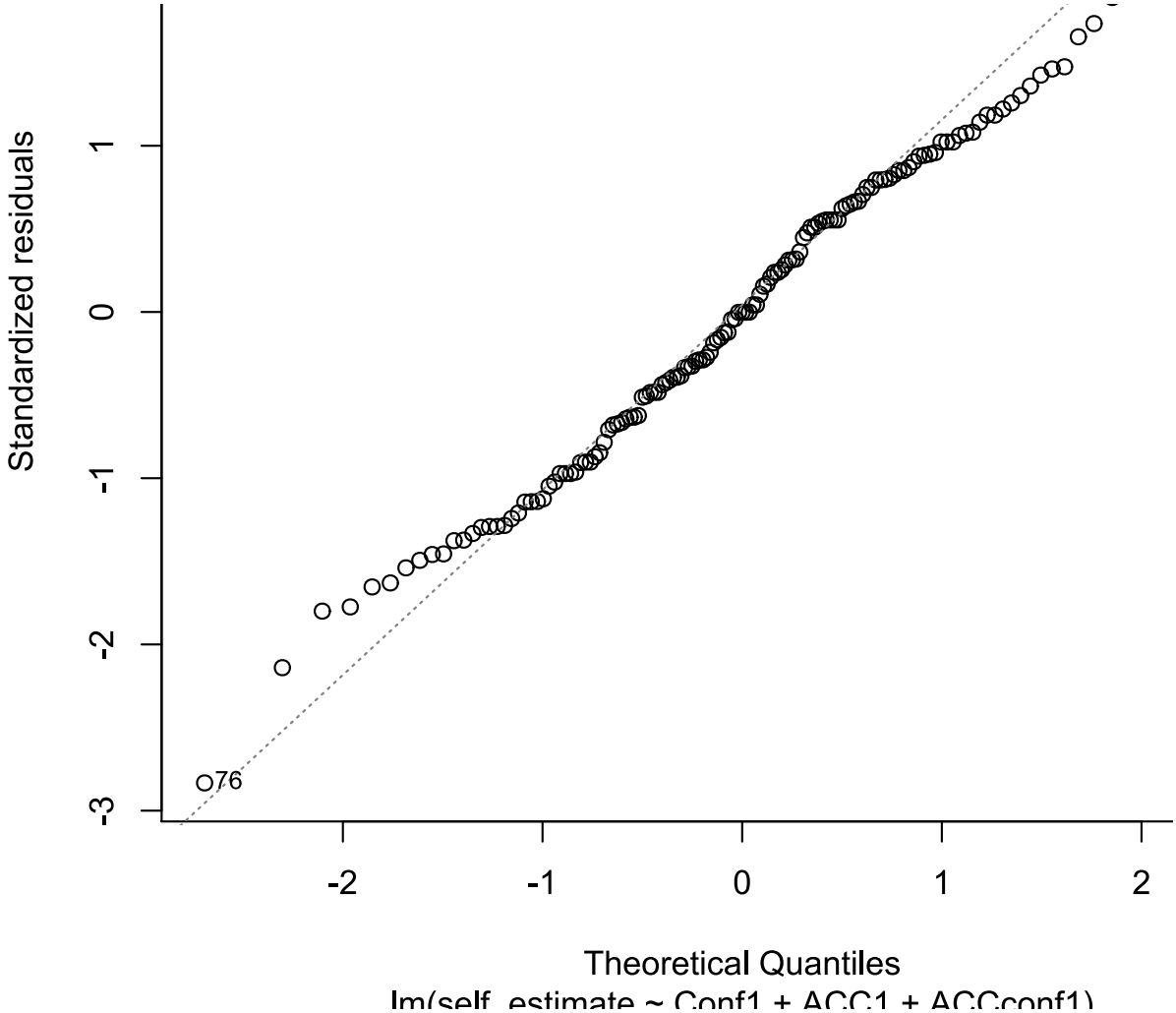
	Df	Sum Sq	Mean Sq	F value	Pr(>F)
data$Conf1	1	0.001680117	0.001680117	2.418533	0.1229745
data$ACC1	1	0.002034148	0.002034148	2.928162	0.09005647
data$ACCconf1	1	0.001665525	0.001665525	2.397528	0.1245944
data$SOB_indicator	1	5.457544e-05	5.457544e-05	0.0785615	0.7798185
Residuals	103	0.07155247	0.0006946842	NA	NA

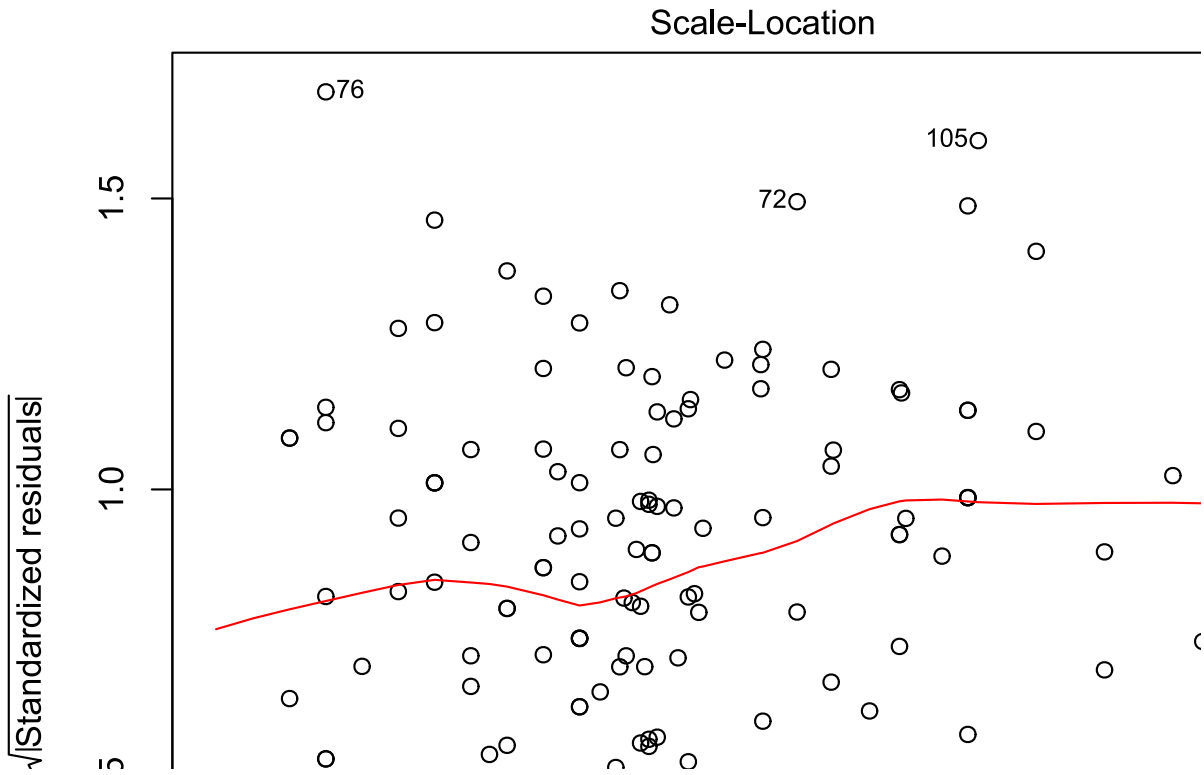
Model fit test

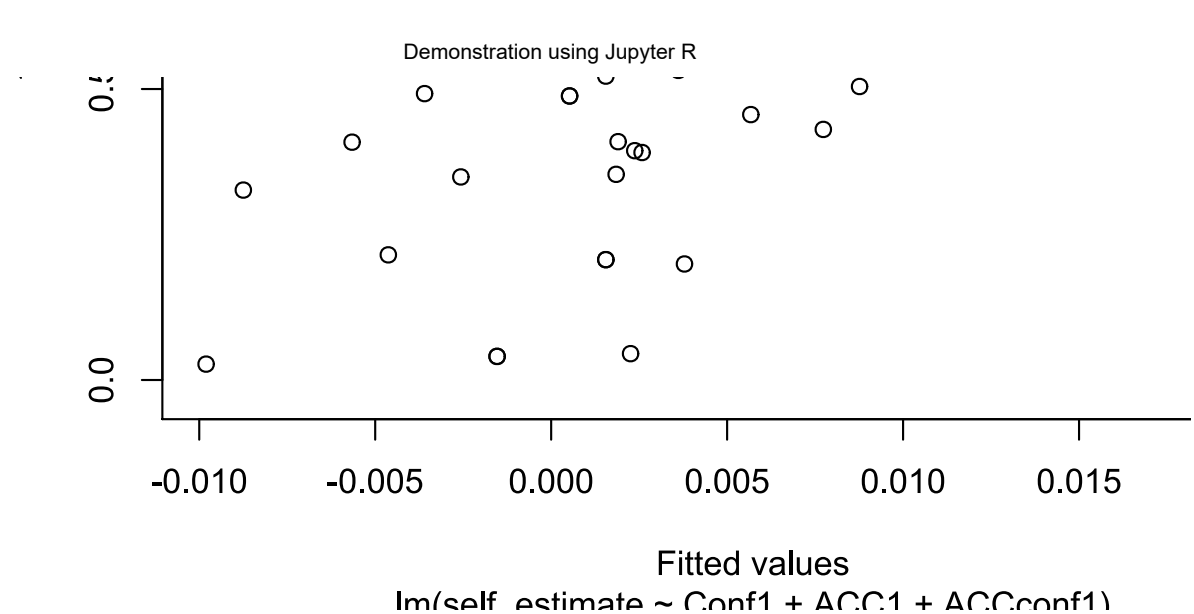
In [15]:
```
plot(lmDay1.three,which = 1:4)
```

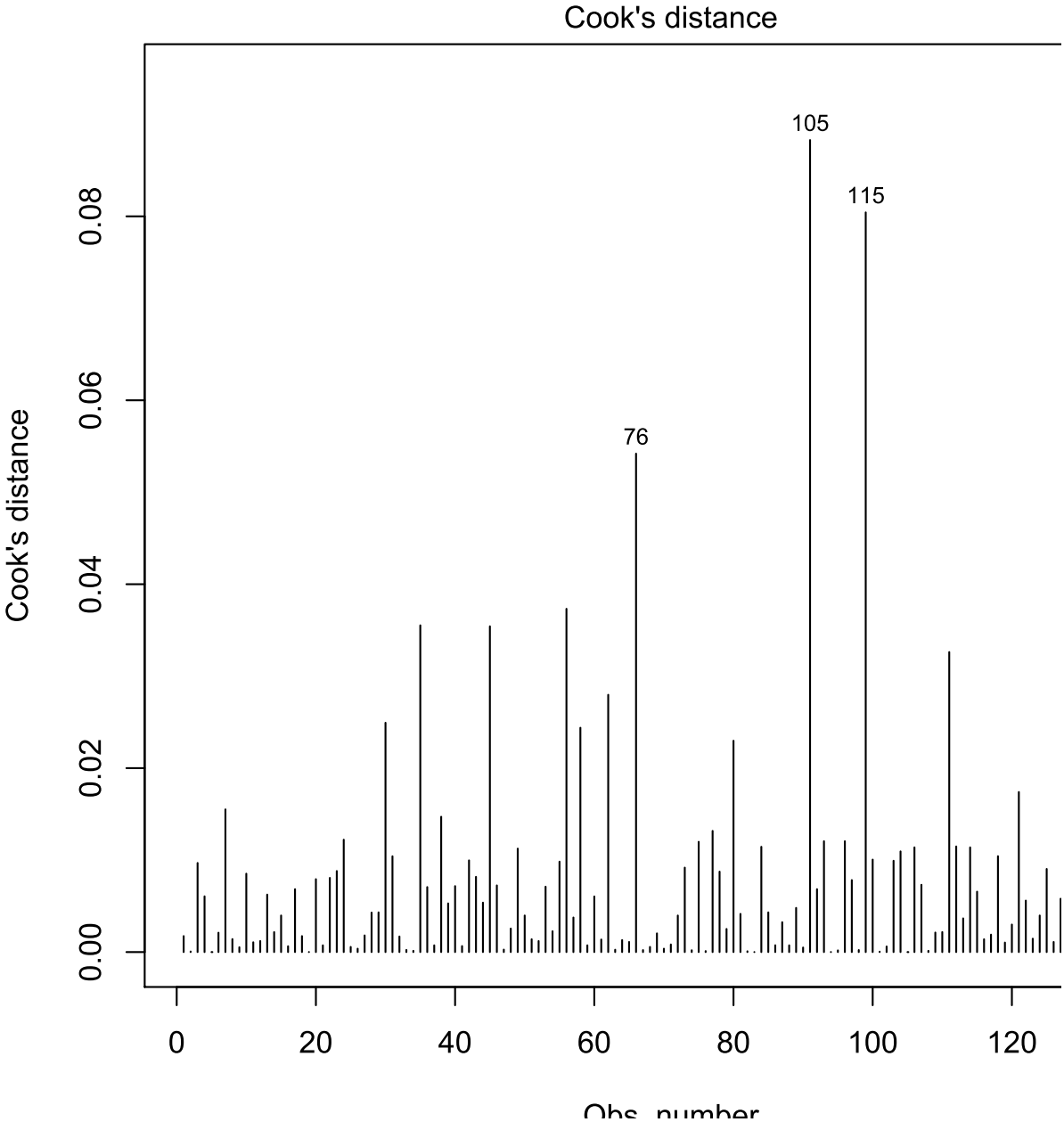





Standardized residuals
1
0
-1
-2
-3
76
-2
-1
0
1
2
Theoretical Quantiles
lm(self_estimate ~ Conf1 + ACC1 + ACCconf1)


Scale-Location
76
105
72
1.5
1.0
√|Standardized residuals|

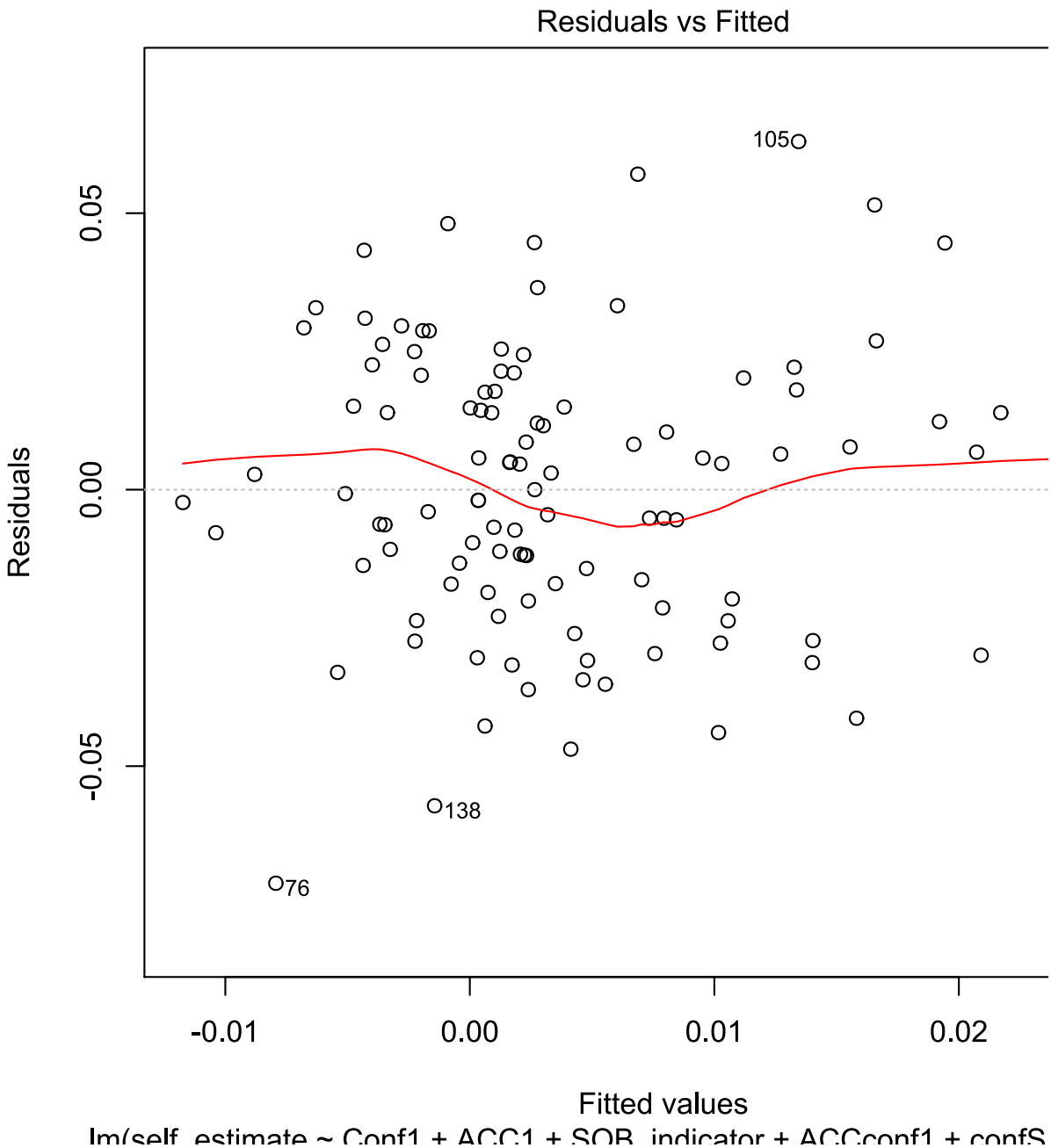

0.0
-0.010
-0.005
0.000
0.005
0.010
0.015
Fitted values
lm(self_estimate ~ Conf1 + ACC1 + ACCconf1)

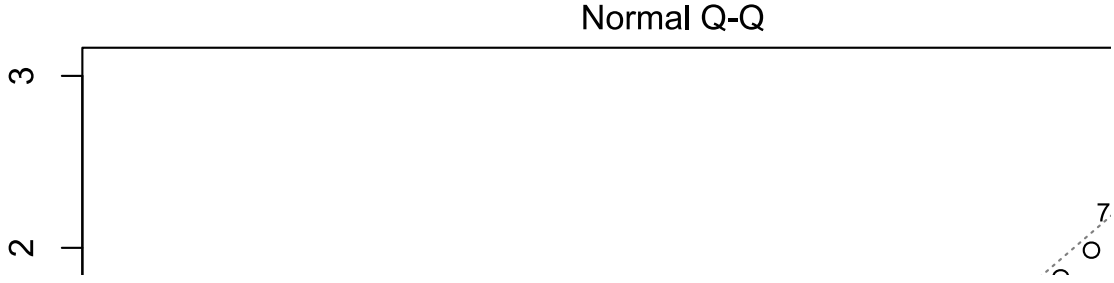

Cook's distance
105
115
76
Cook's distance
0.00
0.02
0.04
0.06
0.08
0
20
40
60
80
100
120
Obs. number

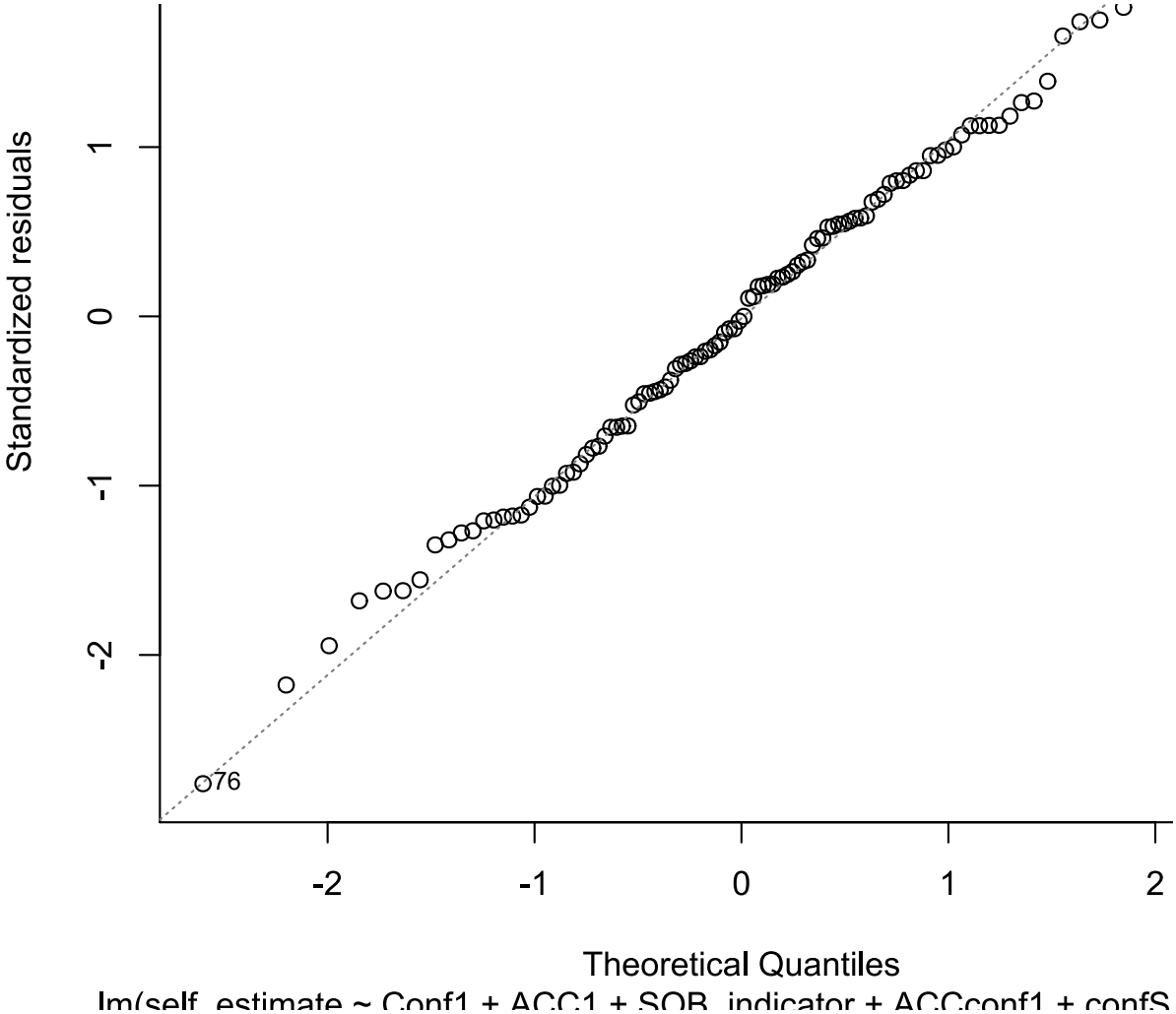
Obs. number

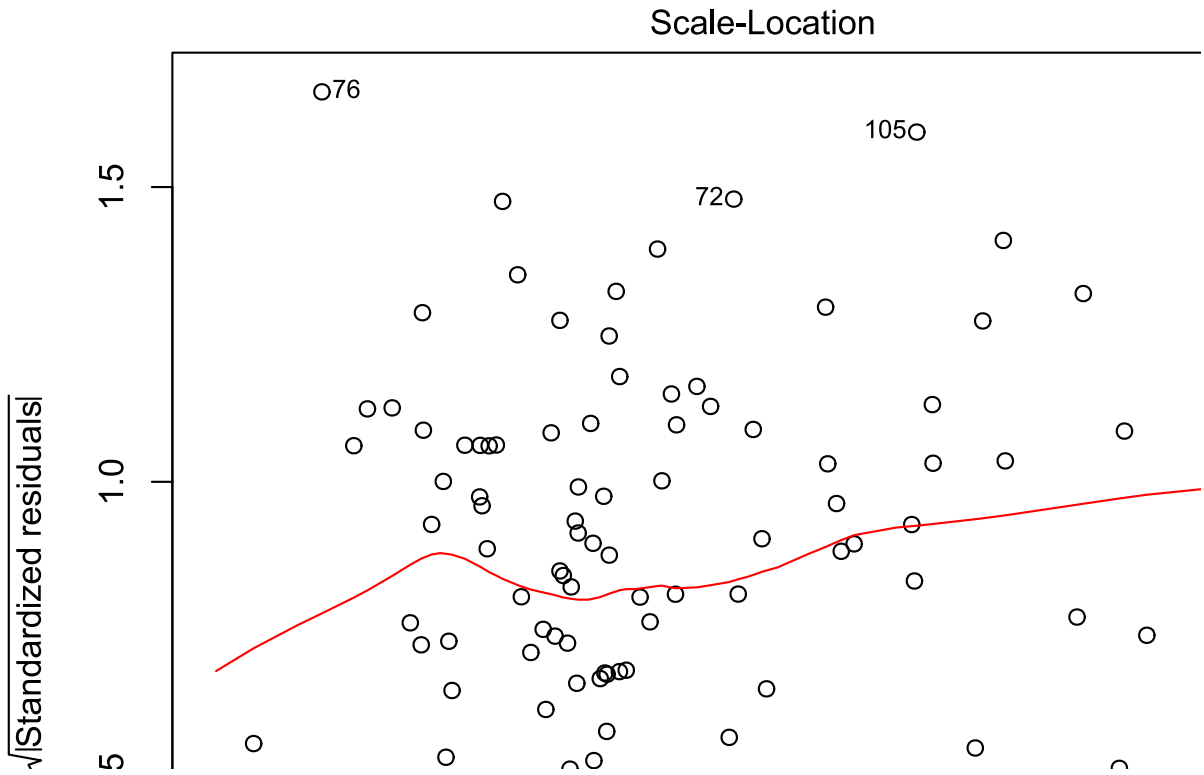
lm(self_estimate ~ Conf1 + ACC1 + ACCconf1)

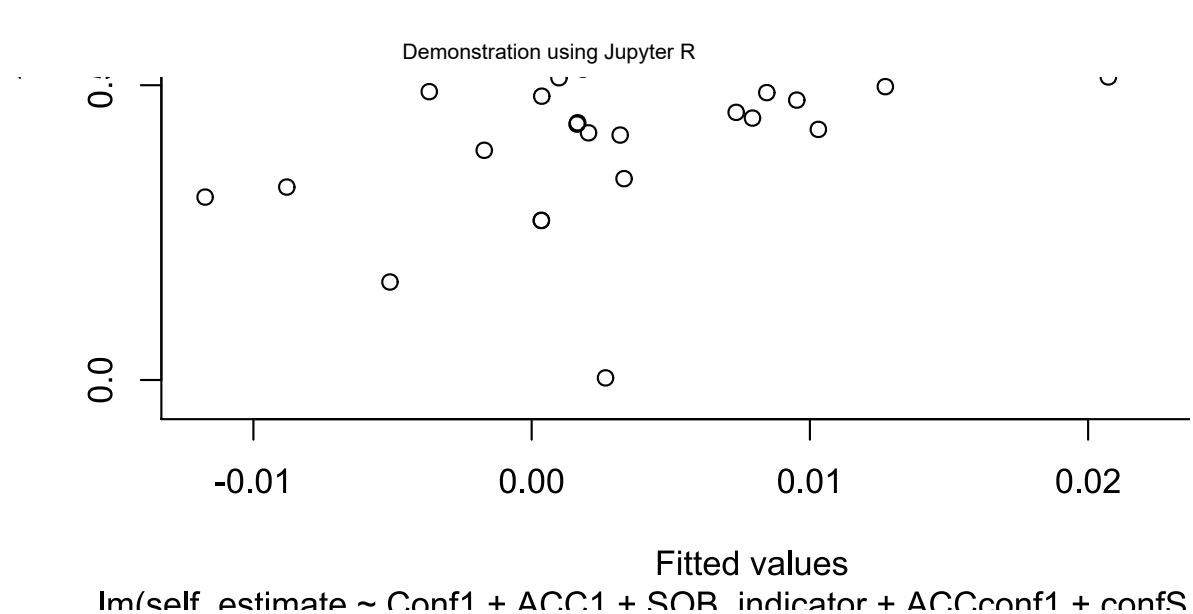
In [16]:
```
plot(lmDay1.five,which = 1:4)
```



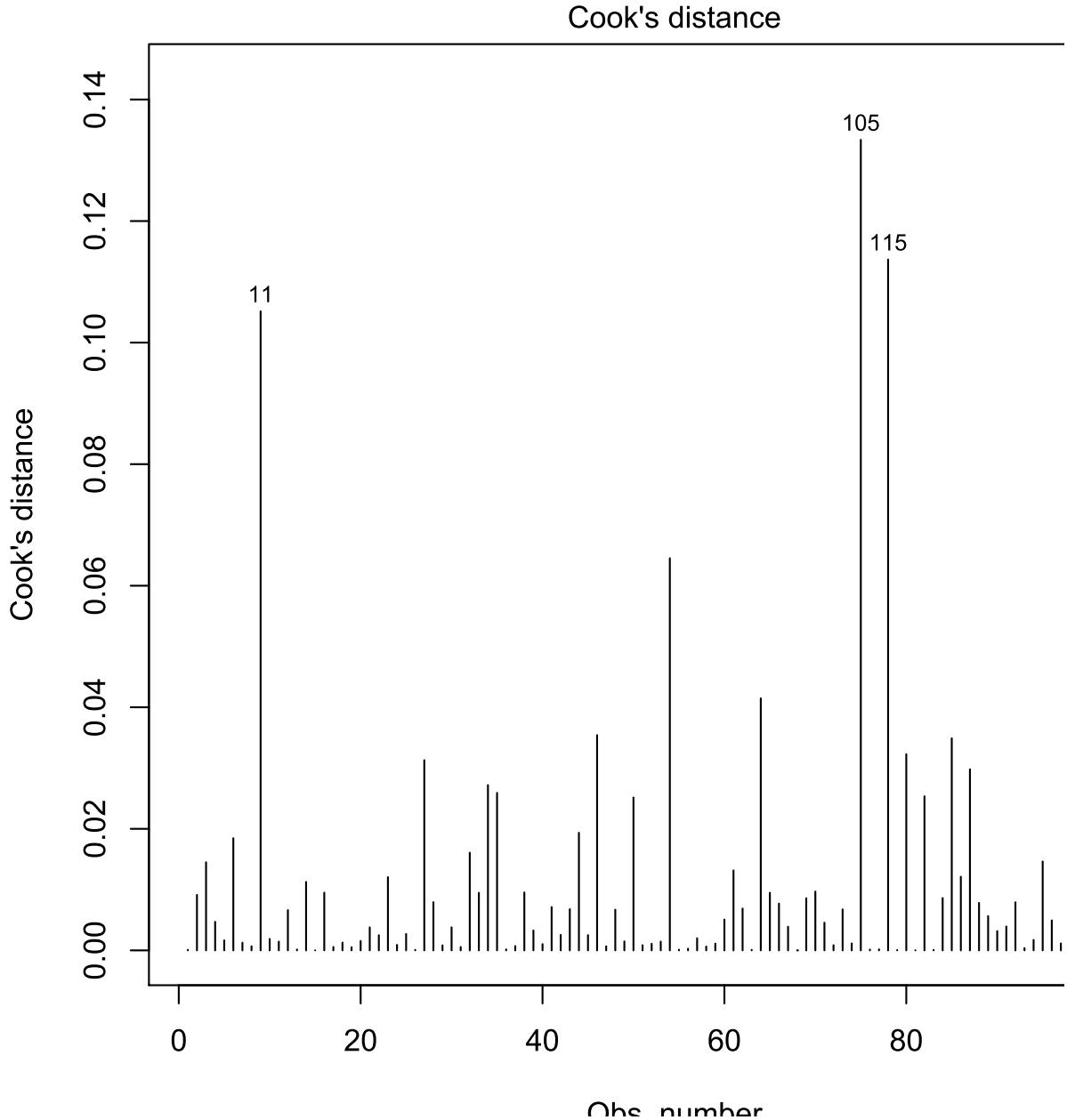



Standardized residuals
1
0
-1
-2
76
-2
-1
0
1
2
Theoretical Quantiles
lm(self_estimate ~ Conf1 + ACC1 + SOB_indicator + ACCconf1 + confS


Scale-Location
76
105
72
√|Standardized residuals|
1.5
1.0
5



lm(self_estimate ~ Conf1 + ACC1 + SOB_indicator + ACCconf1 + confS



Obs. number
lm(self_estimate ~ Conf1 + ACC1 + SOB_indicator + ACCconf1 + confS

give me the observations that are unusual for self_estimate

In [17]:
```
which(rstudent(lmDay1.three)>2)
which(rstudent(lmDay1.five)>2)
```

Out[17]:

39	35
52	45
72	62
105	91

Out[17]:

52	34
72	50
105	75

Day 2

In [18]:
```
lmDay2.one = lm(data$self_estimate2~data$ACC2)
lmDay2.two = lm(data$self_estimate2 ~ data$Conf2+data$ACC2)
# interaction
data$ACCconf2 = data$ACC2 * data$Conf2
lmDay2.three = lm(data$self_estimate2 ~ data$Conf2+data$ACC2+data$ACCconf2)
lmDay2.four = lm(self_estimate2~Conf2+ACC2+ACCconf2+SOB_indicator,data=data)
# interactions
data$ACCSOB2=data$ACC2*data$SOB_indicator
data$confSOB2 = data$Conf2*data$SOB_indicator
lmDay2.five = lm(self_estimate2~Conf2+ACC2+SOB_indicator+ACCconf2+confSOB2+A
```

Summary of models: summary(...)

In [19]:
```
summary(lmDay2.five)
```

Out[19]:
```
Call:
lm(formula = self_estimate2 ~ Conf2 + ACC2 + SOB_indicator + 
    ACCconf2 + confSOB2 + ACCSOB2, data = data)

Residuals:
      Min        1Q    Median        3Q       Max 
-0.050346 -0.018365  0.002763  0.017816  0.059278 

Coefficients:
               Estimate Std. Error t value Pr(>|t|)    
(Intercept)   -0.030845   0.014522  -2.124    0.036 *  
Conf2          0.008568   0.004560   1.879    0.063 .  
ACC2          -0.392915   0.068533  -5.733 9.38e-08 ***
SOB_indicator  0.115720   0.122062   0.948    0.345    
ACCconf2       0.102795   0.021072   4.878 3.79e-06 ***
confSOB2      -0.014323   0.037635  -0.381    0.704    
ACCSOB2        0.247108   0.184167   1.342    0.183    
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.0251 on 106 degrees of freedom
  (46 observations deleted due to missingness)
Multiple R-squared:  0.3207,    Adjusted R-squared:  0.2822 
F-statistic: 8.339 on 6 and 106 DF,  p-value: 2.082e-07
```

How much r^2 improve by steps

In [20]:
```
anova(lmDay2.one,lmDay2.two,lmDay2.three,test="F")
anova(lmDay2.four,lmDay2.five,test="F")
```

Out[20]:

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	132	0.1075047	NA	NA	NA	NA
2	131	0.1056737	1	0.001830965	2.534919	0.1137813
3	130	0.09389865	1	0.01177506	16.30224	9.172413e-05

Out[20]:

	Res.Df	RSS	Df	Sum of Sq	F	Pr(>F)
1	108	0.06793538	NA	NA	NA	NA
2	106	0.06679118	2	0.001144198	0.9079418	0.406467

Skip model fitting test

Missing data analysis

In [21]:
```
pMiss = function(x){sum(is.na(x))/length(x)*100}
sort(apply(data,2,pMiss))
```

Out[21]:

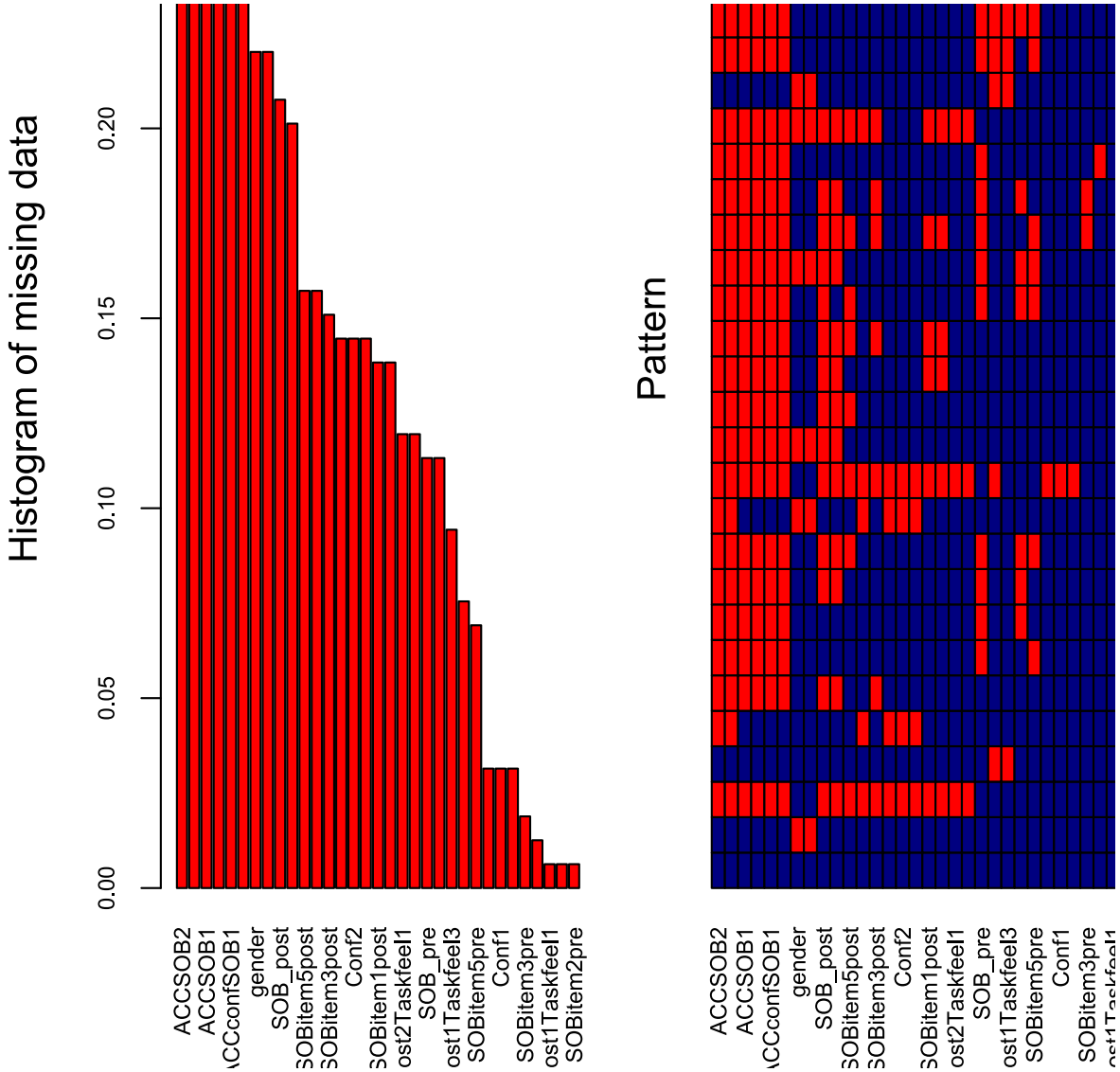
Post1Taskfeel1	0.628930817610063
Post1Taskfeel2	0.628930817610063
SOBitem2pre	0.628930817610063
SOBitem1pre	1.25786163522013
SOBitem3pre	1.88679245283019
ACC1	3.14465408805031
Conf1	3.14465408805031
ACCconf1	3.14465408805031
SOBitem5pre	6.91823899371069
SOBitem4pre	7.54716981132075
Post1Taskfeel3	9.43396226415094
SOB_pre	11.3207547169811
self_estimate	11.3207547169811
Post2Taskfeel1	11.9496855345912
Post2Taskfeel2	11.9496855345912
SOBitem1post	13.8364779874214
SOBitem2psot	13.8364779874214
ACC2	14.4654088050314
Conf2	14.4654088050314
ACCconf2	14.4654088050314
SOBitem3post	15.0943396226415
SOBitem5post	15.7232704402516
self_estimate2	15.7232704402516
SOBitem4post	20.125786163522
SOB_post	20.7547169811321
gender	22.0125786163522
year	22.0125786163522
SOB_indicator	25.1572327044025
ACCSOB1	25.7861635220126
confSOB1	25.7861635220126
ACCconfSOB1	25.7861635220126
ACCSOB2	28.9308176100629
confSOB2	28.9308176100629

Graph of missing pattern

In [42]:
```
library(VIM)
library(mice)
aggr_plot=aggr(data,col=c('navyblue','red'),numbers=TRUE,
               sortVars=TRUE,labels=names(data),cex.axis=.7,
               gap=3,ylab=c("Histogram of missing data","Pattern"))
```

```
Loading required package: Rcpp
mice 2.25 2015-11-09


 Variables sorted by number of missings:
       Variable       Count
        ACCSOB2 0.289308176
       confSOB2 0.289308176
        ACCSOB1 0.257861635
       confSOB1 0.257861635
    ACCconfSOB1 0.257861635
  SOB_indicator 0.251572327
         gender 0.220125786
           year 0.220125786
       SOB_post 0.207547170
   SOBitem4post 0.201257862
   SOBitem5post 0.157232704
 self_estimate2 0.157232704
   SOBitem3post 0.150943396
           ACC2 0.144654088
          Conf2 0.144654088
       ACCconf2 0.144654088
   SOBitem1post 0.138364780
   SOBitem2psot 0.138364780
 Post2Taskfeel1 0.119496855
 Post2Taskfeel2 0.119496855
        SOB_pre 0.113207547
  self_estimate 0.113207547
 Post1Taskfeel3 0.094339623
    SOBitem4pre 0.075471698
    SOBitem5pre 0.069182390
           ACC1 0.031446541
          Conf1 0.031446541
       ACCconf1 0.031446541
    SOBitem3pre 0.018867925
    SOBitem1pre 0.012578616
 Post1Taskfeel1 0.006289308
 Post1Taskfeel2 0.006289308
    SOBitem2pre 0.006289308
```



What do we do about the missing data??? Put something in the spot!!

Multiple imputation of the missing data

In [43]:
```
tempData=mice(data,m=5,method='norm',seed=500)
```

```
 iter imp variable
  1   1  ACC1  ACC2  Conf1  Conf2  Post1Taskfeel1  Post1Taskfeel2  Post
1Taskfeel3  Post2Taskfeel1  Post2Taskfeel2  SOBitem1pre  SOBitem2pre  S
OBitem3pre  SOBitem4pre  SOBitem5pre  SOBitem1post  SOBitem2psot  SOBit
em3post  SOBitem4post  SOBitem5post  gender  year  SOB_pre  SOB_post  S
OB_indicator  self_estimate  self_estimate2  ACCconf1  ACCSOB1  confSOB
1  ACCconfSOB1  ACCconf2  ACCSOB2  confSOB2
  1   2  ACC1  ACC2  Conf1  Conf2  Post1Taskfeel1  Post1Taskfeel2  Post
1Taskfeel3  Post2Taskfeel1  Post2Taskfeel2  SOBitem1pre  SOBitem2pre  S
OBitem3pre  SOBitem4pre  SOBitem5pre  SOBitem1post  SOBitem2psot  SOBit
em3post  SOBitem4post  SOBitem5post  gender  year  SOB_pre  SOB_post  S
OB_indicator  self_estimate  self_estimate2  ACCconf1  ACCSOB1  confSOB
1  ACCconfSOB1  ACCconf2  ACCSOB2  confSOB2
  1   3  ACC1  ACC2  Conf1  Conf2  Post1Taskfeel1  Post1Taskfeel2  Post
1Taskfeel3  Post2Taskfeel1  Post2Taskfeel2  SOBitem1pre  SOBitem2pre  S
OBitem3pre  SOBitem4pre  SOBitem5pre  SOBitem1post  SOBitem2psot  SOBit
em3post  SOBitem4post  SOBitem5post  gender  year  SOB_pre  SOB_post  S
OB_indicator  self_estimate  self_estimate2  ACCconf1  ACCSOB1  confSOB
```

matched t test for each variable, and show they are not different from each other

In [44]:
```
cnt = 1
p.values=c()
for (c in 1:5){
  completeData=complete(tempData,c)
  for (i in datanames){
    print(c(i,cnt))
    TT = t.test(data[,i],completeData[,i])
    p.values[cnt]=TT$p.value
    cnt = cnt +1

  }
}
```

```
[1] "ACC1" "1"
[1] "ACC2" "2"
[1] "Conf1" "3"
[1] "Conf2" "4"
[1] "Post1Taskfeel1" "5"
[1] "Post1Taskfeel2" "6"
[1] "Post1Taskfeel3" "7"
[1] "Post2Taskfeel1" "8"
[1] "Post2Taskfeel2" "9"
[1] "SOBitem1pre" "10"
[1] "SOBitem2pre" "11"
[1] "SOBitem3pre" "12"
[1] "SOBitem4pre" "13"
[1] "SOBitem5pre" "14"
[1] "SOBitem1post" "15"
[1] "SOBitem2psot" "16"
[1] "SOBitem3post" "17"
[1] "SOBitem4post" "18"
[1] "SOBitem5post" "19"
```

In [45]:
```
which(p.values<0.05)
```

Out[45]:

In [46]:
```
fit3 = lm(self_estimate~Conf1+ACC1+SOB_indicator+ACCconf1+confSOB1+ACCSOB1,d
```

In [47]:
```
# pooling
tempData = mice(data,m=5,seed=245435)
modelFit1=with(tempData,lm(self_estimate~Conf1+ACC1+SOB_indicator+ACCconf1+c
tempData2=mice(data,m=50,seed=245435)
modelFit2=with(tempData2,lm(self_estimate~Conf1+ACC1+SOB_indicator+ACCconf1+
print(summary(pool(modelFit1)),digits=2)
print(summary(pool(modelFit2)),digits=3)
print(summary(fit3),digits=2)
```

```
OBitem3pre SOBitem4pre SOBitem5pre SOBitem1post SOBitem2psot SOBit
em3post SOBitem4post SOBitem5post gender year SOB_pre SOB_post S
OB_indicator self_estimate self_estimate2 ACCconf1 ACCSOB1 confSOB
1 ACCconfSOB1 ACCconf2 ACCSOB2 confSOB2
  4   2 ACC1 ACC2 Conf1 Conf2 Post1Taskfeel1 Post1Taskfeel2 Post
1Taskfeel3 Post2Taskfeel1 Post2Taskfeel2 SOBitem1pre SOBitem2pre S
OBitem3pre SOBitem4pre SOBitem5pre SOBitem1post SOBitem2psot SOBit
em3post SOBitem4post SOBitem5post gender year SOB_pre SOB_post S
OB_indicator self_estimate self_estimate2 ACCconf1 ACCSOB1 confSOB
1 ACCconfSOB1 ACCconf2 ACCSOB2 confSOB2
  4   3 ACC1 ACC2 Conf1 Conf2 Post1Taskfeel1 Post1Taskfeel2 Post
1Taskfeel3 Post2Taskfeel1 Post2Taskfeel2 SOBitem1pre SOBitem2pre S

OBitem3pre SOBitem4pre SOBitem5pre SOBitem1post SOBitem2psot SOBit
em3post SOBitem4post SOBitem5post gender year SOB_pre SOB_post S
OB_indicator self_estimate self_estimate2 ACCconf1 ACCSOB1 confSOB
1 ACCconfSOB1 ACCconf2 ACCSOB2 confSOB2
  4   4 ACC1 ACC2 Conf1 Conf2 Post1Taskfeel1 Post1Taskfeel2 Post
1Taskfeel3 Post2Taskfeel1 Post2Taskfeel2 SOBitem1pre SOBitem2pre S
```

In [48]:
```
# Day 2
fit3 = lm(self_estimate2~Conf2+ACC2+SOB_indicator+ACCconf2+confSOB2+ACCSOB2,
# pooling
tempData = mice(data,m=5,seed=245435)
modelFit1=with(tempData,lm(self_estimate2~Conf2+ACC2+SOB_indicator+ACCconf2+
tempData2=mice(data,m=50,seed=245435)
modelFit2=with(tempData2,lm(self_estimate2~Conf2+ACC2+SOB_indicator+ACCconf2
print(summary(pool(modelFit1)),digits=2)
print(summary(pool(modelFit2)),digits=3)
print(summary(fit3),digits=3)
```

```
tem3post SOBitem4post SOBitem5post gender year SOB_pre SOB_post
SOB_indicator self_estimate self_estimate2 ACCconf1 ACCSOB1 confSO
B1 ACCconfSOB1 ACCconf2 ACCSOB2 confSOB2
  4   13 ACC1 ACC2 Conf1 Conf2 Post1Taskfeel1 Post1Taskfeel2 Pos
t1Taskfeel3 Post2Taskfeel1 Post2Taskfeel2 SOBitem1pre SOBitem2pre
SOBitem3pre SOBitem4pre SOBitem5pre SOBitem1post SOBitem2psot SOBi
tem3post SOBitem4post SOBitem5post gender year SOB_pre SOB_post
SOB_indicator self_estimate self_estimate2 ACCconf1 ACCSOB1 confSO
B1 ACCconfSOB1 ACCconf2 ACCSOB2 confSOB2
  4   14 ACC1 ACC2 Conf1 Conf2 Post1Taskfeel1 Post1Taskfeel2 Pos
t1Taskfeel3 Post2Taskfeel1 Post2Taskfeel2 SOBitem1pre SOBitem2pre
SOBitem3pre SOBitem4pre SOBitem5pre SOBitem1post SOBitem2psot SOBi
tem3post SOBitem4post SOBitem5post gender year SOB_pre SOB_post
SOB_indicator self_estimate self_estimate2 ACCconf1 ACCSOB1 confSO
B1 ACCconfSOB1 ACCconf2 ACCSOB2 confSOB2
  4   15 ACC1 ACC2 Conf1 Conf2 Post1Taskfeel1 Post1Taskfeel2 Pos
t1Taskfeel3 Post2Taskfeel1 Post2Taskfeel2 SOBitem1pre SOBitem2pre
SOBitem3pre SOBitem4pre SOBitem5pre SOBitem1post SOBitem2psot SOBi
tem3post SOBitem4post SOBitem5post gender year SOB_pre SOB_post
SOB_indicator self_estimate self_estimate2 ACCconf1 ACCSOB1 confSO
```

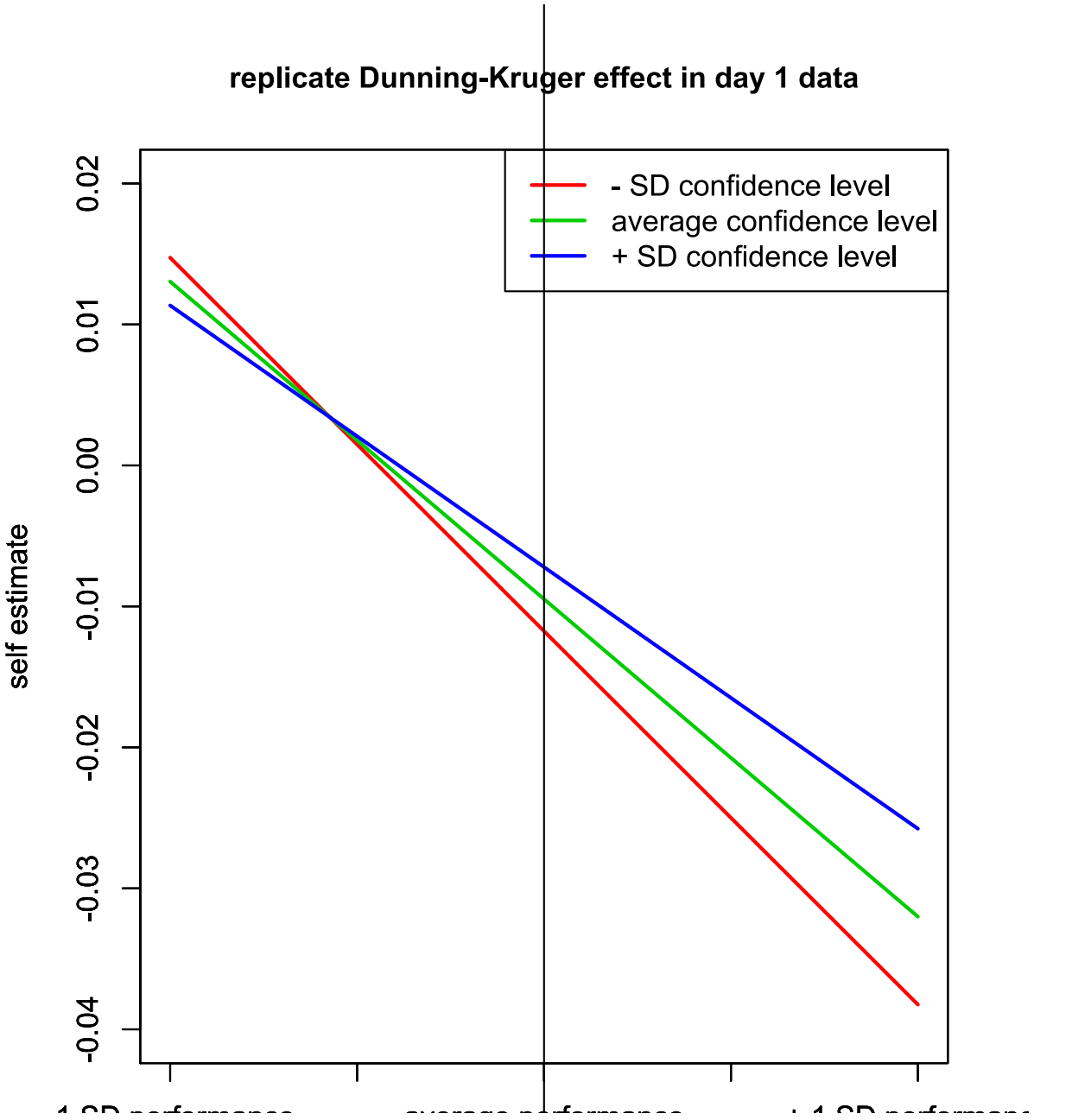
plotting

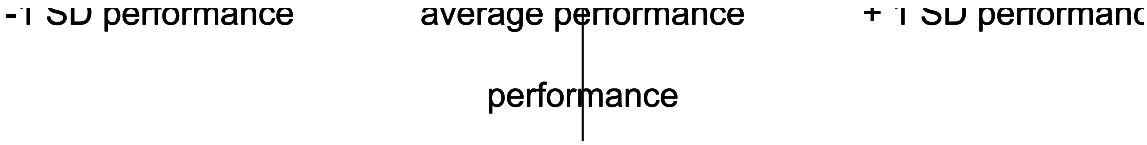
Day 1

In [29]:
```
xbar.acc = mean(data$ACC1,na.rm = T)
xbar.conf = mean(data$Conf1,na.rm = T)
s.acc = SD(data$ACC1)
s.conf = SD(data$Conf1)
lowNlow = c(1,-s.conf,-s.acc,(-s.conf*-s.acc)) %*% coef(lmDay1.three)
lowNAve = c(1,-s.conf,0,0) %*% coef(lmDay1.three)
lowNhigh = c(1,-s.conf,s.acc,(-s.conf*s.acc)) %*% coef(lmDay1.three)
AveNlow = c(1,0,-s.acc,(0*-s.acc)) %*% coef(lmDay1.three)
AveNAve = c(1,0,0,0) %*% coef(lmDay1.three)
AveNhigh = c(1,0,s.acc,(0*s.acc)) %*% coef(lmDay1.three)
HighNlow = c(1,s.conf,-s.acc,(s.conf*-s.acc)) %*% coef(lmDay1.three)
HighNAve = c(1,s.conf,0,(s.conf*0))%*% coef(lmDay1.three)
HighNhigh = c(1,s.conf,s.acc,(s.conf*s.acc)) %*% coef(lmDay1.three)
# set performance as the x axis
D = matrix(data = c(lowNlow,lowNAve,lowNhigh,AveNlow,
                    AveNAve,AveNhigh,HighNlow,HighNAve,
                    HighNhigh),nrow=3,ncol=3,byrow = TRUE)
```

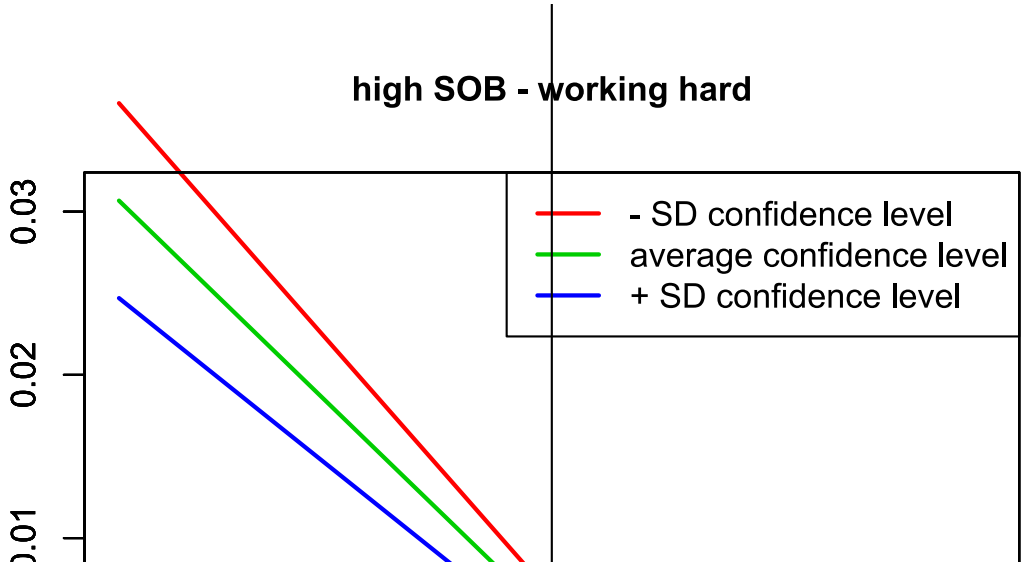
In [30]:
```
ylims = c(-0.04,0.02)

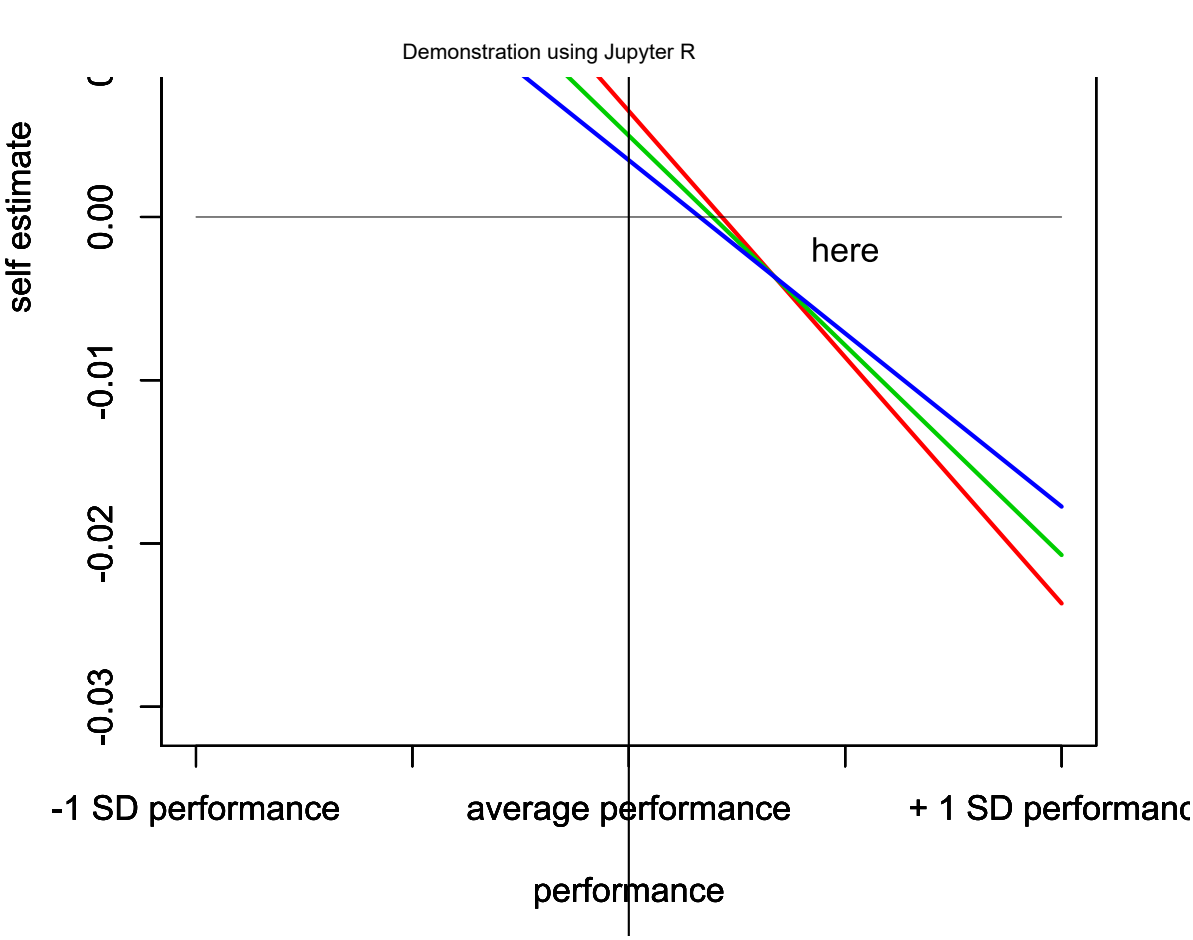
par(xpd=T, mar=par()$mar+c(0,0,0,6))
par(ps = 12, cex = 1, cex.main = 1)
plot(c(1,2,3),D[1,],type="l",ylim=ylims,col=2,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[2,],type="l",ylim=ylims,col=3,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[3,],type="l",ylim=ylims,col=4,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
title(main="replicate Dunning-Kruger effect in day 1 data")
legend("topright",legend=c("- SD confidence level","average confidence level
abline(v=2)
```




-1 SD performance
average performance
+ 1 SD performanc
performance

In [41]:
```
xbar.acc = mean(data$ACC1,na.rm = T)
xbar.conf = mean(data$Conf1,na.rm = T)
xbar.SOB = mean(data$SOB_indicator,na.rm=T)
s.acc = SD(data$ACC1)
s.conf = SD(data$Conf1)
s.SOB = SD(data$SOB_indicator)
lowNlowNhigh = c(1,-s.conf,-s.acc,s.SOB,(-s.conf*-s.acc),(-s.conf*s.SOB),(-s
lowNAveNhigh = c(1,-s.conf,0,s.SOB,(-s.conf*0),(-s.conf*s.SOB),(0*s.SOB)) %*
lowNhighNhigh = c(1,-s.conf,s.acc,s.SOB,(-s.conf*s.acc),(-s.conf*s.SOB),(s.a
AveNlowNhigh = c(1,0,-s.acc,s.SOB,(0*-s.acc),(-0*s.SOB),(-s.acc*s.SOB)) %*%
AveNAveNhigh = c(1,-0,0,s.SOB,(0*0),(0*s.SOB),(0*s.SOB)) %*% coef(lmDay1.fiv
AveNhighNhigh = c(1,-0,s.acc,s.SOB,(0*s.acc),(0*s.SOB),(s.acc*s.SOB)) %*% co
HighNlowNhigh = c(1,s.conf,-s.acc,s.SOB,(s.conf*-s.acc),(s.conf*s.SOB),(-s.a
HighNAveNhigh = c(1,s.conf,0,s.SOB,(s.conf*0),(s.conf*s.SOB),(0*s.SOB)) %*%
HighNhighNhigh = c(1,s.conf,s.acc,s.SOB,(s.conf*s.acc),(s.conf*s.SOB),(s.acc
#set performance as x axis
D = matrix(data = c(lowNlowNhigh,lowNAveNhigh,lowNhighNhigh,AveNlowNhigh,
                    AveNAveNhigh,AveNhighNhigh,HighNlowNhigh,HighNAveNhigh,
                    HighNhighNhigh),nrow=3,ncol=3,byrow = TRUE)
ylims = c(-0.03,0.03)
par(xpd=T, mar=par()$mar+c(0,0,0,6))
par(ps = 12, cex = 1, cex.main = 1)
plot(c(1,2,3),D[1,],type="l",ylim=ylims,col=2,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[2,],type="l",ylim=ylims,col=3,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[3,],type="l",ylim=ylims,col=4,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(seq(1,3,length=3),y = array(0,c(1,3)),type="l",ylim=ylims,col=1,xaxt =
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
title(main="high SOB - working hard")
legend("topright",legend=c("- SD confidence level","average confidence level
text(2.5,-0.002,'here')
abline(v=2)
```

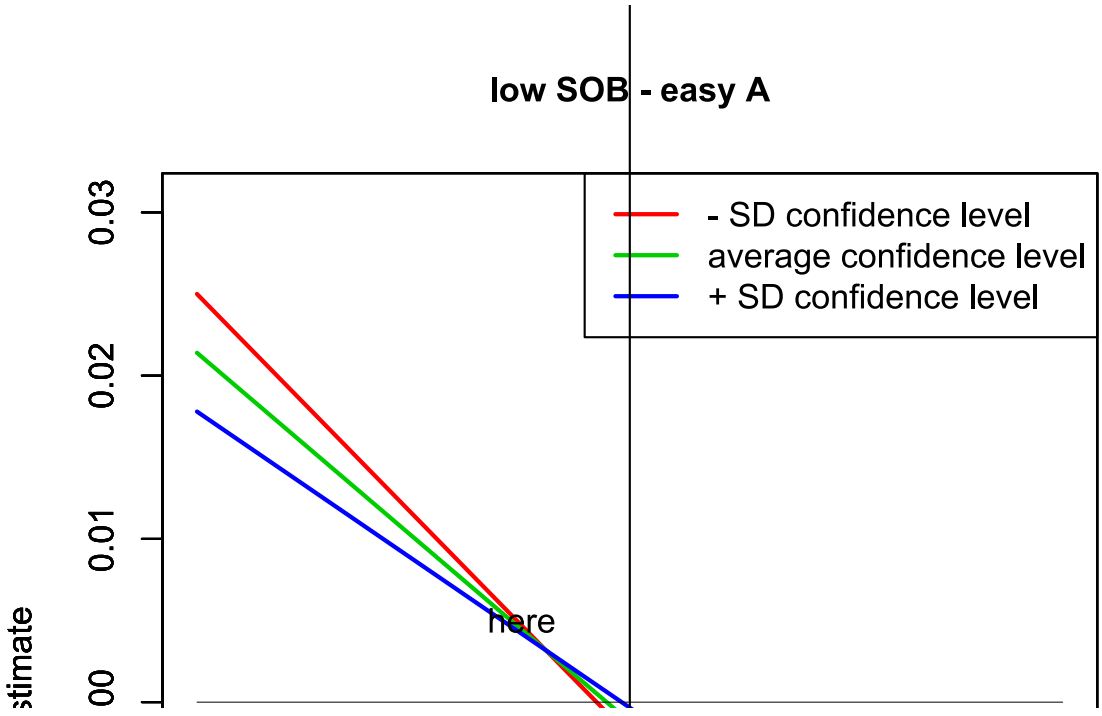


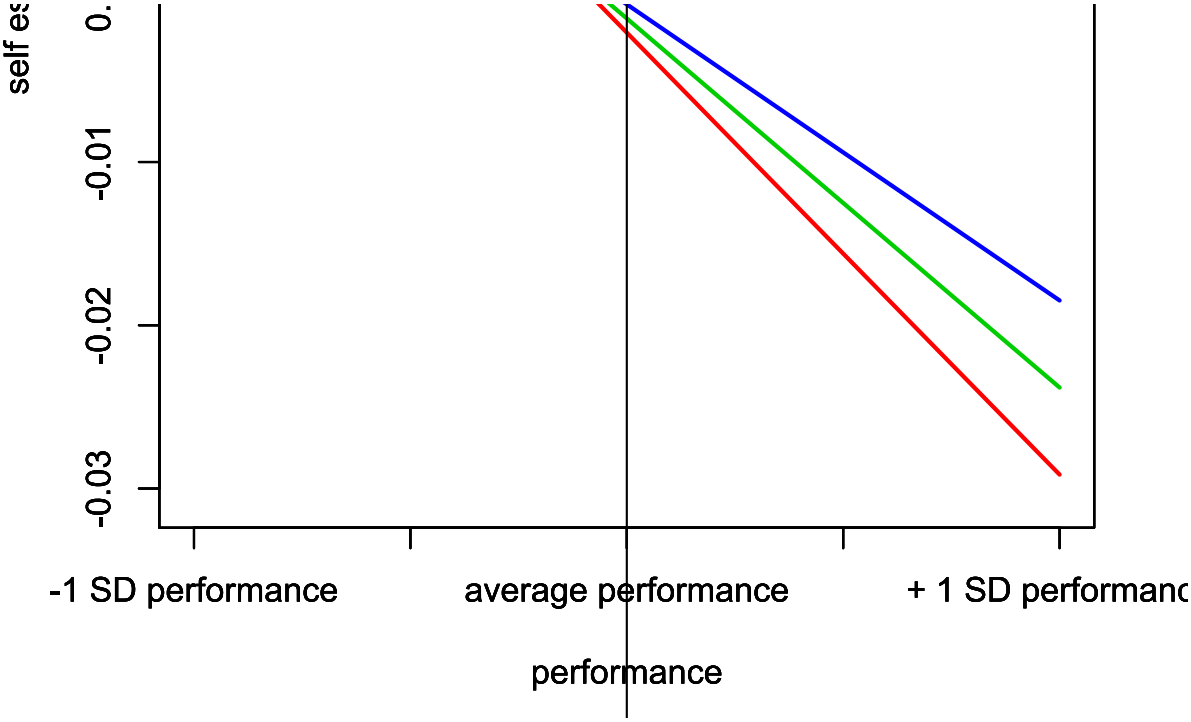

self estimate
0.00
-0.01
-0.02
-0.03
here
-1 SD performance
average performance
+ 1 SD performanc
performance

In [32]:

```
lowNlowNlow = c(1,-s.conf,-s.acc,-s.SOB,(-s.conf*-s.acc),(-s.conf*-s.SOB),(-
lowNAveNlow = c(1,-s.conf,0,-s.SOB,(-s.conf*0),(-s.conf*-s.SOB),(0*-s.SOB))
lowNhighNlow = c(1,-s.conf,s.acc,-s.SOB,(-s.conf*s.acc),(-s.conf*-s.SOB),(s.
AveNlowNlow = c(1,0,-s.acc,-s.SOB,(0*-s.acc),(-0*-s.SOB),(-s.acc*-s.SOB)) %*
AveNAveNlow = c(1,-0,0,-s.SOB,(0*0),(0*-s.SOB),(0*-s.SOB)) %*% coef(lmDay1.f
AveNhighNlow = c(1,-0,s.acc,-s.SOB,(0*s.acc),(0*-s.SOB),(s.acc*-s.SOB)) %*%
HighNlowNlow = c(1,s.conf,-s.acc,-s.SOB,(s.conf*-s.acc),(s.conf*-s.SOB),(-s.
HighNAveNlow = c(1,s.conf,0,-s.SOB,(s.conf*0),(s.conf*-s.SOB),(0*-s.SOB)) %*
HighNhighNlow = c(1,s.conf,s.acc,-s.SOB,(s.conf*s.acc),(s.conf*-s.SOB),(s.ac
# set performance as axis
D = matrix(data = c(lowNlowNlow,lowNAveNlow,lowNhighNlow,AveNlowNlow,
                    AveNAveNlow,AveNhighNlow,HighNlowNlow,HighNAveNlow,
                    HighNhighNlow),nrow=3,ncol=3,byrow = TRUE)

ylims = c(-0.03,0.03)
par(xpd=T, mar=par()$mar+c(0,0,0,6))
par(ps = 12, cex = 1, cex.main = 1)
plot(c(1,2,3),D[1,],type="l",ylim=ylims,col=2,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[2,],type="l",ylim=ylims,col=3,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[3,],type="l",ylim=ylims,col=4,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(seq(1,3,length=3),y = array(0,c(1,3)),type="l",ylim=ylims,col=1,xaxt =
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
title(main="low SOB - easy A")
legend("topright",legend=c("- SD confidence level","average confidence level
text(1.75,0.005,'here')
abline(v = 2)
```



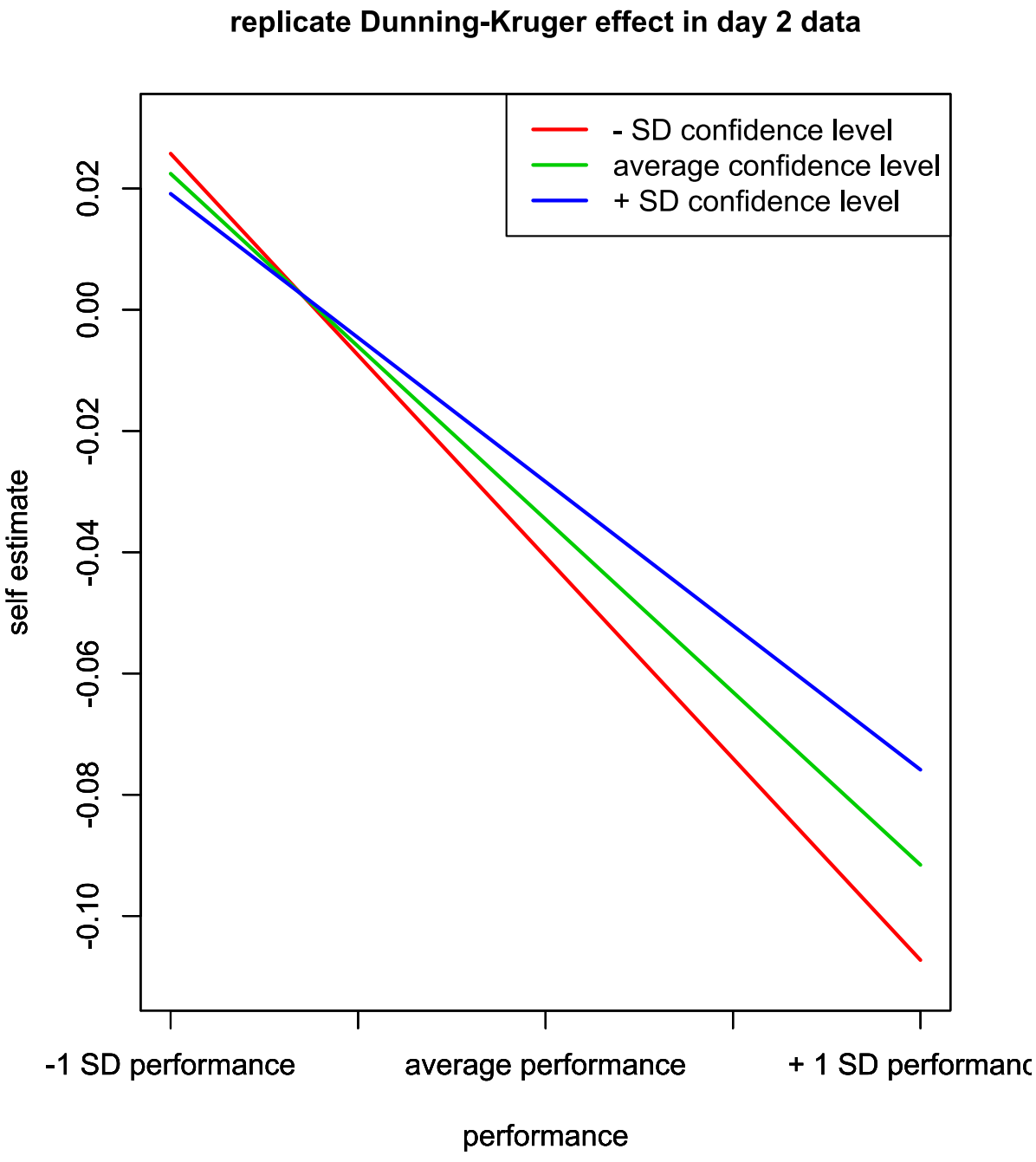


Day 2

In [33]:
```
xbar.acc = mean(data$ACC2,na.rm = T)
xbar.conf = mean(data$Conf2,na.rm = T)
s.acc = SD(data$ACC2)
s.conf = SD(data$Conf2)

lowNlow = c(1,-s.conf,-s.acc,(-s.conf*-s.acc)) %*% coef(lmDay2.three)
lowNAve = c(1,-s.conf,0,0) %*% coef(lmDay2.three)
lowNhigh = c(1,-s.conf,s.acc,(-s.conf*s.acc)) %*% coef(lmDay2.three)
AveNlow = c(1,0,-s.acc,(0*-s.acc)) %*% coef(lmDay2.three)
AveNAve = c(1,0,0,0) %*% coef(lmDay2.three)
AveNhigh = c(1,0,s.acc,(0*s.acc)) %*% coef(lmDay2.three)
HighNlow = c(1,s.conf,-s.acc,(s.conf*-s.acc)) %*% coef(lmDay2.three)
HighNAve = c(1,s.conf,0,(s.conf*0))%*% coef(lmDay2.three)
HighNhigh = c(1,s.conf,s.acc,(s.conf*s.acc)) %*% coef(lmDay2.three)
# set performance as x axis
D = matrix(data = c(lowNlow,lowNAve,lowNhigh,AveNlow,
                    AveNAve,AveNhigh,HighNlow,HighNAve,
                    HighNhigh),nrow=3,ncol=3,byrow = TRUE)
```

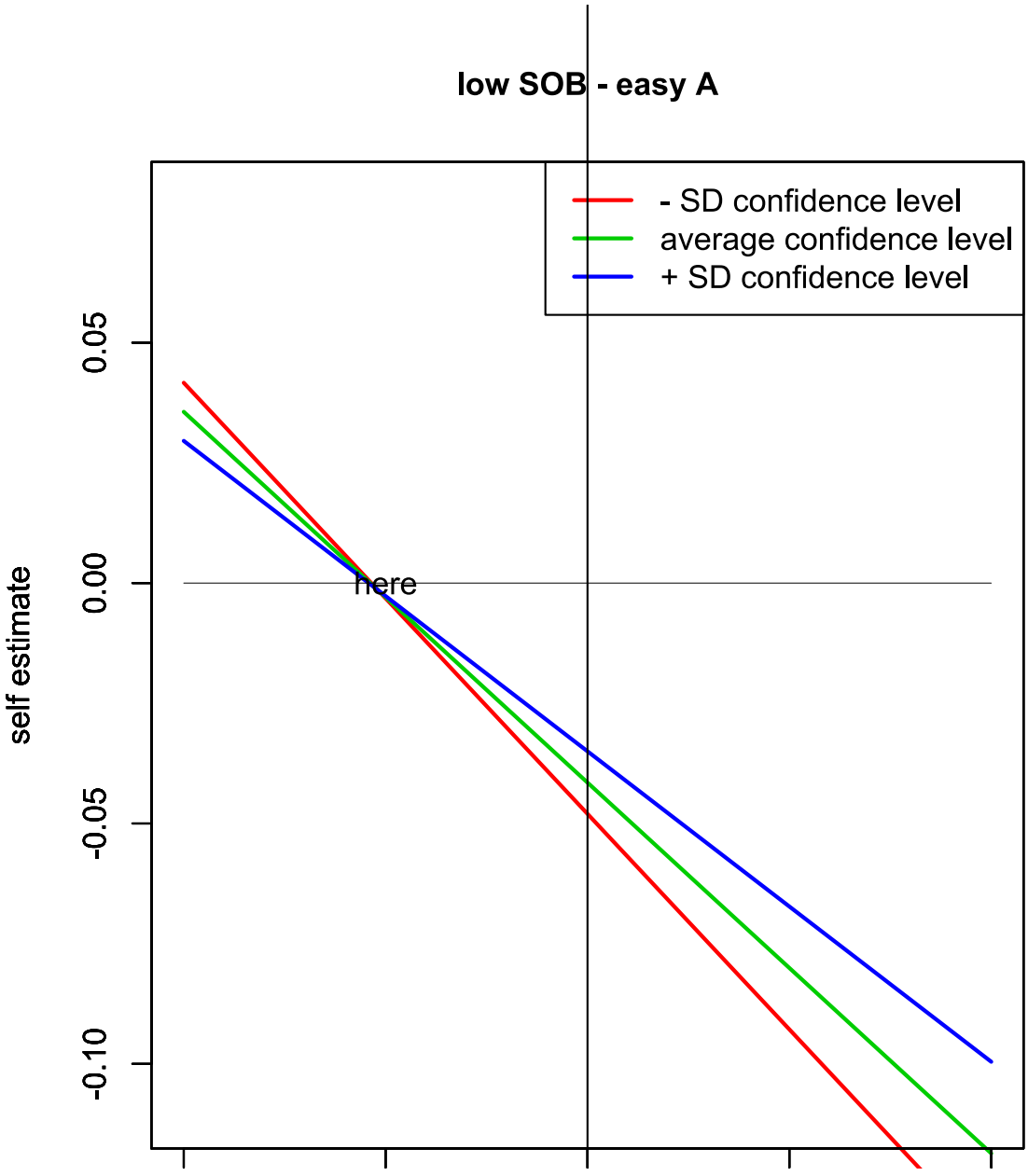
In [34]:
```
ylims = c(-0.11,0.03)
par(xpd=T, mar=par()$mar+c(0,0,0,6))
par(ps = 12, cex = 1, cex.main = 1)
plot(c(1,2,3),D[1,],type="l",ylim=ylims,col=2,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[2,],type="l",ylim=ylims,col=3,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[3,],type="l",ylim=ylims,col=4,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
title(main="replicate Dunning-Kruger effect in day 2 data")
legend("topright",legend=c("- SD confidence level","average confidence level
```

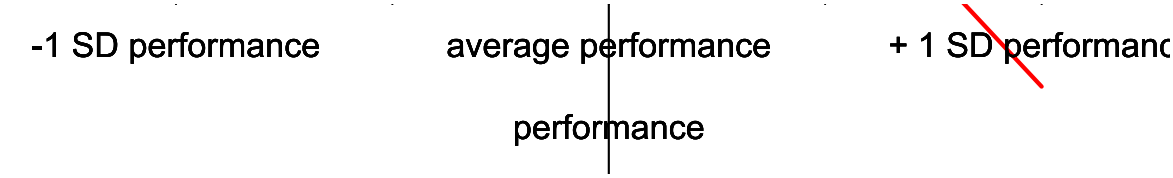


In [35]:
```
xbar.acc = mean(data$ACC2,na.rm = T)
xbar.conf = mean(data$Conf2,na.rm = T)
xbar.SOB = mean(data$SOB_indicator,na.rm=T)
s.acc = SD(data$ACC2)
s.conf = SD(data$Conf2)
s.SOB = SD(data$SOB_indicator)

# easy A
lowNlowNlow = c(1,-s.conf,-s.acc,-s.SOB,(-s.conf*-s.acc),(-s.conf*-s.SOB),(-
lowNAveNlow = c(1,-s.conf,0,-s.SOB,(-s.conf*0),(-s.conf*-s.SOB),(0*-s.SOB))
lowNhighNlow = c(1,-s.conf,s.acc,-s.SOB,(-s.conf*s.acc),(-s.conf*-s.SOB),(s.
AveNlowNlow = c(1,0,-s.acc,-s.SOB,(0*-s.acc),(-0*-s.SOB),(-s.acc*-s.SOB)) %*
AveNAveNlow = c(1,-0,0,-s.SOB,(0*0),(0*-s.SOB),(0*-s.SOB)) %*% coef(lmDay2.f
AveNhighNlow = c(1,-0,s.acc,-s.SOB,(0*s.acc),(0*-s.SOB),(s.acc*-s.SOB)) %*%
HighNlowNlow = c(1,s.conf,-s.acc,-s.SOB,(s.conf*-s.acc),(s.conf*-s.SOB),(-s.
HighNAveNlow = c(1,s.conf,0,-s.SOB,(s.conf*0),(s.conf*-s.SOB),(0*-s.SOB)) %*
HighNhighNlow = c(1,s.conf,s.acc,-s.SOB,(s.conf*s.acc),(s.conf*-s.SOB),(s.ac
# set performance as axis
D = matrix(data = c(lowNlowNlow,lowNAveNlow,lowNhighNlow,AveNlowNlow,
                    AveNAveNlow,AveNhighNlow,HighNlowNlow,HighNAveNlow,
                    HighNhighNlow),nrow=3,ncol=3,byrow = TRUE)
```

In [36]:
```
ylims = c(-0.11,0.08)
par(xpd=T, mar=par()$mar+c(0,0,0,6))
par(ps = 12, cex = 1, cex.main = 1)
plot(c(1,2,3),D[1,],type="l",ylim=ylims,col=2,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[2,],type="l",ylim=ylims,col=3,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[3,],type="l",ylim=ylims,col=4,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(seq(1,3,length=3),y = array(0,c(1,3)),type="l",ylim=ylims,col=1,xaxt =
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
title(main="low SOB - easy A")
legend("topright",legend=c("- SD confidence level","average confidence level
abline(v=2)
text(1.5,0,'here')
```

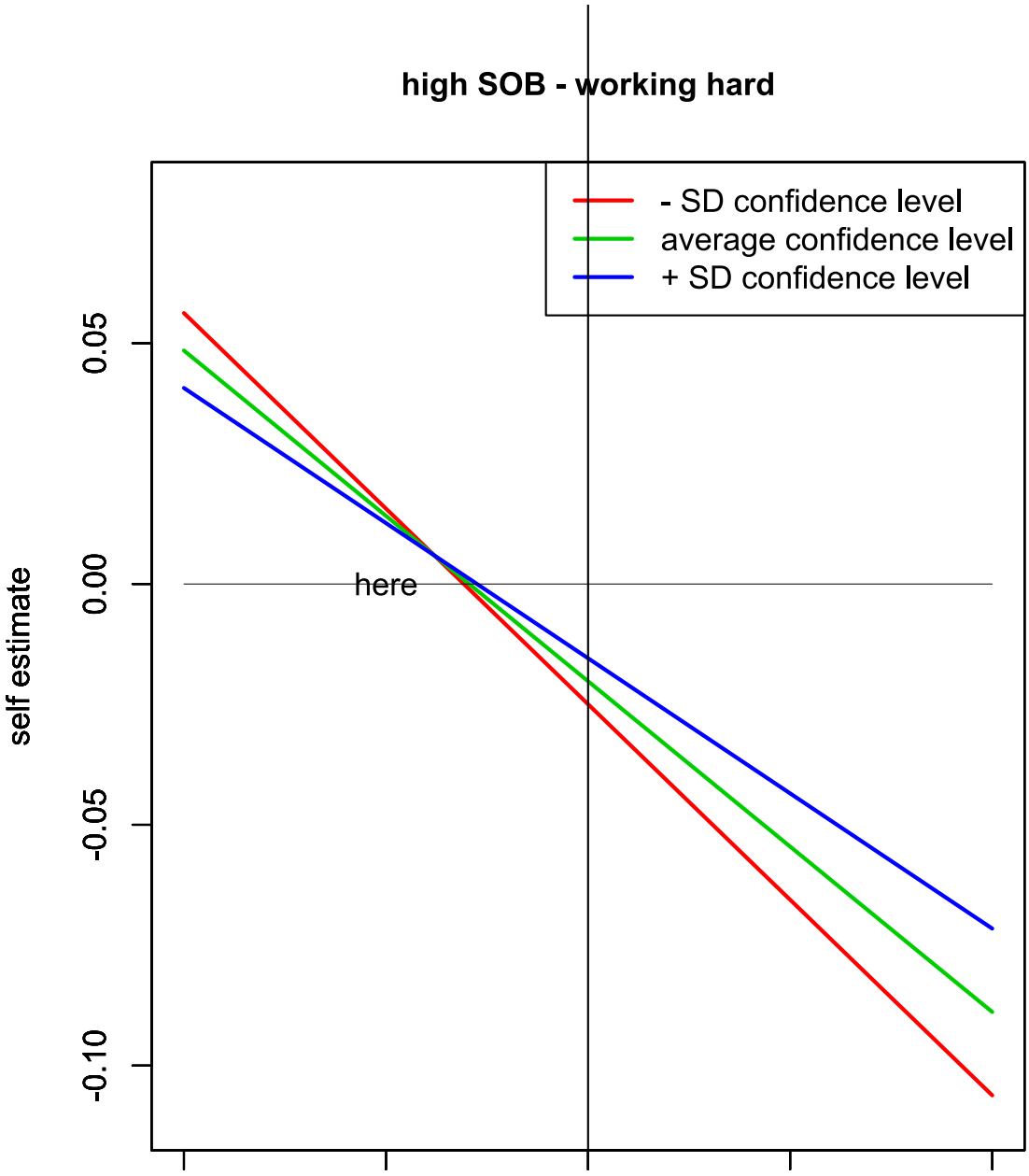


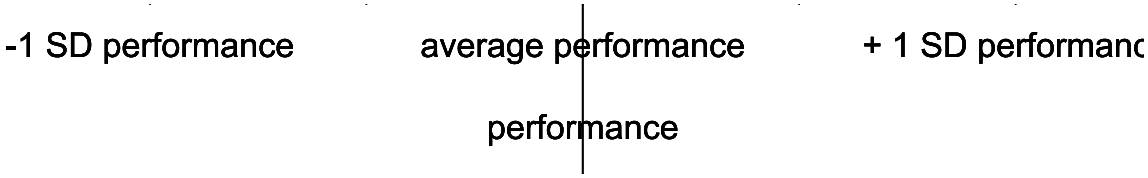


In [37]:
```
lowNlowNhigh = c(1,-s.conf,-s.acc,s.SOB,(-s.conf*-s.acc),(-s.conf*s.SOB),(-s
lowNAveNhigh = c(1,-s.conf,0,s.SOB,(-s.conf*0),(-s.conf*s.SOB),(0*s.SOB)) %*
lowNhighNhigh = c(1,-s.conf,s.acc,s.SOB,(-s.conf*s.acc),(-s.conf*s.SOB),(s.a
AveNlowNhigh = c(1,0,-s.acc,s.SOB,(0*-s.acc),(-0*s.SOB),(-s.acc*s.SOB)) %*%
AveNAveNhigh = c(1,-0,0,s.SOB,(0*0),(0*s.SOB),(0*s.SOB)) %*% coef(lmDay2.fiv
AveNhighNhigh = c(1,-0,s.acc,s.SOB,(0*s.acc),(0*s.SOB),(s.acc*s.SOB)) %*% co
HighNlowNhigh = c(1,s.conf,-s.acc,s.SOB,(s.conf*-s.acc),(s.conf*s.SOB),(-s.a
HighNAveNhigh = c(1,s.conf,0,s.SOB,(s.conf*0),(s.conf*s.SOB),(0*s.SOB)) %*%
HighNhighNhigh = c(1,s.conf,s.acc,s.SOB,(s.conf*s.acc),(s.conf*s.SOB),(s.acc

#set performance as x axis
D = matrix(data = c(lowNlowNhigh,lowNAveNhigh,lowNhighNhigh,AveNlowNhigh,
                    AveNAveNhigh,AveNhighNhigh,HighNlowNhigh,HighNAveNhigh,
                    HighNhighNhigh),nrow=3,ncol=3,byrow = TRUE)
```

In [38]:
```
ylims = c(-0.11,0.08)
par(xpd=T, mar=par()$mar+c(0,0,0,6))
par(ps = 12, cex = 1, cex.main = 1)
plot(c(1,2,3),D[1,],type="l",ylim=ylims,col=2,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[2,],type="l",ylim=ylims,col=3,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(c(1,2,3),D[3,],type="l",ylim=ylims,col=4,xaxt = "n",ylab="self estimate
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
par(new=T)
plot(seq(1,3,length=3),y = array(0,c(1,3)),type="l",ylim=ylims,col=1,xaxt =
axis(1,at=seq(1,3,0.5),labels = c("-1 SD performance","","average performanc
title(main="high SOB - working hard")
legend("topright",legend=c("- SD confidence level","average confidence level
abline(v=2)
text(1.5,0,'here')
```





In [39]:
```
library(car)
```

```
Attaching package: 'car'

The following object is masked from 'package:psych':

    logit
```

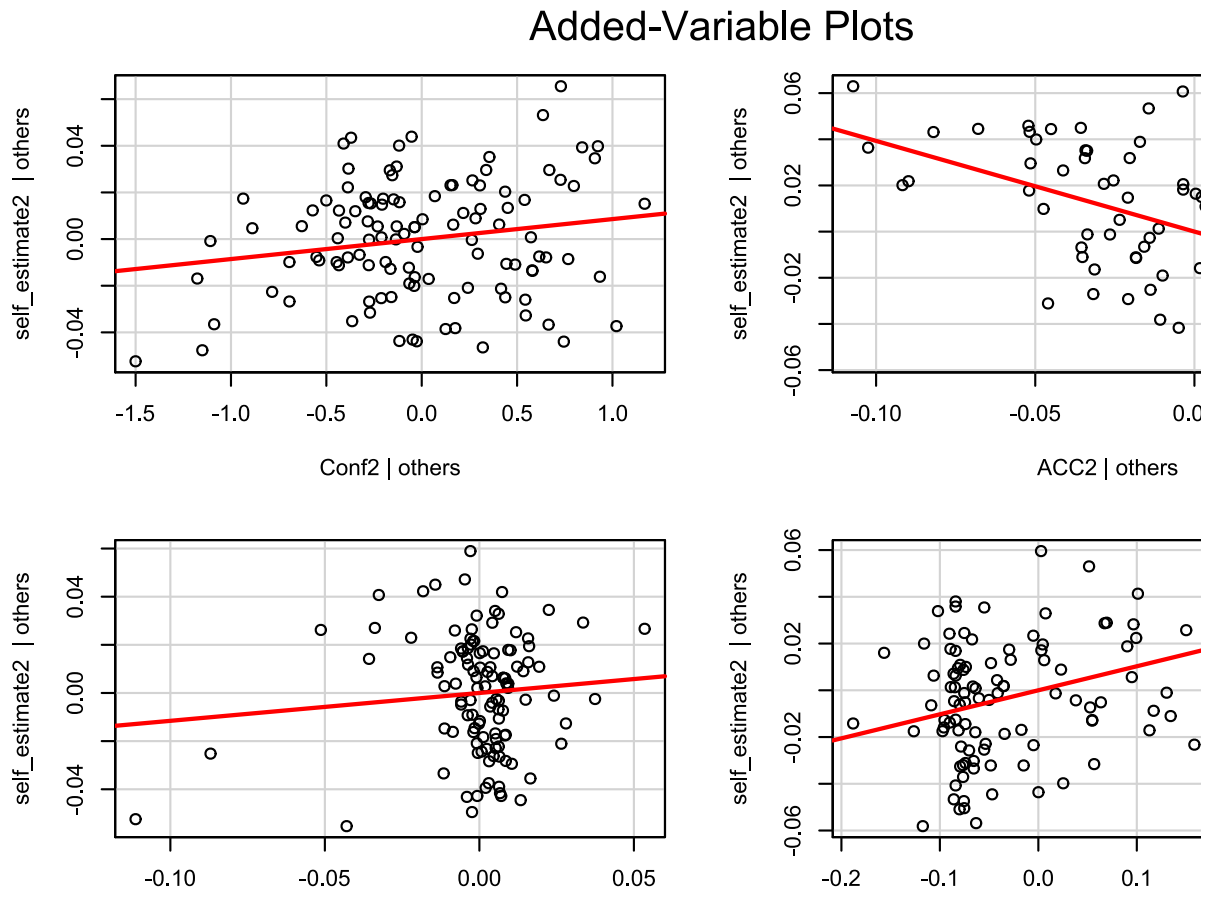
In [40]:
```
summary(lmDay2.five)
avPlots(lmDay2.five)
```

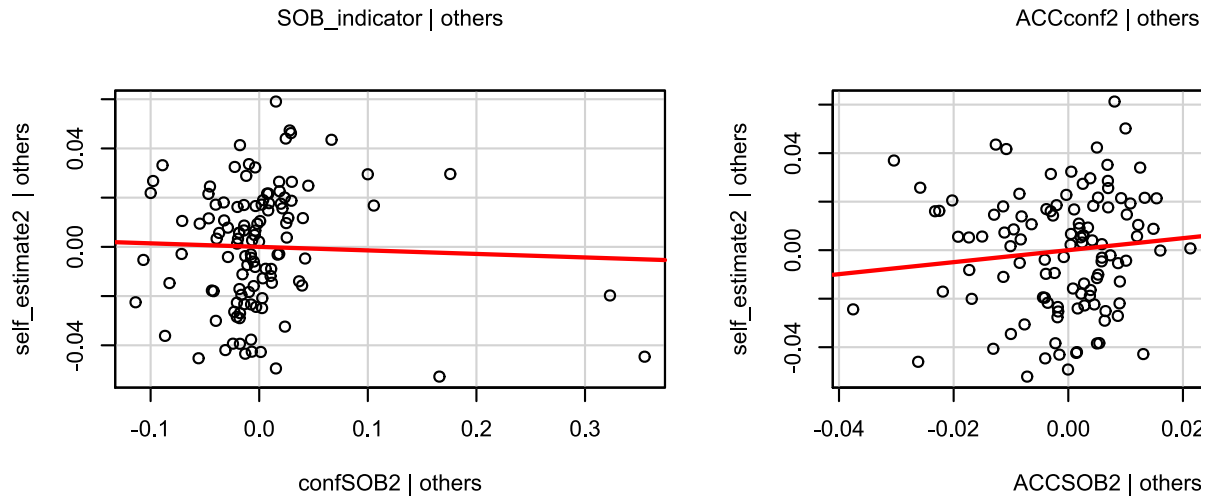
Out[40]:
```
Call:
lm(formula = self_estimate2 ~ Conf2 + ACC2 + SOB_indicator + 
    ACCconf2 + confSOB2 + ACCSOB2, data = data)

Residuals:
      Min        1Q    Median        3Q       Max 
-0.050346 -0.018365  0.002763  0.017816  0.059278 

Coefficients:
               Estimate Std. Error t value Pr(>|t|)    
(Intercept)   -0.030845   0.014522  -2.124    0.036 *  
Conf2          0.008568   0.004560   1.879    0.063 .  
ACC2          -0.392915   0.068533  -5.733 9.38e-08 ***
SOB_indicator  0.115720   0.122062   0.948    0.345    
ACCconf2       0.102795   0.021072   4.878 3.79e-06 ***
confSOB2      -0.014323   0.037635  -0.381    0.704    
ACCSOB2        0.247108   0.184167   1.342    0.183    
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.0251 on 106 degrees of freedom
  (46 observations deleted due to missingness)
Multiple R-squared:  0.3207,    Adjusted R-squared:  0.2822 
F-statistic: 8.339 on 6 and 106 DF,  p-value: 2.082e-07
```




SOB_indicator | others
ACCconf2 | others
self_estimate2 | others
0.04
0.00
-0.04
-0.1
0.0
0.1
0.2
0.3
confSOB2 | others
self_estimate2 | others
0.04
0.00
-0.04
-0.04
-0.02
0.00
0.02
ACCSOB2 | others

In [ ]: