```
library(psych)
library(car)

##
## Attaching package:  'car'
##
## The following object is masked from 'package:psych':
##
##     logit

setwd("/Users/Anissa/Dropbox/school/Projects/volunteer/c x work/SPAN cxwork/")
load("/Users/Anissa/Dropbox/school/Projects/volunteer/c x work/SPAN cxwork/SPAN.RData")
save.image("/Users/Anissa/Dropbox/school/Projects/volunteer/c x work/SPAN cxwork/SPAN.RData'

# reliabilities
alpha(subset(SPAN, select = c(PNEOC11, PNEOC12, PNEOC13, PNEOC14, PNEOC15, PNEOC16,
    PNEOC17, PNEOC18, PNEOC21, PNEOC22, PNEOC23, PNEOC24, PNEOC25, PNEOC26,
    PNEOC27, PNEOC28, PNEOC31, PNEOC32, PNEOC33, PNEOC34, PNEOC35, PNEOC36,
    PNEOC37, PNEOC38, PNEOC41, PNEOC42, PNEOC43, PNEOC44, PNEOC45, PNEOC46,
    PNEOC47, PNEOC48, PNEOC51, PNEOC52, PNEOC53, PNEOC54, PNEOC55, PNEOC56,
    PNEOC57, PNEOC58, PNEOC61, PNEOC62, PNEOC63, PNEOC64, PNEOC65, PNEOC66,
    PNEOC67, PNEOC68)))

##
## Reliability analysis
## Call: alpha(x = subset(SPAN, select = c(PNEOC11, PNEOC12, PNEOC13,
##      PNEOC14, PNEOC15, PNEOC16, PNEOC17, PNEOC18, PNEOC21, PNEOC22,
##      PNEOC23, PNEOC24, PNEOC25, PNEOC26, PNEOC27, PNEOC28, PNEOC31,
##      PNEOC32, PNEOC33, PNEOC34, PNEOC35, PNEOC36, PNEOC37, PNEOC38,
##      PNEOC41, PNEOC42, PNEOC43, PNEOC44, PNEOC45, PNEOC46, PNEOC47,
##      PNEOC48, PNEOC51, PNEOC52, PNEOC53, PNEOC54, PNEOC55, PNEOC56,
##      PNEOC57, PNEOC58, PNEOC61, PNEOC62, PNEOC63, PNEOC64, PNEOC65,
##      PNEOC66, PNEOC67, PNEOC68)))
##
##   raw_alpha std.alpha G6(smc) average_r S/N    ase mean   sd
##       0.89       0.9    0.92      0.16   9 0.0045  2.6 0.36
##
##  lower alpha upper     95% confidence boundaries
## 0.88 0.89 0.9
##
##  Reliability if an item is dropped:
##         raw_alpha std.alpha G6(smc) average_r S/N alpha se
## PNEOC11      0.89       0.9    0.91      0.16 8.9   0.0046
## PNEOC12      0.89       0.9    0.92      0.16 9.0   0.0045
## PNEOC13      0.89       0.9    0.91      0.16 8.7   0.0046
## PNEOC14      0.89       0.9    0.91      0.16 8.7   0.0046
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## PNEOC15      0.89      0.9      0.91      0.16 8.7      0.0046
## PNEOC16      0.89      0.9      0.91      0.16 8.7      0.0046
## PNEOC17      0.89      0.9      0.91      0.16 8.7      0.0046
## PNEOC18      0.89      0.9      0.91      0.15 8.6      0.0046
## PNEOC21      0.89      0.9      0.92      0.16 9.1      0.0045
## PNEOC22      0.89      0.9      0.91      0.16 8.8      0.0046
## PNEOC23      0.89      0.9      0.91      0.16 8.8      0.0046
## PNEOC24      0.89      0.9      0.91      0.16 8.9      0.0046
## PNEOC25      0.89      0.9      0.91      0.15 8.6      0.0047
## PNEOC26      0.89      0.9      0.92      0.16 9.0      0.0045
## PNEOC27      0.89      0.9      0.92      0.16 9.1      0.0045
## PNEOC28      0.89      0.9      0.91      0.16 8.8      0.0046
## PNEOC31      0.89      0.9      0.91      0.16 8.9      0.0046
## PNEOC32      0.89      0.9      0.91      0.16 8.7      0.0047
## PNEOC33      0.89      0.9      0.91      0.16 8.9      0.0045
## PNEOC34      0.89      0.9      0.92      0.16 9.0      0.0045
## PNEOC35      0.89      0.9      0.91      0.16 8.7      0.0046
## PNEOC36      0.89      0.9      0.91      0.16 8.9      0.0046
## PNEOC37      0.89      0.9      0.91      0.16 8.7      0.0046
## PNEOC38      0.89      0.9      0.91      0.16 8.9      0.0046
## PNEOC41      0.89      0.9      0.91      0.16 9.0      0.0045
## PNEOC42      0.89      0.9      0.91      0.15 8.6      0.0047
## PNEOC43      0.89      0.9      0.91      0.16 8.8      0.0046
## PNEOC44      0.89      0.9      0.91      0.16 8.6      0.0046
## PNEOC45      0.89      0.9      0.91      0.16 8.9      0.0046
## PNEOC46      0.89      0.9      0.91      0.16 8.7      0.0046
## PNEOC47      0.89      0.9      0.91      0.16 8.7      0.0046
## PNEOC48      0.89      0.9      0.92      0.16 9.0      0.0045
## PNEOC51      0.89      0.9      0.91      0.16 8.7      0.0047
## PNEOC52      0.89      0.9      0.91      0.16 8.7      0.0047
## PNEOC53      0.89      0.9      0.91      0.15 8.6      0.0047
## PNEOC54      0.89      0.9      0.91      0.15 8.6      0.0047
## PNEOC55      0.89      0.9      0.91      0.15 8.6      0.0047
## PNEOC56      0.89      0.9      0.91      0.16 8.7      0.0046
## PNEOC57      0.89      0.9      0.91      0.16 8.7      0.0047
## PNEOC58      0.89      0.9      0.91      0.15 8.6      0.0047
## PNEOC61      0.89      0.9      0.91      0.16 8.9      0.0045
## PNEOC62      0.89      0.9      0.91      0.16 8.7      0.0046
## PNEOC63      0.89      0.9      0.91      0.16 8.8      0.0046
## PNEOC64      0.89      0.9      0.91      0.16 8.8      0.0046
## PNEOC65      0.89      0.9      0.91      0.16 9.0      0.0045
## PNEOC66      0.89      0.9      0.91      0.16 8.8      0.0046
## PNEOC67      0.89      0.9      0.91      0.16 8.8      0.0046
## PNEOC68      0.89      0.9      0.92      0.16 9.0      0.0045
##
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##   Item statistics
##            n raw.r std.r r.cor r.drop mean   sd
## PNEOC11 1607  0.32  0.33  0.31   0.28  2.8 0.77
## PNEOC12 1607  0.26  0.28  0.24   0.22  3.3 0.79
## PNEOC13 1608  0.45  0.48  0.46   0.42  3.0 0.57
## PNEOC14 1605  0.51  0.51  0.50   0.47  2.5 0.86
## PNEOC15 1607  0.44  0.46  0.44   0.40  2.8 0.71
## PNEOC16 1609  0.45  0.46  0.44   0.41  2.9 0.89
## PNEOC17 1606  0.44  0.46  0.45   0.41  3.0 0.68
## PNEOC18 1604  0.54  0.57  0.56   0.52  3.1 0.62
## PNEOC21 1607  0.23  0.21  0.17   0.17  1.8 1.00
## PNEOC22 1609  0.46  0.45  0.44   0.42  2.5 0.97
## PNEOC23 1605  0.42  0.42  0.40   0.38  2.4 0.92
## PNEOC24 1609  0.34  0.33  0.31   0.29  2.7 0.91
## PNEOC25 1609  0.61  0.59  0.59   0.57  2.6 0.97
## PNEOC26 1598  0.24  0.23  0.20   0.19  1.9 0.96
## PNEOC27 1607  0.18  0.16  0.13   0.13  1.4 1.01
## PNEOC28 1606  0.44  0.43  0.42   0.40  2.3 1.00
## PNEOC31 1609  0.34  0.35  0.33   0.30  3.2 0.74
## PNEOC32 1611  0.52  0.51  0.49   0.47  2.6 1.06
## PNEOC33 1608  0.33  0.33  0.30   0.28  2.9 1.06
## PNEOC34 1603  0.25  0.24  0.21   0.20  2.8 1.04
## PNEOC35 1610  0.46  0.47  0.46   0.42  3.2 0.69
## PNEOC36 1603  0.32  0.33  0.30   0.27  2.7 0.81
## PNEOC37 1607  0.44  0.46  0.45   0.41  3.2 0.56
## PNEOC38 1605  0.35  0.34  0.31   0.29  2.7 1.05
## PNEOC41 1609  0.29  0.28  0.25   0.23  2.2 0.98
## PNEOC42 1610  0.59  0.59  0.58   0.55  2.5 0.90
## PNEOC43 1607  0.41  0.40  0.38   0.36  2.3 0.92
## PNEOC44 1610  0.54  0.55  0.55   0.51  3.1 0.70
## PNEOC45 1609  0.37  0.36  0.34   0.32  2.0 1.05
## PNEOC46 1606  0.50  0.51  0.50   0.46  2.7 0.86
## PNEOC47 1609  0.47  0.48  0.47   0.43  2.6 0.87
## PNEOC48 1605  0.25  0.24  0.21   0.19  1.8 1.13
## PNEOC51 1612  0.53  0.52  0.51   0.48  2.7 0.91
## PNEOC52 1611  0.53  0.52  0.51   0.49  2.6 0.95
## PNEOC53 1609  0.57  0.58  0.58   0.54  2.8 0.74
## PNEOC54 1608  0.61  0.59  0.59   0.57  2.4 0.95
## PNEOC55 1608  0.59  0.60  0.59   0.56  2.9 0.79
## PNEOC56 1607  0.47  0.47  0.46   0.43  2.7 0.82
## PNEOC57 1606  0.52  0.51  0.50   0.48  2.4 0.99
## PNEOC58 1607  0.57  0.57  0.56   0.53  2.5 0.89
## PNEOC61 1611  0.32  0.30  0.27   0.26  1.5 1.03
## PNEOC62 1610  0.46  0.49  0.48   0.43  3.0 0.61
## PNEOC63 1607  0.40  0.39  0.37   0.35  2.0 1.00
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## PNEOC64 1610  0.44   0.45   0.43    0.40  2.4 0.89
## PNEOC65 1608  0.27   0.26   0.23    0.22  2.1 0.94
## PNEOC66 1607  0.41   0.42   0.40    0.37  2.5 0.84
## PNEOC67 1608  0.38   0.39   0.37    0.34  2.8 0.83
## PNEOC68 1607  0.23   0.24   0.20    0.18  2.5 0.79
##
## Non missing response frequency for each item
##            0    1    2    3    4 miss
## PNEOC11 0.01 0.05 0.19 0.62 0.12 0.01
## PNEOC12 0.01 0.03 0.06 0.47 0.43 0.01
## PNEOC13 0.00 0.01 0.09 0.73 0.17 0.01
## PNEOC14 0.01 0.16 0.20 0.57 0.07 0.02
## PNEOC15 0.01 0.04 0.21 0.63 0.11 0.01
## PNEOC16 0.01 0.09 0.08 0.58 0.23 0.01
## PNEOC17 0.00 0.04 0.11 0.67 0.18 0.01
## PNEOC18 0.00 0.02 0.09 0.69 0.19 0.02
## PNEOC21 0.06 0.42 0.23 0.25 0.03 0.01
## PNEOC22 0.02 0.14 0.24 0.47 0.13 0.01
## PNEOC23 0.01 0.17 0.28 0.45 0.09 0.02
## PNEOC24 0.01 0.11 0.19 0.53 0.16 0.01
## PNEOC25 0.03 0.13 0.17 0.54 0.15 0.01
## PNEOC26 0.05 0.33 0.29 0.32 0.02 0.02
## PNEOC27 0.14 0.55 0.12 0.16 0.03 0.01
## PNEOC28 0.03 0.22 0.20 0.48 0.07 0.01
## PNEOC31 0.01 0.02 0.04 0.56 0.36 0.01
## PNEOC32 0.01 0.21 0.11 0.46 0.20 0.01
## PNEOC33 0.02 0.12 0.17 0.38 0.31 0.01
## PNEOC34 0.01 0.15 0.14 0.43 0.27 0.02
## PNEOC35 0.01 0.02 0.06 0.60 0.31 0.01
## PNEOC36 0.01 0.09 0.23 0.57 0.11 0.02
## PNEOC37 0.00 0.01 0.04 0.70 0.24 0.01
## PNEOC38 0.02 0.18 0.10 0.48 0.22 0.02
## PNEOC41 0.02 0.28 0.28 0.36 0.07 0.01
## PNEOC42 0.01 0.16 0.27 0.48 0.08 0.01
## PNEOC43 0.02 0.21 0.29 0.42 0.06 0.01
## PNEOC44 0.00 0.03 0.12 0.61 0.23 0.01
## PNEOC45 0.04 0.38 0.18 0.34 0.05 0.01
## PNEOC46 0.00 0.11 0.22 0.53 0.13 0.01
## PNEOC47 0.01 0.12 0.23 0.53 0.11 0.01
## PNEOC48 0.11 0.38 0.18 0.28 0.05 0.02
## PNEOC51 0.02 0.12 0.12 0.60 0.14 0.01
## PNEOC52 0.02 0.16 0.17 0.53 0.12 0.01
## PNEOC53 0.01 0.05 0.20 0.62 0.13 0.01
## PNEOC54 0.02 0.19 0.19 0.53 0.07 0.01
## PNEOC55 0.01 0.07 0.13 0.62 0.17 0.01
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## PNEOC56 0.01 0.12 0.16 0.63 0.09 0.01
## PNEOC57 0.02 0.25 0.15 0.51 0.07 0.01
## PNEOC58 0.02 0.14 0.24 0.52 0.09 0.01
## PNEOC61 0.11 0.49 0.19 0.16 0.04 0.01
## PNEOC62 0.00 0.02 0.11 0.71 0.16 0.01
## PNEOC63 0.02 0.40 0.21 0.33 0.05 0.01
## PNEOC64 0.01 0.19 0.24 0.50 0.06 0.01
## PNEOC65 0.03 0.29 0.26 0.40 0.03 0.01
## PNEOC66 0.01 0.15 0.20 0.59 0.05 0.01
## PNEOC67 0.01 0.09 0.17 0.58 0.15 0.01
## PNEOC68 0.00 0.13 0.25 0.56 0.05 0.01

alpha(Calpha)

##
## Reliability analysis
## Call: alpha(x = Calpha)
##
##   raw_alpha std.alpha G6(smc) average_r S/N    ase mean   sd
##       0.89       0.9    0.92      0.16   9 0.0045  2.6 0.36
##
##  lower alpha upper     95% confidence boundaries
## 0.88 0.89 0.9
##
##  Reliability if an item is dropped:
##         raw_alpha std.alpha G6(smc) average_r S/N alpha se
## PNEOC11      0.89       0.9    0.91      0.16 8.9   0.0046
## PNEOC12      0.89       0.9    0.92      0.16 9.0   0.0045
## PNEOC13      0.89       0.9    0.91      0.16 8.7   0.0046
## PNEOC14      0.89       0.9    0.91      0.16 8.7   0.0046
## PNEOC15      0.89       0.9    0.91      0.16 8.7   0.0046
## PNEOC16      0.89       0.9    0.91      0.16 8.7   0.0046
## PNEOC17      0.89       0.9    0.91      0.16 8.7   0.0046
## PNEOC18      0.89       0.9    0.91      0.15 8.6   0.0046
## PNEOC21      0.89       0.9    0.92      0.16 9.1   0.0045
## PNEOC22      0.89       0.9    0.91      0.16 8.8   0.0046
## PNEOC23      0.89       0.9    0.91      0.16 8.8   0.0046
## PNEOC24      0.89       0.9    0.91      0.16 8.9   0.0046
## PNEOC25      0.89       0.9    0.91      0.15 8.6   0.0047
## PNEOC26      0.89       0.9    0.92      0.16 9.0   0.0045
## PNEOC27      0.89       0.9    0.92      0.16 9.1   0.0045
## PNEOC28      0.89       0.9    0.91      0.16 8.8   0.0046
## PNEOC31      0.89       0.9    0.91      0.16 8.9   0.0046
## PNEOC32      0.89       0.9    0.91      0.16 8.7   0.0047
## PNEOC33      0.89       0.9    0.91      0.16 8.9   0.0045
## PNEOC34      0.89       0.9    0.92      0.16 9.0   0.0045
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## PNEOC35        0.89        0.9    0.91       0.16 8.7   0.0046
## PNEOC36        0.89        0.9    0.91       0.16 8.9   0.0046
## PNEOC37        0.89        0.9    0.91       0.16 8.7   0.0046
## PNEOC38        0.89        0.9    0.91       0.16 8.9   0.0046
## PNEOC41        0.89        0.9    0.91       0.16 9.0   0.0045
## PNEOC42        0.89        0.9    0.91       0.15 8.6   0.0047
## PNEOC43        0.89        0.9    0.91       0.16 8.8   0.0046
## PNEOC44        0.89        0.9    0.91       0.16 8.6   0.0046
## PNEOC45        0.89        0.9    0.91       0.16 8.9   0.0046
## PNEOC46        0.89        0.9    0.91       0.16 8.7   0.0046
## PNEOC47        0.89        0.9    0.91       0.16 8.7   0.0046
## PNEOC48        0.89        0.9    0.92       0.16 9.0   0.0045
## PNEOC51        0.89        0.9    0.91       0.16 8.7   0.0047
## PNEOC52        0.89        0.9    0.91       0.16 8.7   0.0047
## PNEOC53        0.89        0.9    0.91       0.15 8.6   0.0047
## PNEOC54        0.89        0.9    0.91       0.15 8.6   0.0047
## PNEOC55        0.89        0.9    0.91       0.15 8.6   0.0047
## PNEOC56        0.89        0.9    0.91       0.16 8.7   0.0046
## PNEOC57        0.89        0.9    0.91       0.16 8.7   0.0047
## PNEOC58        0.89        0.9    0.91       0.15 8.6   0.0047
## PNEOC61        0.89        0.9    0.91       0.16 8.9   0.0045
## PNEOC62        0.89        0.9    0.91       0.16 8.7   0.0046
## PNEOC63        0.89        0.9    0.91       0.16 8.8   0.0046
## PNEOC64        0.89        0.9    0.91       0.16 8.8   0.0046
## PNEOC65        0.89        0.9    0.91       0.16 9.0   0.0045
## PNEOC66        0.89        0.9    0.91       0.16 8.8   0.0046
## PNEOC67        0.89        0.9    0.91       0.16 8.8   0.0046
## PNEOC68        0.89        0.9    0.92       0.16 9.0   0.0045
##
##   Item statistics
##              n raw.r std.r r.cor r.drop mean   sd
## PNEOC11 1607  0.32  0.33  0.31   0.28  2.8 0.77
## PNEOC12 1607  0.26  0.28  0.24   0.22  3.3 0.79
## PNEOC13 1608  0.45  0.48  0.46   0.42  3.0 0.57
## PNEOC14 1605  0.51  0.51  0.50   0.47  2.5 0.86
## PNEOC15 1607  0.44  0.46  0.44   0.40  2.8 0.71
## PNEOC16 1609  0.45  0.46  0.44   0.41  2.9 0.89
## PNEOC17 1606  0.44  0.46  0.45   0.41  3.0 0.68
## PNEOC18 1604  0.54  0.57  0.56   0.52  3.1 0.62
## PNEOC21 1607  0.23  0.21  0.17   0.17  1.8 1.00
## PNEOC22 1609  0.46  0.45  0.44   0.42  2.5 0.97
## PNEOC23 1605  0.42  0.42  0.40   0.38  2.4 0.92
## PNEOC24 1609  0.34  0.33  0.31   0.29  2.7 0.91
## PNEOC25 1609  0.61  0.59  0.59   0.57  2.6 0.97
## PNEOC26 1598  0.24  0.23  0.20   0.19  1.9 0.96
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## PNEOC27 1607  0.18  0.16  0.13   0.13  1.4 1.01
## PNEOC28 1606  0.44  0.43  0.42   0.40  2.3 1.00
## PNEOC31 1609  0.34  0.35  0.33   0.30  3.2 0.74
## PNEOC32 1611  0.52  0.51  0.49   0.47  2.6 1.06
## PNEOC33 1608  0.33  0.33  0.30   0.28  2.9 1.06
## PNEOC34 1603  0.25  0.24  0.21   0.20  2.8 1.04
## PNEOC35 1610  0.46  0.47  0.46   0.42  3.2 0.69
## PNEOC36 1603  0.32  0.33  0.30   0.27  2.7 0.81
## PNEOC37 1607  0.44  0.46  0.45   0.41  3.2 0.56
## PNEOC38 1605  0.35  0.34  0.31   0.29  2.7 1.05
## PNEOC41 1609  0.29  0.28  0.25   0.23  2.2 0.98
## PNEOC42 1610  0.59  0.59  0.58   0.55  2.5 0.90
## PNEOC43 1607  0.41  0.40  0.38   0.36  2.3 0.92
## PNEOC44 1610  0.54  0.55  0.55   0.51  3.1 0.70
## PNEOC45 1609  0.37  0.36  0.34   0.32  2.0 1.05
## PNEOC46 1606  0.50  0.51  0.50   0.46  2.7 0.86
## PNEOC47 1609  0.47  0.48  0.47   0.43  2.6 0.87
## PNEOC48 1605  0.25  0.24  0.21   0.19  1.8 1.13
## PNEOC51 1612  0.53  0.52  0.51   0.48  2.7 0.91
## PNEOC52 1611  0.53  0.52  0.51   0.49  2.6 0.95
## PNEOC53 1609  0.57  0.58  0.58   0.54  2.8 0.74
## PNEOC54 1608  0.61  0.59  0.59   0.57  2.4 0.95
## PNEOC55 1608  0.59  0.60  0.59   0.56  2.9 0.79
## PNEOC56 1607  0.47  0.47  0.46   0.43  2.7 0.82
## PNEOC57 1606  0.52  0.51  0.50   0.48  2.4 0.99
## PNEOC58 1607  0.57  0.57  0.56   0.53  2.5 0.89
## PNEOC61 1611  0.32  0.30  0.27   0.26  1.5 1.03
## PNEOC62 1610  0.46  0.49  0.48   0.43  3.0 0.61
## PNEOC63 1607  0.40  0.39  0.37   0.35  2.0 1.00
## PNEOC64 1610  0.44  0.45  0.43   0.40  2.4 0.89
## PNEOC65 1608  0.27  0.26  0.23   0.22  2.1 0.94
## PNEOC66 1607  0.41  0.42  0.40   0.37  2.5 0.84
## PNEOC67 1608  0.38  0.39  0.37   0.34  2.8 0.83
## PNEOC68 1607  0.23  0.24  0.20   0.18  2.5 0.79
##
## Non missing response frequency for each item
##             0    1    2    3    4 miss
## PNEOC11 0.01 0.05 0.19 0.62 0.12 0.01
## PNEOC12 0.01 0.03 0.06 0.47 0.43 0.01
## PNEOC13 0.00 0.01 0.09 0.73 0.17 0.01
## PNEOC14 0.01 0.16 0.20 0.57 0.07 0.02
## PNEOC15 0.01 0.04 0.21 0.63 0.11 0.01
## PNEOC16 0.01 0.09 0.08 0.58 0.23 0.01
## PNEOC17 0.00 0.04 0.11 0.67 0.18 0.01
## PNEOC18 0.00 0.02 0.09 0.69 0.19 0.02
```

```
## PNEOC21 0.06 0.42 0.23 0.25 0.03 0.01
## PNEOC22 0.02 0.14 0.24 0.47 0.13 0.01
## PNEOC23 0.01 0.17 0.28 0.45 0.09 0.02
## PNEOC24 0.01 0.11 0.19 0.53 0.16 0.01
## PNEOC25 0.03 0.13 0.17 0.54 0.15 0.01
## PNEOC26 0.05 0.33 0.29 0.32 0.02 0.02
## PNEOC27 0.14 0.55 0.12 0.16 0.03 0.01
## PNEOC28 0.03 0.22 0.20 0.48 0.07 0.01
## PNEOC31 0.01 0.02 0.04 0.56 0.36 0.01
## PNEOC32 0.01 0.21 0.11 0.46 0.20 0.01
## PNEOC33 0.02 0.12 0.17 0.38 0.31 0.01
## PNEOC34 0.01 0.15 0.14 0.43 0.27 0.02
## PNEOC35 0.01 0.02 0.06 0.60 0.31 0.01
## PNEOC36 0.01 0.09 0.23 0.57 0.11 0.02
## PNEOC37 0.00 0.01 0.04 0.70 0.24 0.01
## PNEOC38 0.02 0.18 0.10 0.48 0.22 0.02
## PNEOC41 0.02 0.28 0.28 0.36 0.07 0.01
## PNEOC42 0.01 0.16 0.27 0.48 0.08 0.01
## PNEOC43 0.02 0.21 0.29 0.42 0.06 0.01
## PNEOC44 0.00 0.03 0.12 0.61 0.23 0.01
## PNEOC45 0.04 0.38 0.18 0.34 0.05 0.01
## PNEOC46 0.00 0.11 0.22 0.53 0.13 0.01
## PNEOC47 0.01 0.12 0.23 0.53 0.11 0.01
## PNEOC48 0.11 0.38 0.18 0.28 0.05 0.02
## PNEOC51 0.02 0.12 0.12 0.60 0.14 0.01
## PNEOC52 0.02 0.16 0.17 0.53 0.12 0.01
## PNEOC53 0.01 0.05 0.20 0.62 0.13 0.01
## PNEOC54 0.02 0.19 0.19 0.53 0.07 0.01
## PNEOC55 0.01 0.07 0.13 0.62 0.17 0.01
## PNEOC56 0.01 0.12 0.16 0.63 0.09 0.01
## PNEOC57 0.02 0.25 0.15 0.51 0.07 0.01
## PNEOC58 0.02 0.14 0.24 0.52 0.09 0.01
## PNEOC61 0.11 0.49 0.19 0.16 0.04 0.01
## PNEOC62 0.00 0.02 0.11 0.71 0.16 0.01
## PNEOC63 0.02 0.40 0.21 0.33 0.05 0.01
## PNEOC64 0.01 0.19 0.24 0.50 0.06 0.01
## PNEOC65 0.03 0.29 0.26 0.40 0.03 0.01
## PNEOC66 0.01 0.15 0.20 0.59 0.05 0.01
## PNEOC67 0.01 0.09 0.17 0.58 0.15 0.01
## PNEOC68 0.00 0.13 0.25 0.56 0.05 0.01

Aalpha <- subset(SPAN, select = c(PNEOA11, PNEOA12, PNEOA13, PNEOA14, PNEOA15,
    PNEOA16, PNEOA17, PNEOA18, PNEOA21, PNEOA22, PNEOA23, PNEOA24, PNEOA25,
    PNEOA26, PNEOA27, PNEOA28, PNEOA31, PNEOA32, PNEOA33, PNEOA34, PNEOA35,
    PNEOA36, PNEOA37, PNEOA38, PNEOA41, PNEOA42, PNEOA43, PNEOA44, PNEOA45,
    PNEOA46, PNEOA47, PNEOA48, PNEOA51, PNEOA52, PNEOA53, PNEOA54, PNEOA55,
```

```
    PNEOA56, PNEOA57, PNEOA58, PNEOA61, PNEOA62, PNEOA63, PNEOA64, PNEOA65,
    PNEOA66, PNEOA67, PNEOA68))
alpha(Aalpha)

##
## Reliability analysis
## Call: alpha(x = Aalpha)
##
##   raw_alpha std.alpha G6(smc) average_r S/N    ase mean   sd
##      0.86      0.87    0.89      0.12 6.5 0.0056  2.7 0.32
##
##  lower alpha upper     95% confidence boundaries
## 0.85 0.86 0.87
##
##  Reliability if an item is dropped:
##         raw_alpha std.alpha G6(smc) average_r S/N alpha se
## PNEOA11      0.86      0.86    0.89      0.12 6.3   0.0058
## PNEOA12      0.86      0.87    0.89      0.12 6.4   0.0057
## PNEOA13      0.86      0.86    0.89      0.12 6.4   0.0057
## PNEOA14      0.86      0.86    0.89      0.12 6.3   0.0057
## PNEOA15      0.86      0.86    0.89      0.12 6.3   0.0058
## PNEOA16      0.86      0.86    0.89      0.12 6.3   0.0058
## PNEOA17      0.86      0.86    0.89      0.12 6.2   0.0058
## PNEOA18      0.86      0.86    0.89      0.12 6.4   0.0057
## PNEOA21      0.86      0.86    0.89      0.12 6.4   0.0057
## PNEOA22      0.86      0.86    0.89      0.12 6.3   0.0058
## PNEOA23      0.86      0.87    0.89      0.12 6.5   0.0057
## PNEOA24      0.86      0.86    0.89      0.12 6.4   0.0057
## PNEOA25      0.86      0.87    0.89      0.12 6.4   0.0057
## PNEOA26      0.86      0.86    0.89      0.12 6.3   0.0058
## PNEOA27      0.86      0.86    0.89      0.12 6.3   0.0058
## PNEOA28      0.86      0.87    0.89      0.12 6.5   0.0057
## PNEOA31      0.86      0.86    0.89      0.12 6.3   0.0058
## PNEOA32      0.86      0.86    0.89      0.12 6.3   0.0057
## PNEOA33      0.86      0.86    0.89      0.12 6.2   0.0058
## PNEOA34      0.86      0.86    0.89      0.12 6.3   0.0057
## PNEOA35      0.86      0.87    0.89      0.12 6.4   0.0057
## PNEOA36      0.86      0.87    0.89      0.12 6.4   0.0057
## PNEOA37      0.86      0.86    0.89      0.12 6.4   0.0057
## PNEOA38      0.86      0.86    0.89      0.12 6.3   0.0057
## PNEOA41      0.86      0.87    0.89      0.12 6.5   0.0057
## PNEOA42      0.86      0.86    0.89      0.12 6.4   0.0057
## PNEOA43      0.86      0.87    0.89      0.12 6.6   0.0056
## PNEOA44      0.86      0.87    0.89      0.12 6.4   0.0057
## PNEOA45      0.86      0.87    0.89      0.12 6.4   0.0057
## PNEOA46      0.86      0.86    0.89      0.12 6.4   0.0057
```

```
## PNEOA47      0.86      0.86      0.89      0.12 6.4   0.0057
## PNEOA48      0.86      0.86      0.89      0.12 6.3   0.0057
## PNEOA51      0.86      0.86      0.89      0.12 6.4   0.0057
## PNEOA52      0.86      0.87      0.89      0.12 6.6   0.0056
## PNEOA53      0.86      0.86      0.89      0.12 6.4   0.0058
## PNEOA54      0.86      0.86      0.89      0.12 6.4   0.0057
## PNEOA55      0.86      0.87      0.89      0.12 6.6   0.0056
## PNEOA56      0.86      0.87      0.89      0.12 6.4   0.0057
## PNEOA57      0.86      0.87      0.89      0.12 6.4   0.0057
## PNEOA58      0.86      0.86      0.89      0.12 6.4   0.0057
## PNEOA61      0.86      0.87      0.89      0.12 6.5   0.0057
## PNEOA62      0.86      0.87      0.89      0.12 6.4   0.0057
## PNEOA63      0.86      0.87      0.89      0.12 6.5   0.0057
## PNEOA64      0.86      0.87      0.89      0.12 6.5   0.0057
## PNEOA65      0.86      0.87      0.89      0.12 6.5   0.0056
## PNEOA66      0.86      0.86      0.89      0.12 6.4   0.0057
## PNEOA67      0.86      0.86      0.89      0.12 6.4   0.0057
## PNEOA68      0.86      0.87      0.89      0.12 6.5   0.0057
##
##  Item statistics
##            n raw.r std.r r.cor r.drop mean   sd
## PNEOA11 1609  0.49  0.48  0.47   0.44  2.5 0.96
## PNEOA12 1609  0.30  0.33  0.31   0.26  2.8 0.66
## PNEOA13 1609  0.40  0.39  0.38   0.34  2.4 1.05
## PNEOA14 1607  0.40  0.42  0.41   0.36  2.9 0.70
## PNEOA15 1606  0.42  0.43  0.42   0.38  2.8 0.79
## PNEOA16 1609  0.42  0.44  0.44   0.37  2.7 0.86
## PNEOA17 1607  0.49  0.52  0.52   0.46  2.9 0.67
## PNEOA18 1606  0.38  0.41  0.40   0.34  2.8 0.74
## PNEOA21 1605  0.40  0.39  0.36   0.35  2.9 0.99
## PNEOA22 1608  0.49  0.47  0.47   0.44  3.0 0.92
## PNEOA23 1609  0.33  0.31  0.28   0.27  2.1 1.02
## PNEOA24 1609  0.37  0.37  0.34   0.31  3.0 0.95
## PNEOA25 1608  0.30  0.32  0.29   0.26  3.2 0.75
## PNEOA26 1610  0.48  0.47  0.46   0.44  3.0 0.85
## PNEOA27 1608  0.50  0.49  0.49   0.46  3.0 0.90
## PNEOA28 1603  0.28  0.25  0.22   0.22  2.3 0.92
## PNEOA31 1605  0.52  0.51  0.50   0.47  3.0 0.95
## PNEOA32 1611  0.39  0.42  0.40   0.35  3.3 0.67
## PNEOA33 1609  0.55  0.55  0.55   0.51  3.1 0.86
## PNEOA34 1609  0.41  0.45  0.43   0.38  3.4 0.59
## PNEOA35 1608  0.33  0.34  0.32   0.27  2.8 0.88
## PNEOA36 1606  0.31  0.35  0.32   0.28  3.0 0.58
## PNEOA37 1607  0.37  0.41  0.39   0.34  2.9 0.65
## PNEOA38 1607  0.40  0.42  0.41   0.36  2.9 0.70
```

```
## PNEOA41 1612   0.30   0.29   0.26    0.24   2.7 0.92
## PNEOA42 1608   0.39   0.36   0.34    0.33   1.6 1.06
## PNEOA43 1607   0.19   0.17   0.13    0.12   2.0 1.03
## PNEOA44 1610   0.36   0.36   0.33    0.32   2.7 0.84
## PNEOA45 1606   0.33   0.32   0.30    0.27   2.4 0.89
## PNEOA46 1607   0.40   0.38   0.36    0.34   2.4 0.97
## PNEOA47 1608   0.39   0.37   0.36    0.33   2.4 1.03
## PNEOA48 1607   0.42   0.43   0.41    0.38   3.1 0.71
## PNEOA51 1609   0.41   0.39   0.37    0.35   2.6 0.94
## PNEOA52 1612   0.22   0.20   0.17    0.16   2.3 0.93
## PNEOA53 1607   0.44   0.41   0.40    0.38   2.7 0.91
## PNEOA54 1606   0.36   0.37   0.35    0.32   2.9 0.67
## PNEOA55 1607   0.25   0.22   0.19    0.18   1.8 0.97
## PNEOA56 1605   0.35   0.34   0.31    0.29   2.4 1.05
## PNEOA57 1608   0.32   0.33   0.30    0.27   2.6 0.76
## PNEOA58 1605   0.39   0.37   0.35    0.33   2.5 0.95
## PNEOA61 1609   0.26   0.27   0.24    0.21   3.2 0.79
## PNEOA62 1610   0.37   0.34   0.32    0.31   2.1 0.99
## PNEOA63 1607   0.31   0.31   0.28    0.25   2.7 0.98
## PNEOA64 1606   0.30   0.31   0.28    0.25   2.5 0.89
## PNEOA65 1604   0.24   0.25   0.22    0.19   2.5 0.87
## PNEOA66 1608   0.38   0.40   0.38    0.34   3.3 0.77
## PNEOA67 1610   0.38   0.40   0.38    0.34   3.1 0.69
## PNEOA68 1601   0.26   0.27   0.23    0.21   2.4 0.85
##
## Non missing response frequency for each item
##            0    1    2    3    4 miss
## PNEOA11 0.02 0.15 0.25 0.45 0.14 0.01
## PNEOA12 0.01 0.04 0.15 0.71 0.09 0.01
## PNEOA13 0.04 0.19 0.17 0.49 0.11 0.01
## PNEOA14 0.01 0.05 0.14 0.69 0.12 0.01
## PNEOA15 0.01 0.07 0.13 0.64 0.15 0.01
## PNEOA16 0.01 0.11 0.16 0.60 0.11 0.01
## PNEOA17 0.00 0.04 0.14 0.68 0.14 0.01
## PNEOA18 0.00 0.06 0.17 0.64 0.12 0.01
## PNEOA21 0.03 0.08 0.12 0.47 0.30 0.02
## PNEOA22 0.01 0.08 0.12 0.47 0.33 0.01
## PNEOA23 0.03 0.33 0.25 0.32 0.07 0.01
## PNEOA24 0.01 0.09 0.11 0.48 0.31 0.01
## PNEOA25 0.01 0.02 0.04 0.55 0.37 0.01
## PNEOA26 0.00 0.07 0.10 0.54 0.28 0.01
## PNEOA27 0.01 0.08 0.11 0.48 0.32 0.01
## PNEOA28 0.02 0.21 0.33 0.37 0.07 0.02
## PNEOA31 0.01 0.10 0.10 0.49 0.30 0.02
## PNEOA32 0.01 0.01 0.03 0.56 0.40 0.01
```

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```
## PNEOA33 0.01 0.06 0.10 0.50 0.33 0.01
## PNEOA34 0.01 0.00 0.02 0.57 0.40 0.01
## PNEOA35 0.01 0.11 0.16 0.56 0.16 0.01
## PNEOA36 0.00 0.01 0.11 0.73 0.14 0.01
## PNEOA37 0.00 0.03 0.14 0.69 0.14 0.01
## PNEOA38 0.00 0.04 0.18 0.63 0.15 0.01
## PNEOA41 0.02 0.12 0.19 0.54 0.13 0.01
## PNEOA42 0.09 0.49 0.18 0.17 0.06 0.01
## PNEOA43 0.04 0.37 0.17 0.39 0.03 0.01
## PNEOA44 0.01 0.09 0.23 0.56 0.11 0.01
## PNEOA45 0.02 0.19 0.25 0.50 0.04 0.01
## PNEOA46 0.02 0.20 0.24 0.45 0.10 0.01
## PNEOA47 0.03 0.22 0.22 0.42 0.11 0.01
## PNEOA48 0.00 0.03 0.09 0.61 0.27 0.01
## PNEOA51 0.01 0.15 0.23 0.47 0.14 0.01
## PNEOA52 0.02 0.20 0.27 0.45 0.06 0.01
## PNEOA53 0.01 0.09 0.25 0.46 0.19 0.01
## PNEOA54 0.00 0.03 0.17 0.65 0.14 0.01
## PNEOA55 0.06 0.35 0.33 0.22 0.04 0.01
## PNEOA56 0.03 0.22 0.19 0.43 0.13 0.02
## PNEOA57 0.01 0.07 0.29 0.54 0.09 0.01
## PNEOA58 0.02 0.13 0.30 0.41 0.14 0.02
## PNEOA61 0.02 0.02 0.10 0.52 0.34 0.01
## PNEOA62 0.04 0.27 0.28 0.35 0.05 0.01
## PNEOA63 0.02 0.12 0.21 0.44 0.21 0.01
## PNEOA64 0.03 0.12 0.27 0.52 0.07 0.01
## PNEOA65 0.01 0.13 0.28 0.49 0.10 0.02
## PNEOA66 0.00 0.04 0.04 0.47 0.45 0.01
## PNEOA67 0.01 0.02 0.06 0.66 0.24 0.01
## PNEOA68 0.01 0.16 0.35 0.43 0.06 0.02

Ealpha <- subset(SPAN, select = c(PNEOE11, PNEOE12, PNEOE13, PNEOE14, PNEOE15,
    PNEOE16, PNEOE17, PNEOE18, PNEOE21, PNEOE22, PNEOE23, PNEOE24, PNEOE25,
    PNEOE26, PNEOE27, PNEOE28, PNEOE31, PNEOE32, PNEOE33, PNEOE34, PNEOE35,
    PNEOE36, PNEOE37, PNEOE38, PNEOE41, PNEOE42, PNEOE43, PNEOE44, PNEOE45,
    PNEOE46, PNEOE47, PNEOE48, PNEOE51, PNEOE52, PNEOE53, PNEOE54, PNEOE55,
    PNEOE56, PNEOE57, PNEOE58, PNEOE61, PNEOE62, PNEOE63, PNEOE64, PNEOE65,
    PNEOE66, PNEOE67, PNEOE68))
alpha(Ealpha, check.keys = FALSE)

##
## Reliability analysis
## Call: alpha(x = Ealpha, check.keys = FALSE)
##
##   raw_alpha std.alpha G6(smc) average_r S/N    ase mean   sd
##       0.88      0.89    0.91      0.14 8.1 0.0049  2.3 0.38
```

```
## 
##   lower alpha upper    95% confidence boundaries
## 0.87 0.88 0.89
## 
##   Reliability if an item is dropped:
##          raw_alpha std.alpha G6(smc) average_r S/N alpha se
## PNEOE11       0.88      0.89    0.91      0.15 8.0   0.0050
## PNEOE12       0.88      0.89    0.91      0.14 7.8   0.0051
## PNEOE13       0.88      0.89    0.91      0.14 7.8   0.0050
## PNEOE14       0.88      0.89    0.91      0.14 7.9   0.0050
## PNEOE15       0.88      0.88    0.91      0.14 7.7   0.0051
## PNEOE16       0.88      0.89    0.91      0.14 7.8   0.0051
## PNEOE17       0.88      0.89    0.91      0.14 7.9   0.0050
## PNEOE18       0.88      0.89    0.91      0.14 7.9   0.0050
## PNEOE21       0.88      0.89    0.91      0.14 7.7   0.0051
## PNEOE22       0.88      0.89    0.91      0.14 7.7   0.0051
## PNEOE23       0.88      0.89    0.91      0.14 7.8   0.0051
## PNEOE24       0.88      0.89    0.91      0.15 8.2   0.0049
## PNEOE25       0.88      0.89    0.91      0.14 7.9   0.0050
## PNEOE26       0.88      0.89    0.91      0.15 8.1   0.0049
## PNEOE27       0.88      0.89    0.91      0.14 7.7   0.0051
## PNEOE28       0.88      0.88    0.91      0.14 7.7   0.0051
## PNEOE31       0.88      0.89    0.91      0.15 8.0   0.0050
## PNEOE32       0.88      0.89    0.91      0.15 8.0   0.0050
## PNEOE33       0.88      0.89    0.91      0.14 7.8   0.0051
## PNEOE34       0.88      0.89    0.91      0.14 7.9   0.0050
## PNEOE35       0.88      0.89    0.91      0.14 7.9   0.0050
## PNEOE36       0.88      0.89    0.91      0.14 7.8   0.0051
## PNEOE37       0.88      0.89    0.91      0.15 8.0   0.0050
## PNEOE38       0.88      0.89    0.91      0.14 7.8   0.0050
## PNEOE41       0.89      0.89    0.91      0.15 8.4   0.0048
## PNEOE42       0.88      0.89    0.91      0.14 7.9   0.0050
## PNEOE43       0.88      0.89    0.91      0.15 8.0   0.0049
## PNEOE44       0.88      0.89    0.91      0.14 7.9   0.0050
## PNEOE45       0.88      0.89    0.91      0.14 7.8   0.0051
## PNEOE46       0.88      0.89    0.91      0.15 8.2   0.0049
## PNEOE47       0.88      0.89    0.91      0.14 7.9   0.0050
## PNEOE48       0.88      0.89    0.91      0.14 7.8   0.0051
## PNEOE51       0.88      0.89    0.91      0.15 8.0   0.0050
## PNEOE52       0.88      0.89    0.91      0.15 8.2   0.0048
## PNEOE53       0.88      0.89    0.91      0.15 8.2   0.0049
## PNEOE54       0.89      0.89    0.91      0.15 8.3   0.0048
## PNEOE55       0.88      0.89    0.91      0.14 7.8   0.0051
## PNEOE56       0.88      0.89    0.91      0.15 8.2   0.0048
## PNEOE57       0.88      0.89    0.91      0.15 8.0   0.0050
```

```
## PNEOE58        0.88        0.89        0.91        0.14 7.9   0.0050
## PNEOE61        0.88        0.89        0.91        0.14 7.9   0.0050
## PNEOE62        0.88        0.89        0.91        0.14 7.9   0.0050
## PNEOE63        0.88        0.89        0.91        0.14 7.8   0.0051
## PNEOE64        0.88        0.89        0.91        0.14 7.8   0.0051
## PNEOE65        0.88        0.89        0.91        0.14 7.9   0.0050
## PNEOE66        0.88        0.88        0.91        0.14 7.6   0.0051
## PNEOE67        0.88        0.89        0.91        0.14 7.8   0.0050
## PNEOE68        0.88        0.89        0.91        0.14 7.9   0.0050
##
##   Item statistics
##             n raw.r std.r   r.cor r.drop mean   sd
## PNEOE11 1606 0.332 0.350  0.3226  0.295  2.8 0.72
## PNEOE12 1609 0.518 0.532  0.5273  0.482  2.9 0.89
## PNEOE13 1609 0.451 0.476  0.4666  0.420  3.1 0.72
## PNEOE14 1609 0.385 0.396  0.3782  0.342  3.0 0.89
## PNEOE15 1610 0.574 0.594  0.5954  0.544  2.9 0.80
## PNEOE16 1609 0.514 0.531  0.5220  0.477  2.7 0.91
## PNEOE17 1607 0.397 0.415  0.3950  0.357  2.8 0.83
## PNEOE18 1603 0.377 0.399  0.3766  0.341  2.8 0.75
## PNEOE21 1608 0.595 0.584  0.5805  0.551  2.3 1.18
## PNEOE22 1608 0.557 0.560  0.5564  0.523  1.6 0.88
## PNEOE23 1610 0.500 0.498  0.4923  0.458  2.0 0.98
## PNEOE24 1605 0.164 0.167  0.1314  0.109  1.8 1.03
## PNEOE25 1605 0.435 0.431  0.4195  0.385  2.1 1.10
## PNEOE26 1608 0.289 0.273  0.2439  0.229  2.1 1.16
## PNEOE27 1606 0.548 0.553  0.5483  0.514  2.7 0.86
## PNEOE28 1604 0.617 0.610  0.6130  0.582  2.1 1.01
## PNEOE31 1606 0.348 0.344  0.3207  0.297  1.7 1.05
## PNEOE32 1606 0.332 0.327  0.2997  0.284  1.6 0.97
## PNEOE33 1610 0.508 0.505  0.4972  0.463  2.3 1.07
## PNEOE34 1609 0.427 0.421  0.4026  0.380  2.0 0.98
## PNEOE35 1607 0.418 0.423  0.4048  0.380  2.5 0.83
## PNEOE36 1607 0.515 0.507  0.4976  0.473  2.0 1.01
## PNEOE37 1608 0.298 0.302  0.2728  0.255  1.6 0.84
## PNEOE38 1605 0.459 0.458  0.4446  0.419  2.7 0.89
## PNEOE41 1610 0.016 0.012 -0.0361 -0.040  1.7 1.01
## PNEOE42 1609 0.395 0.407  0.3869  0.358  2.5 0.80
## PNEOE43 1606 0.293 0.287  0.2559  0.239  2.1 1.05
## PNEOE44 1609 0.447 0.451  0.4361  0.406  1.9 0.93
## PNEOE45 1609 0.513 0.511  0.4993  0.470  2.3 1.01
## PNEOE46 1607 0.177 0.178  0.1437  0.125  1.8 0.97
## PNEOE47 1608 0.442 0.441  0.4281  0.396  1.7 1.01
## PNEOE48 1606 0.506 0.509  0.4983  0.467  2.5 0.92
## PNEOE51 1608 0.337 0.329  0.3068  0.292  1.7 0.91
```

```
## PNEOE52 1608 0.192 0.163  0.1259  0.122  2.2 1.30
## PNEOE53 1609 0.201 0.187  0.1528  0.145  2.0 1.06
## PNEOE54 1610 0.082 0.055  0.0089  0.012  1.8 1.26
## PNEOE55 1608 0.524 0.520  0.5108  0.487  2.1 0.88
## PNEOE56 1604 0.184 0.157  0.1180  0.114  1.5 1.29
## PNEOE57 1608 0.307 0.302  0.2715  0.258  1.7 0.97
## PNEOE58 1605 0.403 0.394  0.3719  0.355  2.1 1.02
## PNEOE61 1611 0.385 0.378  0.3571  0.330  2.6 1.10
## PNEOE62 1609 0.374 0.382  0.3629  0.331  2.8 0.90
## PNEOE63 1607 0.505 0.512  0.5032  0.462  2.6 1.00
## PNEOE64 1607 0.506 0.517  0.5119  0.467  2.5 0.91
## PNEOE65 1606 0.415 0.421  0.4029  0.369  2.2 0.96
## PNEOE66 1608 0.634 0.647  0.6522  0.605  2.6 0.86
## PNEOE67 1608 0.460 0.459  0.4401  0.411  1.9 1.09
## PNEOE68 1607 0.421 0.441  0.4229  0.384  3.0 0.78
##
## Non missing response frequency for each item
##             0    1    2    3    4 miss
## PNEOE11 0.01 0.04 0.22 0.62 0.11 0.01
## PNEOE12 0.01 0.08 0.14 0.55 0.22 0.01
## PNEOE13 0.00 0.03 0.12 0.58 0.27 0.01
## PNEOE14 0.01 0.08 0.12 0.51 0.28 0.01
## PNEOE15 0.01 0.04 0.18 0.55 0.23 0.01
## PNEOE16 0.01 0.11 0.16 0.55 0.17 0.01
## PNEOE17 0.01 0.08 0.20 0.55 0.16 0.01
## PNEOE18 0.00 0.07 0.20 0.62 0.10 0.02
## PNEOE21 0.06 0.27 0.18 0.34 0.15 0.01
## PNEOE22 0.07 0.41 0.36 0.15 0.02 0.01
## PNEOE23 0.04 0.31 0.29 0.32 0.04 0.01
## PNEOE24 0.08 0.41 0.21 0.26 0.03 0.02
## PNEOE25 0.06 0.29 0.21 0.37 0.08 0.02
## PNEOE26 0.08 0.29 0.22 0.30 0.11 0.01
## PNEOE27 0.01 0.11 0.17 0.59 0.12 0.01
## PNEOE28 0.05 0.26 0.26 0.38 0.04 0.02
## PNEOE31 0.11 0.36 0.25 0.24 0.04 0.01
## PNEOE32 0.04 0.56 0.17 0.19 0.04 0.01
## PNEOE33 0.04 0.23 0.18 0.44 0.11 0.01
## PNEOE34 0.04 0.31 0.26 0.35 0.03 0.01
## PNEOE35 0.01 0.13 0.27 0.52 0.07 0.01
## PNEOE36 0.05 0.32 0.25 0.34 0.05 0.01
## PNEOE37 0.05 0.50 0.29 0.15 0.01 0.01
## PNEOE38 0.01 0.13 0.15 0.59 0.12 0.02
## PNEOE41 0.06 0.48 0.17 0.26 0.03 0.01
## PNEOE42 0.00 0.11 0.34 0.47 0.08 0.01
## PNEOE43 0.03 0.33 0.18 0.39 0.06 0.01
```

```
## PNEOE44 0.04 0.35 0.32 0.26 0.03 0.01
## PNEOE45 0.02 0.28 0.18 0.45 0.07 0.01
## PNEOE46 0.04 0.47 0.19 0.27 0.02 0.01
## PNEOE47 0.08 0.45 0.22 0.23 0.03 0.01
## PNEOE48 0.01 0.15 0.26 0.47 0.11 0.01
## PNEOE51 0.07 0.42 0.33 0.17 0.02 0.01
## PNEOE52 0.13 0.21 0.15 0.34 0.16 0.01
## PNEOE53 0.08 0.28 0.18 0.44 0.02 0.01
## PNEOE54 0.15 0.34 0.11 0.31 0.09 0.01
## PNEOE55 0.02 0.25 0.37 0.33 0.03 0.01
## PNEOE56 0.30 0.29 0.13 0.22 0.06 0.02
## PNEOE57 0.07 0.43 0.28 0.19 0.03 0.01
## PNEOE58 0.06 0.22 0.26 0.41 0.04 0.02
## PNEOE61 0.05 0.15 0.10 0.51 0.20 0.01
## PNEOE62 0.01 0.09 0.19 0.52 0.19 0.01
## PNEOE63 0.02 0.15 0.19 0.47 0.16 0.01
## PNEOE64 0.02 0.15 0.25 0.49 0.08 0.01
## PNEOE65 0.02 0.27 0.26 0.40 0.06 0.01
## PNEOE66 0.01 0.09 0.28 0.49 0.13 0.01
## PNEOE67 0.05 0.42 0.13 0.34 0.06 0.01
## PNEOE68 0.00 0.06 0.10 0.60 0.24 0.01

Oalpha <- subset(SPAN, select = c(PNEOO11, PNEOO12, PNEOO13, PNEOO14, PNEOO15,
    PNEOO16, PNEOO17, PNEOO18, PNEOO21, PNEOO22, PNEOO23, PNEOO24, PNEOO25,
    PNEOO26, PNEOO27, PNEOO28, PNEOO31, PNEOO32, PNEOO33, PNEOO34, PNEOO35,
    PNEOO36, PNEOO37, PNEOO38, PNEOO41, PNEOO42, PNEOO43, PNEOO44, PNEOO45,
    PNEOO46, PNEOO47, PNEOO48, PNEOO51, PNEOO52, PNEOO53, PNEOO54, PNEOO55,
    PNEOO56, PNEOO57, PNEOO58, PNEOO61, PNEOO62, PNEOO63, PNEOO64, PNEOO65,
    PNEOO66, PNEOO67, PNEOO68))
alpha(Oalpha)

##
## Reliability analysis
## Call: alpha(x = Oalpha)
##
##   raw_alpha std.alpha G6(smc) average_r S/N    ase mean   sd
##      0.88      0.88    0.91     0.14 7.7 0.0048  2.3 0.38
##
##  lower alpha upper     95% confidence boundaries
## 0.88 0.88 0.89
##
##  Reliability if an item is dropped:
##         raw_alpha std.alpha G6(smc) average_r S/N alpha se
## PNEOO11      0.88      0.88    0.90     0.14 7.5   0.0049
## PNEOO12      0.88      0.88    0.90     0.14 7.5   0.0049
## PNEOO13      0.88      0.88    0.90     0.14 7.5   0.0049
```

```
## PNE0014    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0015    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0016    0.88    0.88    0.91    0.14 7.6    0.0048
## PNE0017    0.88    0.88    0.91    0.14 7.6    0.0049
## PNE0018    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0021    0.88    0.88    0.90    0.14 7.4    0.0050
## PNE0022    0.88    0.88    0.91    0.14 7.6    0.0048
## PNE0023    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0024    0.88    0.88    0.90    0.13 7.3    0.0050
## PNE0025    0.88    0.88    0.90    0.14 7.4    0.0050
## PNE0026    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0027    0.88    0.88    0.90    0.13 7.3    0.0050
## PNE0028    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0031    0.88    0.88    0.91    0.14 7.7    0.0048
## PNE0032    0.88    0.88    0.90    0.14 7.6    0.0049
## PNE0033    0.88    0.89    0.91    0.14 7.7    0.0048
## PNE0034    0.88    0.88    0.91    0.14 7.5    0.0049
## PNE0035    0.88    0.88    0.91    0.14 7.5    0.0049
## PNE0036    0.88    0.88    0.90    0.14 7.4    0.0049
## PNE0037    0.88    0.88    0.91    0.14 7.6    0.0049
## PNE0038    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0041    0.88    0.88    0.91    0.14 7.6    0.0048
## PNE0042    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0043    0.88    0.88    0.91    0.14 7.7    0.0048
## PNE0044    0.88    0.88    0.90    0.14 7.4    0.0049
## PNE0045    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0046    0.89    0.89    0.91    0.14 7.7    0.0048
## PNE0047    0.88    0.88    0.91    0.14 7.6    0.0048
## PNE0048    0.89    0.88    0.91    0.14 7.7    0.0048
## PNE0051    0.88    0.88    0.90    0.14 7.3    0.0050
## PNE0052    0.88    0.88    0.90    0.14 7.3    0.0050
## PNE0053    0.88    0.88    0.91    0.14 7.7    0.0048
## PNE0054    0.88    0.88    0.90    0.14 7.4    0.0050
## PNE0055    0.88    0.88    0.90    0.14 7.6    0.0048
## PNE0056    0.88    0.88    0.90    0.14 7.3    0.0050
## PNE0057    0.88    0.88    0.90    0.13 7.3    0.0050
## PNE0058    0.88    0.88    0.90    0.13 7.3    0.0050
## PNE0061    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0062    0.88    0.88    0.91    0.14 7.6    0.0049
## PNE0063    0.88    0.88    0.91    0.14 7.6    0.0048
## PNE0064    0.88    0.88    0.91    0.14 7.6    0.0049
## PNE0065    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0066    0.88    0.88    0.90    0.14 7.5    0.0049
## PNE0067    0.88    0.88    0.91    0.14 7.6    0.0048
## PNE0068    0.88    0.88    0.91    0.14 7.6    0.0048
```

```
## 
##  Item statistics 
##            n raw.r std.r r.cor r.drop mean   sd
## PNE0011 1607  0.42  0.42  0.40   0.37  2.5 0.96
## PNE0012 1611  0.44  0.43  0.41   0.39  1.8 1.01
## PNE0013 1608  0.39  0.38  0.36   0.34  1.8 0.99
## PNE0014 1607  0.42  0.42  0.40   0.37  1.9 0.98
## PNE0015 1606  0.42  0.42  0.41   0.38  1.7 0.99
## PNE0016 1608  0.28  0.28  0.26   0.24  1.8 0.85
## PNE0017 1607  0.36  0.36  0.33   0.31  2.7 0.99
## PNE0018 1605  0.44  0.44  0.42   0.40  2.2 1.01
## PNE0021 1600  0.51  0.51  0.49   0.47  2.5 1.06
## PNE0022 1608  0.34  0.32  0.30   0.28  2.3 1.11
## PNE0023 1610  0.42  0.41  0.39   0.37  2.2 1.17
## PNE0024 1606  0.57  0.57  0.56   0.54  2.8 0.91
## PNE0025 1609  0.54  0.53  0.53   0.49  2.4 1.08
## PNE0026 1610  0.37  0.36  0.35   0.32  2.5 0.98
## PNE0027 1607  0.60  0.59  0.59   0.56  2.2 1.07
## PNE0028 1604  0.38  0.37  0.35   0.33  1.8 0.93
## PNE0031 1605  0.26  0.25  0.23   0.20  2.0 0.98
## PNE0032 1608  0.36  0.36  0.34   0.31  2.6 0.96
## PNE0033 1610  0.21  0.23  0.20   0.18  3.1 0.62
## PNE0034 1607  0.37  0.38  0.36   0.33  2.5 0.88
## PNE0035 1608  0.36  0.36  0.34   0.31  2.4 0.94
## PNE0036 1603  0.45  0.46  0.44   0.41  2.7 0.88
## PNE0037 1608  0.34  0.36  0.33   0.30  2.7 0.81
## PNE0038 1607  0.43  0.42  0.40   0.38  1.9 1.06
## PNE0041 1610  0.29  0.29  0.26   0.24  1.5 0.91
## PNE0042 1611  0.40  0.42  0.40   0.37  3.0 0.72
## PNE0043 1606  0.23  0.24  0.21   0.20  1.1 0.70
## PNE0044 1608  0.48  0.47  0.46   0.43  2.3 1.15
## PNE0045 1608  0.39  0.39  0.37   0.34  1.7 0.90
## PNE0046 1607  0.21  0.21  0.17   0.15  2.3 1.04
## PNE0047 1610  0.30  0.29  0.27   0.25  2.2 0.97
## PNE0048 1606  0.25  0.25  0.21   0.20  2.0 1.02
## PNE0051 1608  0.56  0.55  0.55   0.52  2.1 1.06
## PNE0052 1608  0.55  0.55  0.54   0.51  2.6 1.00
## PNE0053 1610  0.26  0.26  0.24   0.21  2.7 0.96
## PNE0054 1608  0.52  0.51  0.51   0.47  2.1 1.07
## PNE0055 1607  0.31  0.30  0.29   0.26  2.1 1.09
## PNE0056 1606  0.55  0.54  0.54   0.51  2.7 1.06
## PNE0057 1606  0.57  0.58  0.58   0.54  2.8 0.84
## PNE0058 1604  0.59  0.59  0.59   0.56  2.7 0.87
## PNE0061 1608  0.40  0.42  0.40   0.36  3.2 0.80
## PNE0062 1606  0.35  0.36  0.34   0.31  2.9 0.90
```

```
## PNE0063 1603   0.35   0.34   0.32     0.29  2.4 1.13
## PNE0064 1607   0.34   0.35   0.32     0.30  2.7 0.85
## PNE0065 1606   0.38   0.38   0.36     0.33  2.3 0.98
## PNE0066 1607   0.39   0.40   0.38     0.35  3.0 0.73
## PNE0067 1610   0.30   0.31   0.28     0.26  2.9 0.83
## PNE0068 1599   0.31   0.31   0.28     0.26  1.9 1.02
##
## Non missing response frequency for each item
##             0    1    2    3    4 miss
## PNE0011 0.02 0.13 0.32 0.39 0.13 0.01
## PNE0012 0.06 0.44 0.20 0.26 0.03 0.01
## PNE0013 0.08 0.36 0.32 0.21 0.03 0.01
## PNE0014 0.05 0.37 0.28 0.26 0.04 0.01
## PNE0015 0.09 0.39 0.29 0.20 0.03 0.01
## PNE0016 0.02 0.40 0.35 0.21 0.01 0.01
## PNE0017 0.03 0.13 0.14 0.53 0.17 0.01
## PNE0018 0.03 0.28 0.20 0.42 0.06 0.02
## PNE0021 0.02 0.17 0.25 0.36 0.19 0.02
## PNE0022 0.05 0.22 0.20 0.39 0.14 0.01
## PNE0023 0.08 0.23 0.20 0.37 0.12 0.01
## PNE0024 0.01 0.08 0.19 0.50 0.21 0.01
## PNE0025 0.05 0.20 0.20 0.43 0.11 0.01
## PNE0026 0.02 0.16 0.22 0.46 0.14 0.01
## PNE0027 0.06 0.24 0.23 0.39 0.09 0.01
## PNE0028 0.06 0.32 0.36 0.23 0.02 0.02
## PNE0031 0.05 0.32 0.29 0.30 0.04 0.02
## PNE0032 0.01 0.18 0.18 0.50 0.13 0.01
## PNE0033 0.01 0.01 0.08 0.67 0.24 0.01
## PNE0034 0.01 0.17 0.21 0.54 0.06 0.01
## PNE0035 0.02 0.18 0.22 0.50 0.08 0.01
## PNE0036 0.01 0.13 0.15 0.59 0.12 0.02
## PNE0037 0.01 0.09 0.21 0.59 0.11 0.01
## PNE0038 0.07 0.35 0.23 0.30 0.05 0.01
## PNE0041 0.08 0.52 0.23 0.16 0.02 0.01
## PNE0042 0.01 0.03 0.15 0.61 0.21 0.01
## PNE0043 0.13 0.70 0.12 0.05 0.00 0.01
## PNE0044 0.06 0.24 0.19 0.37 0.14 0.01
## PNE0045 0.04 0.50 0.24 0.22 0.01 0.01
## PNE0046 0.03 0.27 0.14 0.49 0.06 0.01
## PNE0047 0.02 0.26 0.23 0.43 0.05 0.01
## PNE0048 0.03 0.41 0.16 0.36 0.03 0.01
## PNE0051 0.06 0.25 0.27 0.35 0.08 0.01
## PNE0052 0.03 0.14 0.24 0.43 0.16 0.01
## PNE0053 0.03 0.10 0.16 0.53 0.18 0.01
## PNE0054 0.04 0.34 0.21 0.33 0.08 0.01
```

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```
## PNEO0055 0.07 0.28 0.22 0.36 0.07 0.01
## PNEO0056 0.04 0.14 0.16 0.46 0.21 0.01
## PNEO0057 0.00 0.08 0.19 0.55 0.18 0.01
## PNEO0058 0.01 0.11 0.19 0.55 0.15 0.02
## PNEO0061 0.01 0.03 0.08 0.48 0.40 0.01
## PNEO0062 0.02 0.08 0.14 0.54 0.23 0.01
## PNEO0063 0.05 0.18 0.27 0.31 0.19 0.02
## PNEO0064 0.02 0.09 0.21 0.57 0.11 0.01
## PNEO0065 0.03 0.20 0.26 0.43 0.07 0.01
## PNEO0066 0.01 0.03 0.10 0.63 0.22 0.01
## PNEO0067 0.01 0.07 0.11 0.59 0.21 0.01
## PNEO0068 0.08 0.30 0.32 0.25 0.05 0.02

Nalpha <- subset(SPAN, select = c(PNEON11, PNEON12, PNEON13, PNEON14, PNEON15,
    PNEON16, PNEON17, PNEON18, PNEON21, PNEON22, PNEON23, PNEON24, PNEON25,
    PNEON26, PNEON27, PNEON28, PNEON31, PNEON32, PNEON33, PNEON34, PNEON35,
    PNEON36, PNEON37, PNEON38, PNEON41, PNEON42, PNEON43, PNEON44, PNEON45,
    PNEON46, PNEON47, PNEON48, PNEON51, PNEON52, PNEON53, PNEON54, PNEON55,
    PNEON56, PNEON57, PNEON58, PNEON61, PNEON62, PNEON63, PNEON64, PNEON65,
    PNEON66, PNEON67, PNEON68))
alpha(Nalpha, check.keys = FALSE)

##
## Reliability analysis
## Call: alpha(x = Nalpha, check.keys = FALSE)
##
##    raw_alpha std.alpha G6(smc) average_r S/N    ase mean   sd
##       0.92      0.92    0.93       0.2  12 0.0035  1.5 0.43
##
##  lower alpha upper     95% confidence boundaries
## 0.91 0.92 0.93
##
##  Reliability if an item is dropped:
##          raw_alpha std.alpha G6(smc) average_r S/N alpha se
## PNEON11      0.92      0.92    0.93      0.20  12   0.0035
## PNEON12      0.92      0.92    0.93      0.20  12   0.0036
## PNEON13      0.92      0.92    0.93      0.20  11   0.0036
## PNEON14      0.92      0.92    0.93      0.20  11   0.0037
## PNEON15      0.92      0.92    0.93      0.20  12   0.0036
## PNEON16      0.92      0.92    0.93      0.20  12   0.0036
## PNEON17      0.92      0.92    0.93      0.20  12   0.0036
## PNEON18      0.92      0.92    0.93      0.20  12   0.0036
## PNEON21      0.92      0.92    0.93      0.20  12   0.0036
## PNEON22      0.92      0.92    0.93      0.20  12   0.0036
## PNEON23      0.92      0.92    0.93      0.20  12   0.0036
## PNEON24      0.92      0.92    0.93      0.20  12   0.0036
```

```
## PNEON25         0.92           0.92     0.93       0.20  12   0.0036
## PNEON26         0.92           0.92     0.93       0.20  12   0.0036
## PNEON27         0.92           0.92     0.93       0.20  12   0.0036
## PNEON28         0.92           0.92     0.93       0.20  12   0.0036
## PNEON31         0.92           0.92     0.93       0.20  12   0.0036
## PNEON32         0.92           0.92     0.93       0.20  11   0.0037
## PNEON33         0.92           0.92     0.93       0.20  11   0.0037
## PNEON34         0.92           0.92     0.93       0.20  12   0.0036
## PNEON35         0.92           0.92     0.93       0.20  12   0.0036
## PNEON36         0.92           0.92     0.93       0.20  11   0.0036
## PNEON37         0.92           0.92     0.93       0.20  11   0.0037
## PNEON38         0.92           0.92     0.93       0.19  11   0.0037
## PNEON41         0.92           0.92     0.93       0.20  12   0.0036
## PNEON42         0.92           0.92     0.93       0.20  12   0.0036
## PNEON43         0.92           0.92     0.93       0.20  12   0.0036
## PNEON44         0.92           0.92     0.93       0.20  12   0.0035
## PNEON45         0.92           0.92     0.93       0.20  11   0.0037
## PNEON46         0.92           0.92     0.93       0.20  12   0.0036
## PNEON47         0.92           0.92     0.93       0.20  12   0.0036
## PNEON48         0.92           0.92     0.94       0.21  12   0.0035
## PNEON51         0.92           0.92     0.93       0.20  12   0.0036
## PNEON52         0.92           0.92     0.93       0.20  12   0.0036
## PNEON53         0.92           0.92     0.94       0.21  12   0.0035
## PNEON54         0.92           0.92     0.93       0.20  12   0.0035
## PNEON55         0.92           0.92     0.93       0.20  12   0.0035
## PNEON56         0.92           0.92     0.93       0.20  12   0.0036
## PNEON57         0.92           0.92     0.93       0.20  12   0.0036
## PNEON58         0.92           0.92     0.93       0.20  12   0.0036
## PNEON61         0.92           0.92     0.93       0.20  12   0.0036
## PNEON62         0.92           0.92     0.93       0.20  12   0.0036
## PNEON63         0.92           0.92     0.93       0.20  11   0.0037
## PNEON64         0.92           0.92     0.93       0.20  12   0.0036
## PNEON65         0.92           0.92     0.93       0.20  12   0.0036
## PNEON66         0.92           0.92     0.93       0.20  12   0.0036
## PNEON67         0.92           0.92     0.93       0.20  12   0.0036
## PNEON68         0.92           0.92     0.93       0.20  11   0.0036
##
##   Item statistics
##             n raw.r std.r r.cor r.drop mean   sd
## PNEON11 1606  0.35  0.34  0.32   0.30 1.90 1.14
## PNEON12 1611  0.52  0.53  0.51   0.49 1.14 0.81
## PNEON13 1609  0.58  0.58  0.58   0.55 1.58 0.97
## PNEON14 1608  0.64  0.64  0.64   0.62 1.12 0.88
## PNEON15 1608  0.45  0.44  0.42   0.41 1.93 0.98
## PNEON16 1610  0.55  0.54  0.53   0.52 1.91 1.02
```

```
## PNEON17 1608  0.46  0.46  0.45   0.42 1.71 0.84
## PNEON18 1609  0.50  0.49  0.47   0.45 1.58 1.09
## PNEON21 1606  0.53  0.53  0.52   0.50 1.10 0.88
## PNEON22 1609  0.44  0.44  0.43   0.40 1.19 0.84
## PNEON23 1609  0.34  0.34  0.32   0.30 0.95 0.93
## PNEON24 1607  0.38  0.38  0.36   0.34 1.30 0.92
## PNEON25 1605  0.44  0.45  0.43   0.41 1.34 0.86
## PNEON26 1610  0.46  0.47  0.45   0.43 1.32 0.93
## PNEON27 1605  0.53  0.52  0.50   0.49 2.02 1.02
## PNEON28 1602  0.53  0.53  0.51   0.49 1.70 0.94
## PNEON31 1610  0.54  0.53  0.52   0.50 1.41 1.04
## PNEON32 1606  0.65  0.65  0.65   0.62 1.03 1.01
## PNEON33 1609  0.61  0.61  0.60   0.58 1.51 1.02
## PNEON34 1607  0.51  0.50  0.49   0.47 1.75 1.13
## PNEON35 1606  0.45  0.45  0.43   0.41 1.81 0.97
## PNEON36 1607  0.61  0.61  0.61   0.58 1.00 0.90
## PNEON37 1605  0.63  0.62  0.62   0.60 1.48 1.01
## PNEON38 1606  0.65  0.66  0.66   0.63 1.22 0.83
## PNEON41 1611  0.44  0.43  0.41   0.40 1.66 0.99
## PNEON42 1609  0.40  0.39  0.37   0.35 1.76 1.04
## PNEON43 1607  0.58  0.57  0.57   0.55 1.34 1.06
## PNEON44 1606  0.31  0.30  0.27   0.26 2.08 1.05
## PNEON45 1610  0.61  0.61  0.61   0.58 1.19 0.94
## PNEON46 1607  0.47  0.48  0.47   0.44 1.12 0.77
## PNEON47 1604  0.36  0.36  0.33   0.32 1.70 0.94
## PNEON48 1606  0.16  0.15  0.12   0.12 2.32 0.88
## PNEON51 1610  0.34  0.33  0.30   0.29 1.73 1.02
## PNEON52 1607  0.44  0.44  0.42   0.40 1.98 1.02
## PNEON53 1609  0.16  0.15  0.12   0.11 2.10 1.00
## PNEON54 1612  0.32  0.32  0.29   0.28 2.46 1.01
## PNEON55 1608  0.25  0.25  0.22   0.21 1.98 0.88
## PNEON56 1605  0.41  0.40  0.39   0.37 0.89 0.94
## PNEON57 1608  0.43  0.42  0.40   0.39 1.94 0.98
## PNEON58 1604  0.36  0.36  0.34   0.32 2.01 0.94
## PNEON61 1610  0.51  0.52  0.50   0.48 0.82 0.79
## PNEON62 1613  0.41  0.42  0.40   0.38 0.88 0.68
## PNEON63 1607  0.61  0.60  0.59   0.57 1.54 1.04
## PNEON64 1607  0.39  0.41  0.40   0.36 1.11 0.80
## PNEON65 1606  0.52  0.52  0.51   0.48 1.45 0.94
## PNEON66 1608  0.41  0.44  0.43   0.39 0.96 0.67
## PNEON67 1607  0.45  0.47  0.46   0.43 1.20 0.61
## PNEON68 1608  0.61  0.62  0.62   0.58 1.05 0.73
##
## Non missing response frequency for each item
##             0    1    2    3    4 miss
```

```
## PNEON11 0.10 0.33 0.21 0.28 0.07 0.01
## PNEON12 0.17 0.61 0.14 0.07 0.01 0.01
## PNEON13 0.08 0.51 0.19 0.20 0.02 0.01
## PNEON14 0.22 0.56 0.13 0.09 0.01 0.01
## PNEON15 0.03 0.38 0.24 0.31 0.03 0.01
## PNEON16 0.06 0.37 0.22 0.32 0.03 0.01
## PNEON17 0.05 0.38 0.41 0.15 0.02 0.01
## PNEON18 0.17 0.37 0.18 0.27 0.01 0.01
## PNEON21 0.23 0.52 0.16 0.07 0.01 0.01
## PNEON22 0.16 0.60 0.15 0.08 0.01 0.01
## PNEON23 0.34 0.47 0.10 0.07 0.02 0.01
## PNEON24 0.14 0.59 0.13 0.13 0.02 0.01
## PNEON25 0.11 0.56 0.20 0.11 0.01 0.02
## PNEON26 0.14 0.55 0.16 0.13 0.02 0.01
## PNEON27 0.06 0.31 0.21 0.40 0.02 0.02
## PNEON28 0.05 0.47 0.22 0.25 0.01 0.02
## PNEON31 0.16 0.50 0.14 0.17 0.03 0.01
## PNEON32 0.34 0.43 0.11 0.11 0.01 0.01
## PNEON33 0.11 0.51 0.18 0.16 0.04 0.01
## PNEON34 0.13 0.36 0.18 0.29 0.04 0.01
## PNEON35 0.05 0.41 0.25 0.26 0.03 0.01
## PNEON36 0.30 0.50 0.12 0.07 0.01 0.01
## PNEON37 0.14 0.47 0.18 0.19 0.02 0.02
## PNEON38 0.14 0.60 0.15 0.10 0.01 0.01
## PNEON41 0.08 0.46 0.21 0.23 0.02 0.01
## PNEON42 0.07 0.43 0.20 0.26 0.04 0.01
## PNEON43 0.21 0.45 0.14 0.17 0.02 0.01
## PNEON44 0.03 0.36 0.21 0.33 0.08 0.01
## PNEON45 0.21 0.52 0.16 0.10 0.02 0.01
## PNEON46 0.15 0.65 0.12 0.07 0.00 0.01
## PNEON47 0.05 0.48 0.22 0.24 0.02 0.02
## PNEON48 0.01 0.21 0.25 0.50 0.03 0.01
## PNEON51 0.06 0.48 0.17 0.26 0.03 0.01
## PNEON52 0.05 0.34 0.24 0.33 0.04 0.01
## PNEON53 0.03 0.32 0.23 0.37 0.05 0.01
## PNEON54 0.02 0.22 0.14 0.52 0.10 0.01
## PNEON55 0.02 0.34 0.31 0.33 0.01 0.01
## PNEON56 0.39 0.45 0.07 0.09 0.01 0.02
## PNEON57 0.04 0.37 0.21 0.36 0.02 0.01
## PNEON58 0.03 0.34 0.24 0.37 0.02 0.02
## PNEON61 0.36 0.52 0.08 0.03 0.01 0.01
## PNEON62 0.25 0.67 0.05 0.02 0.01 0.01
## PNEON63 0.13 0.46 0.17 0.22 0.02 0.01
## PNEON64 0.19 0.58 0.16 0.06 0.01 0.01
## PNEON65 0.10 0.56 0.16 0.17 0.02 0.01
```

```
## PNEON66 0.20 0.68 0.09 0.03 0.00 0.01
## PNEON67 0.06 0.72 0.18 0.04 0.00 0.01
## PNEON68 0.17 0.66 0.11 0.04 0.01 0.01

# work variable retired, working, NE combining retired and working variables
# #retired people who work go with working
retworkne <- ifelse(SPAN$PRet == 1 & SPAN$work1 == 1, 1, ifelse(SPAN$PRet ==
    1 & SPAN$work1 == 2, 2, ifelse(SPAN$PRet == 1 & SPAN$work1 == 3, 2, ifelse(SPAN$PRet ==
    0 & SPAN$work1 == 1, 3, ifelse(SPAN$PRet == 0 & SPAN$work1 == 2, 2, ifelse(SPAN$PRet ==
    0 & SPAN$work1 == 3, 2, NA))))))
retworkne <- recode(retworkne, "1='retired'; 2='working'; 3='NE'")  #labels
SPAN$retworkne <- retworkne
SPAN$retworkne <- as.factor(SPAN$retworkne)
mat <- matrix(c(0, 0, 1, 1, 0, 0), ncol = 2)  #retired compared to Not employed (unemployed,
contrasts(SPAN$retworkne) <- mat
contrasts(SPAN$retworkne)

##          [,1] [,2]
## NE          0    1
## retired     0    0
## working     1    0

# DEMOGRAPHIC REGRESSIONS work groups: retworkne (retired, working, not
# employed)
summary(glm(formula = PVol ~ retworkne, family = "binomial", data = SPAN))

##
## Call:
## glm(formula = PVol ~ retworkne, family = "binomial", data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.0553  -1.0553  -0.8495   1.3046   1.5455
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -0.38137    0.10964  -3.478 0.000504 ***
## retworkne1   0.08717    0.12715   0.686 0.492949
## retworkne2  -0.45214    0.17797  -2.541 0.011067 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2120.1  on 1571  degrees of freedom
## Residual deviance: 2107.3  on 1569  degrees of freedom
```

```
##    (58 observations deleted due to missingness)
## AIC: 2113.3
##
## Number of Fisher Scoring iterations: 4

confint(glm(PVol ~ GENDER, data = SPAN, family = "binomial"))
```

## *Waiting for profiling to be done...*

```
##                   2.5 %      97.5 %
## (Intercept) -0.7308947 -0.4299659
## GENDER2      0.0840615  0.4856619
```

```
# gender
summary(glm(PVol ~ GENDER, data = SPAN, family = "binomial"))
```

```
##
## Call:
## glm(formula = PVol ~ GENDER, family = "binomial", data = SPAN)
##
## Deviance Residuals:
##     Min        1Q    Median        3Q       Max
## -1.0550   -1.0550   -0.9432    1.3049    1.4312
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -0.57937    0.07673  -7.551 4.33e-14 ***
## GENDER2      0.28445    0.10243   2.777  0.00548 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2183.3  on 1625  degrees of freedom
## Residual deviance: 2175.6  on 1624  degrees of freedom
##   (4 observations deleted due to missingness)
## AIC: 2179.6
##
## Number of Fisher Scoring iterations: 4

confint(glm(PVol ~ GENDER, data = SPAN, family = "binomial"))
```

## *Waiting for profiling to be done...*

```
##                   2.5 %      97.5 %
## (Intercept) -0.7308947 -0.4299659
## GENDER2      0.0840615  0.4856619
```

```r
# edu
summary(glm(PVol ~ EDU, data = SPAN, family = "binomial"))
```

```
## 
## Call:
## glm(formula = PVol ~ EDU, family = "binomial", data = SPAN)
## 
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.2385  -1.0838  -0.8062   1.2739   1.9284
## 
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -2.05648    0.19437 -10.580   <2e-16 ***
## EDU          0.36648    0.04129   8.875   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 2177.6  on 1621  degrees of freedom
## Residual deviance: 2093.1  on 1620  degrees of freedom
##   (8 observations deleted due to missingness)
## AIC: 2097.1
## 
## Number of Fisher Scoring iterations: 4
```

```r
confint(glm(PVol ~ EDU, data = SPAN, family = "binomial"))
```

```
## Waiting for profiling to be done...
```

```
##                  2.5 %     97.5 %
## (Intercept) -2.4423499 -1.680110
## EDU          0.2862636  0.448193
```

```r
# age
summary(glm(PVol ~ AGE, data = SPAN, family = "binomial"))
```

```
## 
## Call:
## glm(formula = PVol ~ AGE, family = "binomial", data = SPAN)
## 
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.0327  -1.0067  -0.9912   1.3525   1.3875
## 
## Coefficients:
```

```
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -1.20200    1.10416  -1.089    0.276
## AGE          0.01310    0.01852   0.707    0.479
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2183.3  on 1625  degrees of freedom
## Residual deviance: 2182.8  on 1624  degrees of freedom
##   (4 observations deleted due to missingness)
## AIC: 2186.8
##
## Number of Fisher Scoring iterations: 4

confint(glm(PVol ~ AGE, data = SPAN, family = "binomial"))

## Waiting for profiling to be done...

##                   2.5 %     97.5 %
## (Intercept) -3.36860275 0.9612772
## AGE         -0.02320325 0.0494288

# C predict volunteering, control: EDU, AGE, GENDER
VolC <- (glm(PVol ~ EDU + GENDER + AGE + pneoC, data = SPAN, family = "binomial"))
summary(VolC)

##
## Call:
## glm(formula = PVol ~ EDU + GENDER + AGE + pneoC, family = "binomial",
##     data = SPAN)
##
## Deviance Residuals:
##     Min      1Q   Median      3Q      Max
## -1.4579  -1.0140  -0.7531   1.2064   2.0279
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -3.94866    1.23329  -3.202 0.001366 **
## EDU          0.35393    0.04396   8.051 8.24e-16 ***
## GENDER2      0.39417    0.10975   3.592 0.000329 ***
## AGE          0.01401    0.01973   0.710 0.477650
## pneoC        0.35867    0.15371   2.333 0.019625 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
```

```
##       Null deviance: 2025.9  on 1501   degrees of freedom
## Residual deviance: 1932.1  on 1497   degrees of freedom
##    (128 observations deleted due to missingness)
## AIC: 1942.1
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(VolC), confint(VolC))), 2)

## Waiting for profiling to be done...

##                OR 2.5 % 97.5 %
## (Intercept) 0.02  0.00   0.21
## EDU         1.42  1.31   1.55
## GENDER2     1.48  1.20   1.84
## AGE         1.01  0.98   1.05
## pneoC       1.43  1.06   1.94

# C plus big 5 predict volunteer, control: EDU, AGE, GENDER
VolBig5 <- (glm(PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoC + pneoN +
    pneoO, data = SPAN, family = "binomial"))
summary(VolBig5)

##
## Call:
## glm(formula = PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoC +
##     pneoN + pneoO, family = "binomial", data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.7903  -0.9877  -0.7043   1.1625   2.3082
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -5.33640    1.62794  -3.278  0.00105 **
## GENDER2      0.31199    0.12456   2.505  0.01226 *
## AGE          0.01228    0.02129   0.577  0.56410
## EDU          0.37809    0.05065   7.465 8.36e-14 ***
## pneoE        0.92727    0.18526   5.005 5.58e-07 ***
## pneoA        0.55720    0.20792   2.680  0.00737 **
## pneoC       -0.21842    0.20378  -1.072  0.28380
## pneoN       -0.22121    0.17720  -1.248  0.21191
## pneoO       -0.15941    0.17204  -0.927  0.35414
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
```

```
## 
##     Null deviance: 1800.4  on 1332  degrees of freedom
## Residual deviance: 1667.1  on 1324  degrees of freedom
##   (297 observations deleted due to missingness)
## AIC: 1685.1
## 
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(VolBig5), confint(VolBig5))), 2)

## Waiting for profiling to be done...

##              OR 2.5 % 97.5 %
## (Intercept) 0.00  0.00   0.12
## GENDER2     1.37  1.07   1.75
## AGE         1.01  0.97   1.06
## EDU         1.46  1.32   1.61
## pneoE       2.53  1.76   3.65
## pneoA       1.75  1.16   2.63
## pneoC       0.80  0.54   1.20
## pneoN       0.80  0.57   1.13
## pneoO       0.85  0.61   1.19

# Center Variables
SPAN$Con_C <- scale(SPAN$pneoC, center = TRUE, scale = FALSE)
SPAN$Agree_C <- scale(SPAN$pneoA, center = TRUE, scale = FALSE)
SPAN$Extr_C <- scale(SPAN$pneoE, center = TRUE, scale = FALSE)
SPAN$Open_C <- scale(SPAN$pneoO, center = TRUE, scale = FALSE)
SPAN$Neur_C <- scale(SPAN$pneoN, center = TRUE, scale = FALSE)
SPAN$EDU_C <- scale(SPAN$EDU, center = TRUE, scale = FALSE)
SPAN$AGE_C <- scale(SPAN$AGE, center = TRUE, scale = FALSE)

# Interaction term no controls
cxret <- glm(PVol ~ Con_C + retworkne + (Con_C * retworkne), data = SPAN, family = binomial)
summary(cxret)

## 
## Call:
## glm(formula = PVol ~ Con_C + retworkne + (Con_C * retworkne),
##     family = binomial, data = SPAN)
## 
## Deviance Residuals:
##     Min       1Q    Median       3Q      Max
## -1.3354  -1.0533  -0.8999   1.2909   1.9444
## 
## Coefficients:
##                 Estimate Std. Error z value Pr(>|z|)
```

```
## (Intercept)       -0.33318    0.11509  -2.895  0.00379 **
## Con_C              0.99655    0.35334   2.820  0.00480 **
## retworkne1         0.03626    0.13305   0.273  0.78523
## retworkne2        -0.38553    0.18700  -2.062  0.03924 *
## Con_C:retworkne1  -0.74826    0.39896  -1.876  0.06072 .
## Con_C:retworkne2   0.17144    0.55301   0.310  0.75656
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1986.2  on 1468  degrees of freedom
## Residual deviance: 1958.1  on 1463  degrees of freedom
##   (161 observations deleted due to missingness)
## AIC: 1970.1
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(cxret), confint(cxret))), 2)

## Waiting for profiling to be done...

##                   OR 2.5 % 97.5 %
## (Intercept)      0.72  0.57   0.90
## Con_C            2.71  1.37   5.51
## retworkne1       1.04  0.80   1.35
## retworkne2       0.68  0.47   0.98
## Con_C:retworkne1 0.47  0.21   1.02
## Con_C:retworkne2 1.19  0.40   3.55

# Interaction term with EDU, Gender, Age, big 5
cxret <- glm(PVol ~ AGE_C + EDU_C + GENDER + Con_C + retworkne + Agree_C + Extr_C +
    Open_C + Neur_C + (Con_C * retworkne), data = SPAN, family = binomial)
summary(cxret)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Con_C + retworkne +
##     Agree_C + Extr_C + Open_C + Neur_C + (Con_C * retworkne),
##     family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -2.0017  -0.9944  -0.6814   1.1475   2.5080
##
## Coefficients:
```

```
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)      -0.432231   0.149511  -2.891  0.00384 **
## AGE_C             0.003924   0.022471   0.175  0.86137
## EDU_C             0.370345   0.052752   7.021 2.21e-12 ***
## GENDER2           0.351502   0.126394   2.781  0.00542 **
## Con_C             0.491639   0.418555   1.175  0.24015
## retworkne1       -0.197745   0.159067  -1.243  0.21381
## retworkne2       -0.332862   0.216761  -1.536  0.12463
## Agree_C           0.579250   0.209978   2.759  0.00580 **
## Extr_C            0.974420   0.187836   5.188 2.13e-07 ***
## Open_C           -0.157474   0.174614  -0.902  0.36714
## Neur_C           -0.217337   0.180339  -1.205  0.22814
## Con_C:retworkne1 -1.105190   0.454946  -2.429  0.01513 *
## Con_C:retworkne2  0.026313   0.620628   0.042  0.96618
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 1768.7  on 1306  degrees of freedom
## Residual deviance: 1628.0  on 1294  degrees of freedom
##    (323 observations deleted due to missingness)
## AIC: 1654
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(cxret), confint(cxret))), 2)

## Waiting for profiling to be done...

##                    OR 2.5 % 97.5 %
## (Intercept)      0.65  0.48   0.87
## AGE_C            1.00  0.96   1.05
## EDU_C            1.45  1.31   1.61
## GENDER2          1.42  1.11   1.82
## Con_C            1.63  0.73   3.79
## retworkne1       0.82  0.60   1.12
## retworkne2       0.72  0.47   1.09
## Agree_C          1.78  1.18   2.70
## Extr_C           2.65  1.84   3.84
## Open_C           0.85  0.61   1.20
## Neur_C           0.80  0.56   1.14
## Con_C:retworkne1 0.33  0.13   0.80
## Con_C:retworkne2 1.03  0.31   3.51

# Interaction graph #PDF 8.5 x 9
```
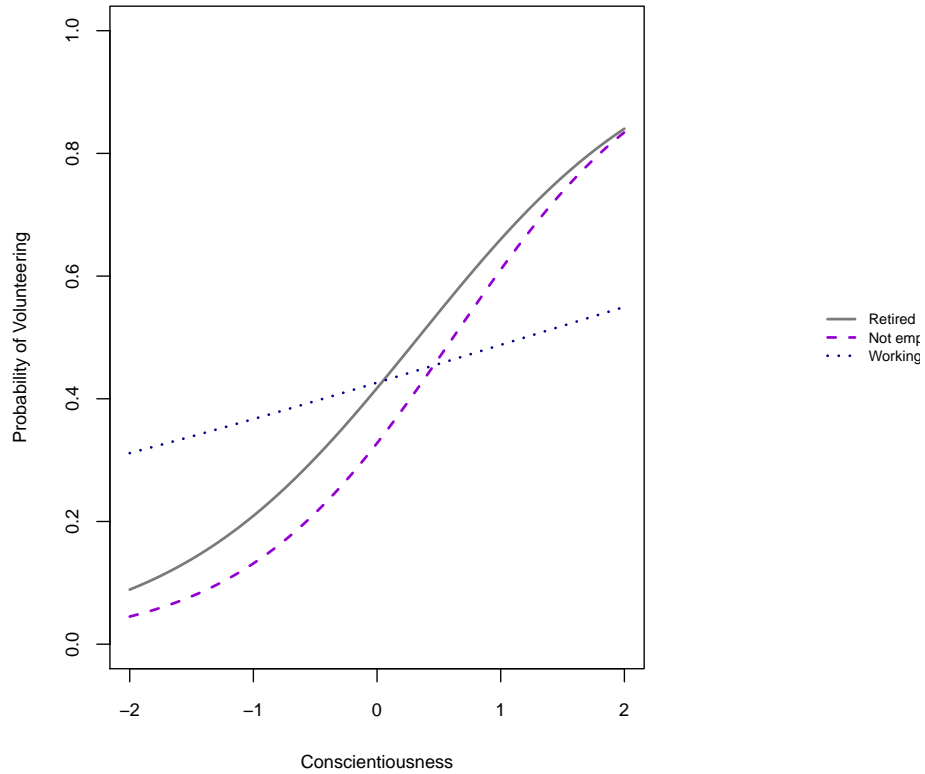
```
cxret <- glm(PVol ~ AGE_C + EDU_C + GENDER + Con_C + retworkne + Agree_C + Extr_C +
    Open_C + Neur_C + (Con_C * retworkne), data = SPAN, family = binomial)
cxret <- glm(PVol ~ Con_C + retworkne + (Con_C * retworkne), data = SPAN, family = binomial)
par(xpd = NA, oma = c(0.5, 0, 0, 8.4))
curve(1 - (1/(1 + exp(cxret$coeff["(Intercept)"] + (cxret$coeff["Con_C"]) *
    x))), xlim = c(-2, 2), ylim = c(0, 1), ylab = "Probability of Volunteering",
    xlab = "Conscientiousness", main = "Figure 1: SPAN \nConscientiousness and Work Status l
    font = 1, lty = 1, lwd = 2, col = "gray48", cex.lab = 0.8, cex.main = 0.8,
    cex.axis = 0.8)
curve(1 - (1/(1 + exp(cxret$coeff["(Intercept)"] + cxret$coef["retworkne2"] *
    1 + (cxret$coeff["Con_C"] + cxret$coef["Con_C:retworkne2"] * 1) * x))),
    lty = 2, lwd = 2, col = "darkviolet", add = TRUE)
curve(1 - (1/(1 + exp(cxret$coeff["(Intercept)"] + cxret$coef["retworkne1"] *
    1 + (cxret$coeff["Con_C"] + cxret$coef["Con_C:retworkne1"] * 1) * x))),
    lty = 3, lwd = 2, col = "blue4", add = TRUE)
legend("right", inset = -0.6, bty = "n", cex = 0.7, legend = c("Retired", "Not employed",
    "Working"), lty = c(1, 2, 3), lwd = c(2, 2, 2), col = c("gray48", "darkviolet",
    "blue4"))
```

**Figure 1: SPAN**
**Conscientiousness and Work Status Interaction**
**Predicting Volunteering**



```
# hours with 0
SPAN$VolScale <- ifelse(SPAN$PVol == 0, SPAN$PVol, ifelse(SPAN$PVol > 0, SPAN$PVolHrs,
    NA))
# removing outliers
SPAN$VolScale80 <- SPAN$VolScale
SPAN$VolScale50 <- SPAN$VolScale80
SPAN$VolScale80[SPAN$VolScale80 == 80] <- NA
SPAN$VolScale50[SPAN$VolScale50 == 103] <- NA
table(SPAN$VolScale50)

##
##     0 0.23 0.25 0.37  0.5 0.62 0.75    1  1.5 1.57 1.75    2 2.25  2.5 2.81
##   982    1    5    1   12    2    2   57   17    1    2   71    1   11    1
##     3 3.25  3.5    4 4.25  4.5    5  5.5 5.69    6  6.5  6.7    7  7.5    8
##    53    1    9   58    1    6   44    3    1   20    7    1   11    6   24
## 8.23  8.5    9   10 10.7   11 11.5   12   13 13.5   14   15 15.2   16 16.5
```

```
##    1    1    7   23    1    6    2    6    7    2    3    6    1    3    1
##   17 17.5   18 19.5   20 20.2   21   22   23   24 24.5   25   26   30   32
##    2    1    6    1    8    1    3    2    2    1    1    5    2    5    1
##   35   36 37.5   40   42   44   45 46.5   50   80
##    1    1    1    2    1    1    1    1    1    1
```

```r
table(SPAN$VolScale80)
```

```
##
##    0 0.23 0.25 0.37  0.5 0.62 0.75    1  1.5 1.57 1.75    2 2.25  2.5 2.81
##  982    1    5    1   12    2    2   57   17    1    2   71    1   11    1
##    3 3.25  3.5    4 4.25  4.5    5  5.5 5.69    6  6.5  6.7    7  7.5    8
##   53    1    9   58    1    6   44    3    1   20    7    1   11    6   24
## 8.23  8.5    9   10 10.7   11 11.5   12   13 13.5   14   15 15.2   16 16.5
##    1    1    7   23    1    6    2    6    7    2    3    6    1    3    1
##   17 17.5   18 19.5   20 20.2   21   22   23   24 24.5   25   26   30   32
##    2    1    6    1    8    1    3    2    2    1    1    5    2    5    1
##   35   36 37.5   40   42   44   45 46.5   50  103
##    1    1    1    2    1    1    1    1    1    1
```

```r
# hours with 0, +.1, logs
SPAN$VolScalelog <- log10(SPAN$VolScale + 0.1)
SPAN$VolScale80log <- log10(SPAN$VolScale80 + 0.1)
SPAN$VolScale50log <- log10(SPAN$VolScale50 + 0.1)
table(SPAN$VolScale80log)
```

```
##
##                  -1  -0.481486060122112  -0.455931955649724
##                 982                   1                   5
##  -0.327902142064283  -0.221848749616356  -0.142667503568732
##                   1                  12                   2
## -0.0705810742857073  0.0413926851582251   0.204119982655925
##                   2                  57                  17
##   0.222716471147583   0.267171728403014   0.322219294733919
##                   1                   2                  71
##   0.371067862271736   0.414973347970818   0.463892988985907
##                   1                  11                   1
##   0.491361693834273   0.525044807036845   0.556302500767287
##                  53                   1                   9
##   0.612783856719735   0.638489256954637   0.662757831681574
##                  58                   1                   6
##   0.707570176097936    0.7481880270062   0.762678563727436
##                  44                   3                   1
##   0.785329835010767   0.819543935541869   0.832508912706236
##                  20                   7                   1
##   0.851258348719075   0.880813592280791    0.90848501887865
```

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```
##                11                6               24
##   0.920645001406788  0.934498451243568  0.959041392321094
##                1                1                7
##   1.00432137378264   1.03342375548695   1.04532297878666
##                23                1                6
##   1.06445798922692   1.08278537031645   1.11727129565576
##                2                6                7
##   1.13353890837022   1.14921911265538   1.17897694729317
##                2                3                6
##   1.1846914308176   1.20682587603185   1.22010808804006
##                1                3                1
##   1.23299611039215   1.24551266781415   1.25767857486918
##                2                1                6
##   1.29225607135648   1.30319605742049   1.30749603791321
##                1                8                1
##   1.32428245529769   1.34439227368511   1.36361197989214
##                3                2                2
##   1.38201704257487   1.39093510710338   1.39967372148104
##                1                1                5
##   1.41664050733828   1.47856649559384   1.50650503240487
##                2                5                1
##   1.54530711646582   1.55750720190566   1.57518784492766
##                1                1                1
##   1.60314437262018   1.62428209583567   1.64443858946784
##                2                1                1
##   1.65417654187796    1.66838591669   1.69983772586725
##                1                1                1
##   2.01325866528352
##                1

table(SPAN$VolScale50log)

##
##                -1  -0.481486060122112  -0.455931955649724
##               982                1                5
##  -0.327902142064283  -0.221848749616356  -0.142667503568732
##                1               12                2
## -0.0705810742857073  0.0413926851582251  0.204119982655925
##                2               57               17
##   0.222716471147583  0.267171728403014  0.322219294733919
##                1                2               71
##   0.371067862271736  0.414973347970818  0.463892988985907
##                1               11                1
##   0.491361693834273  0.525044807036845  0.556302500767287
##                53                1                9
##   0.612783856719735  0.638489256954637  0.662757831681574
```

```
##                 58                     1                     6
##    0.707570176097936    0.7481880270062    0.762678563727436
##                 44                     3                     1
##    0.785329835010767    0.819543935541869   0.832508912706236
##                 20                     7                     1
##    0.851258348719075    0.880813592280791    0.90848501887865
##                 11                     6                    24
##    0.920645001406788    0.934498451243568   0.959041392321094
##                  1                     1                     7
##     1.00432137378264    1.03342375548695    1.04532297878666
##                 23                     1                     6
##     1.06445798922692    1.08278537031645    1.11727129565576
##                  2                     6                     7
##     1.13353890837022    1.14921911265538    1.17897694729317
##                  2                     3                     6
##     1.1846914308176    1.20682587603185    1.22010808804006
##                  1                     3                     1
##     1.23299611039215    1.24551266781415    1.25767857486918
##                  2                     1                     6
##     1.29225607135648    1.30319605742049    1.30749603791321
##                  1                     8                     1
##     1.32428245529769    1.34439227368511    1.36361197989214
##                  3                     2                     2
##     1.38201704257487    1.39093510710338    1.39967372148104
##                  1                     1                     5
##     1.41664050733828    1.47856649559384    1.50650503240487
##                  2                     5                     1
##     1.54530711646582    1.55750720190566    1.57518784492766
##                  1                     1                     1
##     1.60314437262018    1.62428209583567    1.64443858946784
##                  2                     1                     1
##     1.65417654187796     1.66838591669    1.69983772586725
##                  1                     1                     1
##     1.90363251608424
##                  1
```

```
# interaction predicting log hors
summary(lm(VolScalelog ~ Con_C + retworkne + (Con_C * retworkne), data = SPAN))
```

```
##
## Call:
## lm(formula = VolScalelog ~ Con_C + retworkne + (Con_C * retworkne),
##     data = SPAN)
##
## Residuals:
##     Min      1Q  Median      3Q      Max
```
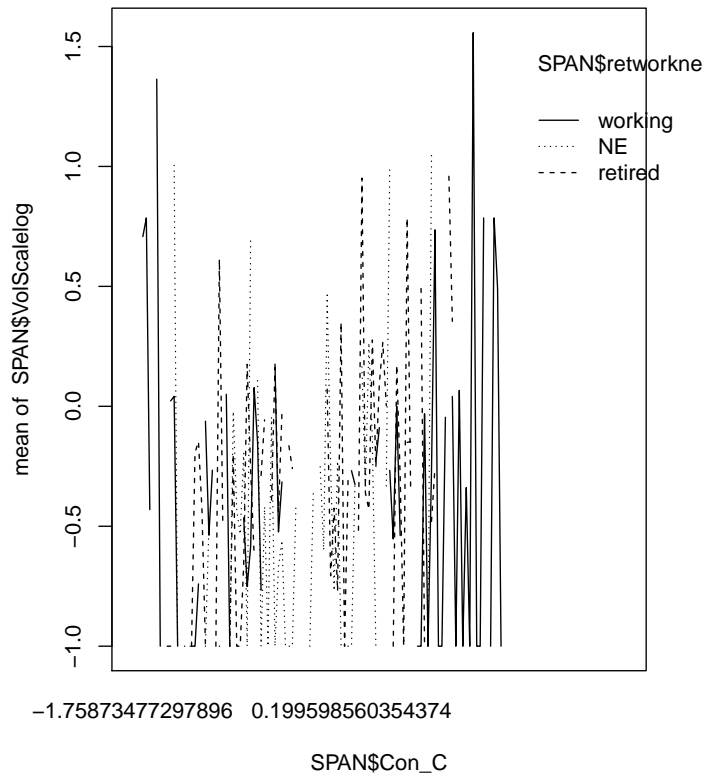
```
## -0.9506 -0.6161 -0.5428  0.8001  2.4992
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)      -0.32330    0.04707  -6.868 9.82e-12 ***
## Con_C             0.39147    0.13659   2.866  0.00422 **
## retworkne1       -0.07668    0.05469  -1.402  0.16110
## retworkne2       -0.13828    0.07432  -1.860  0.06303 .
## Con_C:retworkne1 -0.27397    0.15687  -1.746  0.08095 .
## Con_C:retworkne2  0.02569    0.20200   0.127  0.89880
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8184 on 1381 degrees of freedom
##   (243 observations deleted due to missingness)
## Multiple R-squared:  0.0165,Adjusted R-squared:  0.01294
## F-statistic: 4.633 on 5 and 1381 DF,  p-value: 0.0003379

confint((lm(VolScalelog ~ Con_C + retworkne + (Con_C * retworkne), data = SPAN)))

##                       2.5 %       97.5 %
## (Intercept)      -0.4156381 -0.230953121
## Con_C             0.1235198  0.659429403
## retworkne1       -0.1839691  0.030602908
## retworkne2       -0.2840725  0.007521364
## Con_C:retworkne1 -0.5816965  0.033757688
## Con_C:retworkne2 -0.3705717  0.421960971

interaction.plot(SPAN$Con_C, SPAN$retworkne, SPAN$VolScalelog)
```

mean of SPAN$VolScalelog

SPAN$retworkne

—— working
········· NE
---- retired

−1.75873477297896    0.199598560354374

SPAN$Con_C

```
# other big five interaction term no controls
contrasts(SPAN$retworkne)  #1working #2NE

##         [,1] [,2]
## NE        0    1
## retired   0    0
## working   1    0

axret <- glm(PVol ~ Agree_C + retworkne + (Agree_C * retworkne), data = SPAN,
    family = binomial)
summary(axret)

##
## Call:
## glm(formula = PVol ~ Agree_C + retworkne + (Agree_C * retworkne),
##     family = binomial, data = SPAN)
```

```
## 
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.5338  -1.0353  -0.8601   1.2670   1.8338
## 
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -0.35527    0.11764  -3.020 0.002529 **
## Agree_C            1.28921    0.39131   3.295 0.000986 ***
## retworkne1         0.04957    0.13537   0.366 0.714240
## retworkne2        -0.44878    0.18862  -2.379 0.017346 *
## Agree_C:retworkne1 -0.40515   0.44680  -0.907 0.364514
## Agree_C:retworkne2 -0.07834   0.60113  -0.130 0.896310
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 1980.8  on 1465  degrees of freedom
## Residual deviance: 1934.4  on 1460  degrees of freedom
##   (164 observations deleted due to missingness)
## AIC: 1946.4
## 
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(axret), confint(axret))), 2)

## Waiting for profiling to be done...

##                    OR 2.5 % 97.5 %
## (Intercept)       0.70  0.56   0.88
## Agree_C           3.63  1.71   7.98
## retworkne1        1.05  0.81   1.37
## retworkne2        0.64  0.44   0.92
## Agree_C:retworkne1 0.67  0.27   1.58
## Agree_C:retworkne2 0.92  0.28   3.03

exret <- glm(PVol ~ Extr_C + retworkne + (Extr_C * retworkne), data = SPAN,
    family = binomial)
summary(exret)

## 
## Call:
## glm(formula = PVol ~ Extr_C + retworkne + (Extr_C * retworkne),
##     family = binomial, data = SPAN)
## 
## Deviance Residuals:
```

```
##      Min       1Q    Median       3Q      Max
## -1.5929  -1.0350  -0.8046   1.2286   2.5222
##
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -0.35006    0.11796  -2.967   0.0030 **
## Extr_C             1.41088    0.34007   4.149 3.34e-05 ***
## retworkne1         0.04409    0.13602   0.324   0.7458
## retworkne2        -0.43943    0.19249  -2.283   0.0224 *
## Extr_C:retworkne1 -0.55220    0.38332  -1.441   0.1497
## Extr_C:retworkne2  0.83677    0.62047   1.349   0.1775
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1981.5  on 1465  degrees of freedom
## Residual deviance: 1904.4  on 1460  degrees of freedom
##   (164 observations deleted due to missingness)
## AIC: 1916.4
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(exret), confint(exret))), 2)

## Waiting for profiling to be done...

##                    OR 2.5 % 97.5 %
## (Intercept)      0.70  0.56   0.89
## Extr_C           4.10  2.14   8.16
## retworkne1       1.05  0.80   1.37
## retworkne2       0.64  0.44   0.94
## Extr_C:retworkne1 0.58  0.27   1.20
## Extr_C:retworkne2 2.31  0.70   8.01

oxret <- glm(PVol ~ Open_C + retworkne + (Open_C * retworkne), data = SPAN,
    family = binomial)
summary(oxret)

##
## Call:
## glm(formula = PVol ~ Open_C + retworkne + (Open_C * retworkne),
##     family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q    Median       3Q      Max
## -1.7665  -1.0375  -0.9327   1.2954   2.0821
```

```
## 
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -0.32308    0.11499  -2.810  0.00496 **
## Open_C             0.45524    0.31633   1.439  0.15012
## retworkne1        -0.01245    0.13313  -0.094  0.92548
## retworkne2        -0.42192    0.18951  -2.226  0.02599 *
## Open_C:retworkne1 -0.06395    0.36069  -0.177  0.85926
## Open_C:retworkne2  1.36255    0.53520   2.546  0.01090 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 1969.2  on 1459  degrees of freedom
## Residual deviance: 1933.5  on 1454  degrees of freedom
##   (170 observations deleted due to missingness)
## AIC: 1945.5
## 
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(oxret), confint(oxret))), 2)

## Waiting for profiling to be done...

##                    OR 2.5 % 97.5 %
## (Intercept)      0.72 0.58   0.91
## Open_C           1.58 0.85   2.95
## retworkne1       0.99 0.76   1.28
## retworkne2       0.66 0.45   0.95
## Open_C:retworkne1 0.94 0.46  1.90
## Open_C:retworkne2 3.91 1.39  11.40

nxret <- glm(PVol ~ Neur_C + retworkne + (Neur_C * retworkne), data = SPAN,
    family = binomial)
summary(nxret)

## 
## Call:
## glm(formula = PVol ~ Neur_C + retworkne + (Neur_C * retworkne),
##     family = binomial, data = SPAN)
## 
## Deviance Residuals:
##     Min      1Q   Median      3Q     Max
## -1.4046 -1.0464  -0.8824  1.2713  1.9255
## 
## Coefficients:
```

```
##                  Estimate Std. Error z value Pr(>|z|)
## (Intercept)      -0.39406    0.11712  -3.365 0.000766 ***
## Neur_C           -0.93206    0.31480  -2.961 0.003069 **
## retworkne1        0.07342    0.13477   0.545 0.585877
## retworkne2       -0.31705    0.19165  -1.654 0.098066 .
## Neur_C:retworkne1 0.48225    0.35012   1.377 0.168395
## Neur_C:retworkne2 -0.36679   0.50035  -0.733 0.463524
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1982.6  on 1469  degrees of freedom
## Residual deviance: 1941.5  on 1464  degrees of freedom
##   (160 observations deleted due to missingness)
## AIC: 1953.5
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(nxret), confint(nxret))), 2)

## Waiting for profiling to be done...

##                    OR 2.5 % 97.5 %
## (Intercept)       0.67  0.53   0.85
## Neur_C            0.39  0.21   0.72
## retworkne1        1.08  0.83   1.40
## retworkne2        0.73  0.50   1.06
## Neur_C:retworkne1 1.62  0.82   3.26
## Neur_C:retworkne2 0.69  0.26   1.83

# openness sig, add covariates
oxret <- glm(PVol ~ AGE_C + GENDER + Con_C + retworkne + Agree_C + Extr_C +
    Open_C + Neur_C + (Open_C * retworkne), data = SPAN, family = binomial)
summary(oxret)

##
## Call:
## glm(formula = PVol ~ AGE_C + GENDER + Con_C + retworkne + Agree_C +
##     Extr_C + Open_C + Neur_C + (Open_C * retworkne), family = binomial,
##     data = SPAN)
##
## Deviance Residuals:
##     Min      1Q   Median      3Q      Max
## -1.6605  -1.0217  -0.7694   1.2145   2.3316
##
```

```
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)      -0.4461740  0.1437512  -3.104  0.00191 **
## AGE_C             0.0051439  0.0220412   0.233  0.81547
## GENDER2           0.2099331  0.1227446   1.710  0.08721 .
## Con_C            -0.0334136  0.2004605  -0.167  0.86762
## retworkne1        0.0009532  0.1512749   0.006  0.99497
## retworkne2       -0.4206013  0.2125133  -1.979  0.04780 *
## Agree_C           0.5695330  0.2063643   2.760  0.00578 **
## Extr_C            0.8004867  0.1822571   4.392 1.12e-05 ***
## Open_C           -0.0440327  0.3579841  -0.123  0.90211
## Neur_C           -0.2272241  0.1770216  -1.284  0.19928
## retworkne1:Open_C 0.0939531  0.3992486   0.235  0.81396
## retworkne2:Open_C 1.3050022  0.5760592   2.265  0.02349 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1772.6  on 1309  degrees of freedom
## Residual deviance: 1686.9  on 1298  degrees of freedom
##   (320 observations deleted due to missingness)
## AIC: 1710.9
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(oxret), confint(oxret))), 2)

## Waiting for profiling to be done...

##                   OR 2.5 % 97.5 %
## (Intercept)     0.64  0.48   0.85
## AGE_C           1.01  0.96   1.05
## GENDER2         1.23  0.97   1.57
## Con_C           0.97  0.65   1.43
## retworkne1      1.00  0.74   1.35
## retworkne2      0.66  0.43   0.99
## Agree_C         1.77  1.18   2.66
## Extr_C          2.23  1.56   3.19
## Open_C          0.96  0.47   1.94
## Neur_C          0.80  0.56   1.13
## retworkne1:Open_C 1.10  0.50   2.40
## retworkne2:Open_C 3.69  1.21  11.68

SPAN2 <- subset(SPAN, select = c(PID, PNEOC11, PNEOC12, PNEOC13, PNEOC14, PNEOC15,
    PNEOC16, PNEOC17, PNEOC18, PNEOC21, PNEOC22, PNEOC23, PNEOC24, PNEOC25,
```

```
      PNEOC26, PNEOC27, PNEOC28, PNEOC31, PNEOC32, PNEOC33, PNEOC34, PNEOC35,
      PNEOC36, PNEOC37, PNEOC38, PNEOC41, PNEOC42, PNEOC43, PNEOC44, PNEOC45,
      PNEOC46, PNEOC47, PNEOC48, PNEOC51, PNEOC52, PNEOC53, PNEOC54, PNEOC55,
      PNEOC56, PNEOC57, PNEOC58, PNEOC61, PNEOC62, PNEOC63, PNEOC64, PNEOC65,
      PNEOC66, PNEOC67, PNEOC68))
write.csv(SPAN2, "SPAN2.csv")

# facets
SPAN$Resp <- ((SPAN$PNEOC11 + (5 - SPAN$PNEOC12) + SPAN$PNEOC13 + (5 - SPAN$PNEOC14) +
    SPAN$PNEOC15 + (5 - SPAN$PNEOC16) + SPAN$PNEOC17 + SPAN$PNEOC18)/8)
SPAN$Order <- (((5 - SPAN$PNEOC21) + SPAN$PNEOC22 + (5 - SPAN$PNEOC23) + SPAN$PNEOC24 +
    (5 - SPAN$PNEOC25) + SPAN$PNEOC26 + (5 - SPAN$PNEOC27) + (5 - SPAN$PNEOC28))/8)
SPAN$Duti <- ((SPAN$PNEOC31 + (5 - SPAN$PNEOC32) + SPAN$PNEOC33 + (5 - SPAN$PNEOC34) +
    SPAN$PNEOC35 + SPAN$PNEOC36 + SPAN$PNEOC37 + SPAN$PNEOC38)/8)
SPAN$AS <- (((5 - SPAN$PNEOC41) + SPAN$PNEOC42 + (5 - SPAN$PNEOC43) + SPAN$PNEOC44 +
    (5 - SPAN$PNEOC45) + SPAN$PNEOC46 + SPAN$PNEOC47 + SPAN$PNEOC48)/8)
SPAN$SD <- ((SPAN$PNEOC51 + (5 - SPAN$PNEOC52) + SPAN$PNEOC53 + SPAN$PNEOC54 +
    SPAN$PNEOC55 + (5 - SPAN$PNEOC56) + (5 - SPAN$PNEOC57) + SPAN$PNEOC58)/8)
SPAN$Delib <- (((5 - SPAN$PNEOC61) + SPAN$PNEOC62 + (5 - SPAN$PNEOC63) + SPAN$PNEOC64 +
    (5 - SPAN$PNEOC65) + SPAN$PNEOC66 + SPAN$PNEOC67 + SPAN$PNEOC68)/8)

SPAN$Resp_C <- scale(SPAN$Resp, center = TRUE, scale = FALSE)
SPAN$Order_C <- scale(SPAN$Order, center = TRUE, scale = FALSE)
SPAN$Duti_C <- scale(SPAN$Duti, center = TRUE, scale = FALSE)
SPAN$AS_C <- scale(SPAN$AS, center = TRUE, scale = FALSE)
SPAN$SD_C <- scale(SPAN$SD, center = TRUE, scale = FALSE)
SPAN$Delib_C <- scale(SPAN$Delib, center = TRUE, scale = FALSE)


# responsibility C predict volunteering, control: EDU, AGE, GENDER
Resp <- (glm(PVol ~ EDU + GENDER + AGE + Resp_C, data = SPAN, family = "binomial"))
summary(Resp)

##
## Call:
## glm(formula = PVol ~ EDU + GENDER + AGE + Resp_C, family = "binomial",
##     data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.4007  -1.0131  -0.7506   1.1999   2.0520
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -3.20693    1.17092  -2.739 0.006166 **
## EDU          0.36977    0.04220   8.763  < 2e-16 ***
```

```
## GENDER2        0.36291     0.10724    3.384 0.000714 ***
## AGE            0.01601     0.01931    0.829 0.406971
## Resp_C        -0.25876     0.20851   -1.241 0.214625
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2122.6  on 1575  degrees of freedom
## Residual deviance: 2030.4  on 1571  degrees of freedom
##   (54 observations deleted due to missingness)
## AIC: 2040.4
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Resp), confint(Resp))), 2)

## Waiting for profiling to be done...

##             OR 2.5 % 97.5 %
## (Intercept) 0.04  0.00   0.40
## EDU         1.45  1.33   1.57
## GENDER2     1.44  1.17   1.77
## AGE         1.02  0.98   1.06
## Resp_C      0.77  0.51   1.16

# C plus big 5 predict volunteer, control: EDU, AGE, GENDER
Resp <- (glm(PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN + pneoO + Resp_C,
    data = SPAN, family = "binomial"))
summary(Resp)

##
## Call:
## glm(formula = PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN +
##     pneoO + Resp_C, family = "binomial", data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.7757  -0.9889  -0.7013   1.1471   2.3236
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -5.619311   1.531890   -3.668 0.000244 ***
## GENDER2      0.304339   0.123816    2.458 0.013971 *
## AGE          0.009161   0.021206    0.432 0.665739
## EDU          0.370853   0.049463    7.498 6.50e-14 ***
## pneoE        0.905329   0.182724    4.955 7.25e-07 ***
```

```
## pneoA           0.522354    0.206576    2.529 0.011451 *
## pneoN          -0.199971    0.155594   -1.285 0.198720
## pneoO          -0.139472    0.171108   -0.815 0.415009
## Resp_C         -0.558020    0.235448   -2.370 0.017787 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1831.5  on 1356  degrees of freedom
## Residual deviance: 1691.6  on 1348  degrees of freedom
##   (273 observations deleted due to missingness)
## AIC: 1709.6
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Resp), confint(Resp))), 2)

## Waiting for profiling to be done...

##              OR 2.5 % 97.5 %
## (Intercept) 0.00  0.00   0.07
## GENDER2     1.36  1.06   1.73
## AGE         1.01  0.97   1.05
## EDU         1.45  1.32   1.60
## pneoE       2.47  1.73   3.55
## pneoA       1.69  1.13   2.53
## pneoN       0.82  0.60   1.11
## pneoO       0.87  0.62   1.22
## Resp_C      0.57  0.36   0.91

# interaction
Resp <- glm(PVol ~ AGE_C + EDU_C + GENDER + Resp_C + retworkne + (Resp_C * retworkne),
    data = SPAN, family = binomial)
summary(Resp)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Resp_C + retworkne +
##     (Resp_C * retworkne), family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.4402  -1.0219  -0.7627   1.1945   2.1405
##
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
```

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```
## (Intercept)       -0.466839   0.130210  -3.585 0.000337 ***
## AGE_C              0.005888   0.020317   0.290 0.771969
## EDU_C              0.353696   0.043809   8.074 6.83e-16 ***
## GENDER2            0.388894   0.108693   3.578 0.000346 ***
## Resp_C            -0.325278   0.454820  -0.715 0.474498
## retworkne1        -0.153997   0.139415  -1.105 0.269334
## retworkne2        -0.432227   0.189550  -2.280 0.022591 *
## Resp_C:retworkne1  0.181607   0.529629   0.343 0.731677
## Resp_C:retworkne2  0.015196   0.674676   0.023 0.982031
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2077.1  on 1537  degrees of freedom
## Residual deviance: 1985.3  on 1529  degrees of freedom
##   (92 observations deleted due to missingness)
## AIC: 2003.3
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Resp), confint(Resp))), 2)

## Waiting for profiling to be done...

##                    OR 2.5 % 97.5 %
## (Intercept)      0.63  0.48   0.81
## AGE_C            1.01  0.97   1.05
## EDU_C            1.42  1.31   1.55
## GENDER2          1.48  1.19   1.83
## Resp_C           0.72  0.29   1.76
## retworkne1       0.86  0.65   1.13
## retworkne2       0.65  0.45   0.94
## Resp_C:retworkne1 1.20  0.42   3.40
## Resp_C:retworkne2 1.02  0.27   3.83

# Interaction term with EDU, Gender, Age, big 5
Resp <- glm(PVol ~ AGE_C + EDU_C + GENDER + Resp_C + retworkne + Agree_C + Extr_C +
    Open_C + Neur_C + (Resp_C * retworkne), data = SPAN, family = binomial)
summary(Resp)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Resp_C + retworkne +
##     Agree_C + Extr_C + Open_C + Neur_C + (Resp_C * retworkne),
##     family = binomial, data = SPAN)
```

```
## 
## Deviance Residuals: 
##     Min       1Q   Median       3Q      Max  
## -1.8086  -0.9925  -0.6853   1.1449   2.2967  
## 
## Coefficients: 
##                    Estimate Std. Error z value Pr(>|z|)    
## (Intercept)       -0.4384401  0.1472131  -2.978  0.00290 ** 
## AGE_C             -0.0003641  0.0223174  -0.016  0.98698    
## EDU_C              0.3605054  0.0513935   7.015 2.31e-12 ***
## GENDER2            0.3231125  0.1251662   2.581  0.00984 ** 
## Resp_C            -0.7085918  0.5334202  -1.328  0.18405    
## retworkne1        -0.1905245  0.1567167  -1.216  0.22409    
## retworkne2        -0.3751904  0.2117952  -1.771  0.07648 .  
## Agree_C            0.5420273  0.2079333   2.607  0.00914 ** 
## Extr_C             0.9074591  0.1838343   4.936 7.96e-07 ***
## Open_C            -0.1347319  0.1730769  -0.778  0.43630    
## Neur_C            -0.1716973  0.1582943  -1.085  0.27807    
## Resp_C:retworkne1  0.3134569  0.6103790   0.514  0.60757    
## Resp_C:retworkne2 -0.0816501  0.7730797  -0.106  0.91589    
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 1797.7  on 1328  degrees of freedom
## Residual deviance: 1660.2  on 1316  degrees of freedom
##   (301 observations deleted due to missingness)
## AIC: 1686.2
## 
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Resp), confint(Resp))), 2)

## Waiting for profiling to be done...

##                  OR 2.5 % 97.5 %
## (Intercept)    0.65  0.48   0.86
## AGE_C          1.00  0.96   1.04
## EDU_C          1.43  1.30   1.59
## GENDER2        1.38  1.08   1.77
## Resp_C         0.49  0.17   1.40
## retworkne1     0.83  0.61   1.12
## retworkne2     0.69  0.45   1.04
## Agree_C        1.72  1.15   2.59
## Extr_C         2.48  1.73   3.57
```

```
## Open_C            0.87  0.62   1.23
## Neur_C            0.84  0.62   1.15
## Resp_C:retworkne1 1.37  0.41   4.56
## Resp_C:retworkne2 0.92  0.20   4.22

# ORDER C predict volunteering, control: EDU, AGE, GENDER
Order <- (glm(PVol ~ EDU + GENDER + AGE + Order_C, data = SPAN, family = "binomial"))
summary(Order)

##
## Call:
## glm(formula = PVol ~ EDU + GENDER + AGE + Order_C, family = "binomial",
##     data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.4633  -1.0091  -0.7543   1.2044   2.1286
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -3.20966    1.17298  -2.736 0.006213 **
## EDU          0.36302    0.04274   8.494  < 2e-16 ***
## GENDER2      0.37132    0.10767   3.449 0.000563 ***
## AGE          0.01636    0.01933   0.846 0.397571
## Order_C     -0.40256    0.17313  -2.325 0.020058 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2115.3  on 1571  degrees of freedom
## Residual deviance: 2016.7  on 1567  degrees of freedom
##   (58 observations deleted due to missingness)
## AIC: 2026.7
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Order), confint(Order))), 2)

## Waiting for profiling to be done...

##               OR 2.5 % 97.5 %
## (Intercept) 0.04  0.00   0.40
## EDU         1.44  1.32   1.56
## GENDER2     1.45  1.17   1.79
## AGE         1.02  0.98   1.06
## Order_C     0.67  0.48   0.94
```

```
# C plus big 5 predict volunteer, control: EDU, AGE, GENDER
Order <- (glm(PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN + pneoO + Order_C,
    data = SPAN, family = "binomial"))
summary(Order)

##
## Call:
## glm(formula = PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN +
##     pneoO + Order_C, family = "binomial", data = SPAN)
##
## Deviance Residuals:
##     Min      1Q   Median      3Q      Max
## -1.8539  -0.9749  -0.7013   1.1542   2.2924
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -6.05500    1.54133  -3.928 8.55e-05 ***
## GENDER2      0.31660    0.12380   2.557   0.0105 *
## AGE          0.01185    0.02122   0.559   0.5764
## EDU          0.36730    0.04988   7.364 1.78e-13 ***
## pneoE        0.86873    0.18116   4.795 1.62e-06 ***
## pneoA        0.58006    0.20713   2.800   0.0051 **
## pneoN       -0.09519    0.16014  -0.594   0.5522
## pneoO       -0.11640    0.17113  -0.680   0.4964
## Order_C     -0.26953    0.19756  -1.364   0.1725
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1825.8  on 1352  degrees of freedom
## Residual deviance: 1687.1  on 1344  degrees of freedom
##   (277 observations deleted due to missingness)
## AIC: 1705.1
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Order), confint(Order))), 2)

## Waiting for profiling to be done...

##              OR 2.5 % 97.5 %
## (Intercept) 0.00  0.00   0.05
## GENDER2     1.37  1.08   1.75
## AGE         1.01  0.97   1.05
## EDU         1.44  1.31   1.59
```

```
## pneoE        2.38   1.68   3.41
## pneoA        1.79   1.19   2.69
## pneoN        0.91   0.66   1.24
## pneoO        0.89   0.64   1.24
## Order_C      0.76   0.52   1.12

# interaction
Order <- glm(PVol ~ AGE_C + EDU_C + GENDER + Order_C + retworkne + (Order_C *
    retworkne), data = SPAN, family = binomial)
summary(Order)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Order_C + retworkne +
##      (Order_C * retworkne), family = binomial, data = SPAN)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q       Max
## -1.6956  -1.0164  -0.7511   1.1960    2.0212
##
## Coefficients:
##                      Estimate Std. Error z value Pr(>|z|)
## (Intercept)         -0.509228   0.131146  -3.883 0.000103 ***
## AGE_C                0.009478   0.020352   0.466 0.641434
## EDU_C                0.350382   0.044261   7.916 2.45e-15 ***
## GENDER2              0.394006   0.109191   3.608 0.000308 ***
## Order_C             -0.991643   0.407037  -2.436 0.014840 *
## retworkne1          -0.113775   0.140375  -0.811 0.417647
## retworkne2          -0.344807   0.191375  -1.802 0.071587 .
## Order_C:retworkne1   0.843345   0.459963   1.834 0.066727 .
## Order_C:retworkne2   0.425966   0.612906   0.695 0.487060
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 2067.0  on 1531  degrees of freedom
## Residual deviance: 1968.2  on 1523  degrees of freedom
##    (98 observations deleted due to missingness)
## AIC: 1986.2
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Order), confint(Order))), 2)

## Waiting for profiling to be done...
```

```
##                     OR 2.5 % 97.5 %
## (Intercept)        0.60  0.46   0.78
## AGE_C              1.01  0.97   1.05
## EDU_C              1.42  1.30   1.55
## GENDER2            1.48  1.20   1.84
## Order_C            0.37  0.16   0.82
## retworkne1         0.89  0.68   1.18
## retworkne2         0.71  0.49   1.03
## Order_C:retworkne1 2.32  0.95   5.80
## Order_C:retworkne2 1.53  0.46   5.11

# Interaction term with EDU, Gender, Age, big 5
Order <- glm(PVol ~ AGE_C + EDU_C + GENDER + Order_C + retworkne + Agree_C +
    Extr_C + Open_C + Neur_C + (Order_C * retworkne), data = SPAN, family = binomial)
summary(Order)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Order_C + retworkne +
##     Agree_C + Extr_C + Open_C + Neur_C + (Order_C * retworkne),
##     family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.8248  -0.9938  -0.6780   1.1357   2.3432
##
## Coefficients:
##                    Estimate Std. Error z value Pr(>|z|)
## (Intercept)        -0.443983   0.148913  -2.981  0.00287 **
## AGE_C               0.001797   0.022357   0.080  0.93595
## EDU_C               0.367482   0.052034   7.062 1.64e-12 ***
## GENDER2             0.345335   0.125545   2.751  0.00595 **
## Order_C            -1.462721   0.493956  -2.961  0.00306 **
## retworkne1         -0.197020   0.158185  -1.245  0.21295
## retworkne2         -0.351378   0.214125  -1.641  0.10080
## Agree_C             0.572085   0.209068   2.736  0.00621 **
## Extr_C              0.883203   0.183513   4.813 1.49e-06 ***
## Open_C             -0.119368   0.173827  -0.687  0.49227
## Neur_C             -0.106923   0.163521  -0.654  0.51319
## Order_C:retworkne1  1.563509   0.546618   2.860  0.00423 **
## Order_C:retworkne2  0.984086   0.709779   1.386  0.16560
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
```

```
##     Null deviance: 1792.0  on 1324  degrees of freedom
## Residual deviance: 1647.2  on 1312  degrees of freedom
##   (305 observations deleted due to missingness)
## AIC: 1673.2
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Order), confint(Order))), 2)
```

*## Waiting for profiling to be done...*

```
##                      OR 2.5 % 97.5 %
## (Intercept)        0.64  0.48   0.86
## AGE_C              1.00  0.96   1.05
## EDU_C              1.44  1.31   1.60
## GENDER2            1.41  1.10   1.81
## Order_C            0.23  0.09   0.60
## retworkne1         0.82  0.60   1.12
## retworkne2         0.70  0.46   1.07
## Agree_C            1.77  1.18   2.68
## Extr_C             2.42  1.69   3.48
## Open_C             0.89  0.63   1.25
## Neur_C             0.90  0.65   1.24
## Order_C:retworkne1 4.78  1.66  14.26
## Order_C:retworkne2 2.68  0.67  10.87
```

```
# AS C predict volunteering, control: EDU, AGE, GENDER
AS <- (glm(PVol ~ EDU + GENDER + AGE + AS_C, data = SPAN, family = "binomial"))
summary(AS)
```

```
##
## Call:
## glm(formula = PVol ~ EDU + GENDER + AGE + AS_C, family = "binomial",
##     data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.3600  -1.0087  -0.7467   1.1997   2.0374
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -3.21621    1.17079  -2.747 0.006014 **
## EDU          0.37752    0.04209   8.970  < 2e-16 ***
## GENDER2      0.35468    0.10705   3.313 0.000923 ***
## AGE          0.01548    0.01929   0.802 0.422317
## AS_C         0.04128    0.15136   0.273 0.785042
## ---
```

```
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2128.1  on 1582  degrees of freedom
## Residual deviance: 2033.4  on 1578  degrees of freedom
##   (47 observations deleted due to missingness)
## AIC: 2043.4
##
## Number of Fisher Scoring iterations: 4
```

```r
round(exp(cbind(OR = coef(AS), confint(AS))), 2)
```

```
## Waiting for profiling to be done...
```

```
##                OR 2.5 % 97.5 %
## (Intercept) 0.04  0.00   0.40
## EDU         1.46  1.34   1.59
## GENDER2     1.43  1.16   1.76
## AGE         1.02  0.98   1.05
## AS_C        1.04  0.77   1.40
```

```r
# C plus big 5 predict volunteer, control: EDU, AGE, GENDER
AS <- (glm(PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN + pneoO + AS_C,
    data = SPAN, family = "binomial"))
summary(AS)
```

```
##
## Call:
## glm(formula = PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN +
##     pneoO + AS_C, family = "binomial", data = SPAN)
##
## Deviance Residuals:
##    Min      1Q  Median      3Q     Max
## -1.792  -0.988  -0.699   1.163   2.288
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -5.85785    1.53850  -3.807  0.00014 ***
## GENDER2      0.31008    0.12375   2.506  0.01222 *
## AGE          0.01056    0.02121   0.498  0.61843
## EDU          0.36722    0.04946   7.425 1.13e-13 ***
## pneoE        0.91992    0.18379   5.005 5.58e-07 ***
## pneoA        0.54418    0.20728   2.625  0.00866 **
## pneoN       -0.15454    0.15521  -0.996  0.31941
## pneoO       -0.13685    0.17100  -0.800  0.42354
## AS_C        -0.17559    0.17061  -1.029  0.30340
```

```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1825.0  on 1352  degrees of freedom
## Residual deviance: 1689.2  on 1344  degrees of freedom
##   (277 observations deleted due to missingness)
## AIC: 1707.2
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(AS), confint(AS))), 2)

## Waiting for profiling to be done...

##                OR 2.5 % 97.5 %
## (Intercept) 0.00  0.00   0.06
## GENDER2     1.36  1.07   1.74
## AGE         1.01  0.97   1.05
## EDU         1.44  1.31   1.59
## pneoE       2.51  1.76   3.61
## pneoA       1.72  1.15   2.59
## pneoN       0.86  0.63   1.16
## pneoO       0.87  0.62   1.22
## AS_C        0.84  0.60   1.17

# interaction
AS <- glm(PVol ~ AGE_C + EDU_C + GENDER + AS_C + retworkne + (AS_C * retworkne),
    data = SPAN, family = binomial)
summary(AS)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + AS_C + retworkne +
##     (AS_C * retworkne), family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.4707  -1.0215  -0.7549   1.1912   2.1226
##
## Coefficients:
##               Estimate Std. Error z value Pr(>|z|)
## (Intercept)   -0.512573   0.130525  -3.927  8.6e-05 ***
## AGE_C          0.007765   0.020319   0.382 0.702347
## EDU_C          0.359456   0.043669   8.231  < 2e-16 ***
## GENDER2        0.388744   0.108635   3.578 0.000346 ***
```

```
## AS_C              0.249477   0.343755   0.726 0.467998
## retworkne1       -0.106733   0.139604  -0.765 0.444543
## retworkne2       -0.390501   0.190074  -2.054 0.039931 *
## AS_C:retworkne1 -0.338363   0.393002  -0.861 0.389255
## AS_C:retworkne2  0.348786   0.542395   0.643 0.520193
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2082.8  on 1544  degrees of freedom
## Residual deviance: 1986.1  on 1536  degrees of freedom
##   (85 observations deleted due to missingness)
## AIC: 2004.1
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(AS), confint(AS))), 2)

## Waiting for profiling to be done...

##                 OR 2.5 % 97.5 %
## (Intercept)     0.60  0.46   0.77
## AGE_C           1.01  0.97   1.05
## EDU_C           1.43  1.32   1.56
## GENDER2         1.48  1.19   1.83
## AS_C            1.28  0.65   2.53
## retworkne1      0.90  0.68   1.18
## retworkne2      0.68  0.46   0.98
## AS_C:retworkne1 0.71  0.33   1.54
## AS_C:retworkne2 1.42  0.49   4.14

# Interaction term with EDU, Gender, Age, big 5
AS <- glm(PVol ~ AGE_C + EDU_C + GENDER + AS_C + retworkne + Agree_C + Extr_C +
    Open_C + Neur_C + (AS_C * retworkne), data = SPAN, family = binomial)
summary(AS)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + AS_C + retworkne +
##     Agree_C + Extr_C + Open_C + Neur_C + (AS_C * retworkne),
##     family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.7869  -0.9880  -0.6913   1.1469   2.4636
##
```

```
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)      -0.4405837  0.1477506  -2.982  0.00286 **
## AGE_C             0.0005198  0.0223456   0.023  0.98144
## EDU_C             0.3585849  0.0514829   6.965 3.28e-12 ***
## GENDER2           0.3453277  0.1253868   2.754  0.00589 **
## AS_C              0.2536934  0.3883138   0.653  0.51355
## retworkne1       -0.2033286  0.1572075  -1.293  0.19588
## retworkne2       -0.3814576  0.2121228  -1.798  0.07213 .
## Agree_C           0.5580563  0.2089165   2.671  0.00756 **
## Extr_C            0.9488368  0.1858572   5.105 3.30e-07 ***
## Open_C           -0.1385284  0.1732334  -0.800  0.42391
## Neur_C           -0.1291930  0.1585145  -0.815  0.41506
## AS_C:retworkne1 -0.6252930  0.4432441  -1.411  0.15833
## AS_C:retworkne2  0.1431734  0.6009593   0.238  0.81169
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1792.3  on 1325  degrees of freedom
## Residual deviance: 1655.4  on 1313  degrees of freedom
##   (304 observations deleted due to missingness)
## AIC: 1681.4
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(AS), confint(AS))), 2)

## Waiting for profiling to be done...

##                  OR 2.5 % 97.5 %
## (Intercept)     0.64  0.48   0.86
## AGE_C           1.00  0.96   1.05
## EDU_C           1.43  1.30   1.58
## GENDER2         1.41  1.11   1.81
## AS_C            1.29  0.60   2.78
## retworkne1      0.82  0.60   1.11
## retworkne2      0.68  0.45   1.03
## Agree_C         1.75  1.16   2.64
## Extr_C          2.58  1.80   3.73
## Open_C          0.87  0.62   1.22
## Neur_C          0.88  0.64   1.20
## AS_C:retworkne1 0.54  0.22   1.27
## AS_C:retworkne2 1.15  0.36   3.77

# Dutifulness Duti C predict volunteering, control: EDU, AGE, GENDER
```

```
Duti <- (glm(PVol ~ EDU + GENDER + AGE + Duti_C, data = SPAN, family = "binomial"))
summary(Duti)

##
## Call:
## glm(formula = PVol ~ EDU + GENDER + AGE + Duti_C, family = "binomial",
##     data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.4797  -1.0114  -0.7464   1.1951   2.1821
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -3.10837    1.18142  -2.631  0.00851 **
## EDU          0.37453    0.04275   8.760  < 2e-16 ***
## GENDER2      0.39455    0.10775   3.662  0.00025 ***
## AGE          0.01366    0.01944   0.703  0.48220
## Duti_C       0.42484    0.16495   2.576  0.01001 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2120.8  on 1574  degrees of freedom
## Residual deviance: 2013.3  on 1570  degrees of freedom
##   (55 observations deleted due to missingness)
## AIC: 2023.3
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Duti), confint(Duti))), 2)

## Waiting for profiling to be done...

##                OR 2.5 % 97.5 %
## (Intercept) 0.04  0.00    0.45
## EDU         1.45  1.34    1.58
## GENDER2     1.48  1.20    1.83
## AGE         1.01  0.98    1.05
## Duti_C      1.53  1.11    2.12

# C plus big 5 predict volunteer, control: EDU, AGE, GENDER
Duti <- (glm(PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN + pneoO + Duti_C,
    data = SPAN, family = "binomial"))
summary(Duti)
```

```
## 
## Call:
## glm(formula = PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN +
##     pneoO + Duti_C, family = "binomial", data = SPAN)
## 
## Deviance Residuals:
##     Min      1Q   Median       3Q      Max
## -1.8578  -0.9896  -0.7069   1.1538   2.3292
## 
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) -5.352904   1.536537  -3.484 0.000494 ***
## GENDER2      0.327681   0.123906   2.645 0.008179 **
## AGE          0.006397   0.021197   0.302 0.762830
## EDU          0.364757   0.049763   7.330 2.30e-13 ***
## pneoE        0.849331   0.181221   4.687 2.78e-06 ***
## pneoA        0.511584   0.207025   2.471 0.013469 *
## pneoN       -0.166788   0.155735  -1.071 0.284181
## pneoO       -0.129155   0.170580  -0.757 0.448960
## Duti_C       0.143779   0.188004   0.765 0.444411
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 1826.5  on 1352  degrees of freedom
## Residual deviance: 1690.9  on 1344  degrees of freedom
##   (277 observations deleted due to missingness)
## AIC: 1708.9
## 
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Duti), confint(Duti))), 2)

## Waiting for profiling to be done...

##               OR 2.5 % 97.5 %
## (Intercept) 0.00  0.00   0.09
## GENDER2     1.39  1.09   1.77
## AGE         1.01  0.97   1.05
## EDU         1.44  1.31   1.59
## pneoE       2.34  1.64   3.35
## pneoA       1.67  1.11   2.51
## pneoN       0.85  0.62   1.15
## pneoO       0.88  0.63   1.23
## Duti_C      1.15  0.80   1.67
```

```
# interaction
Duti <- glm(PVol ~ AGE_C + EDU_C + GENDER + Duti_C + retworkne + (Duti_C * retworkne),
    data = SPAN, family = binomial)
summary(Duti)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Duti_C + retworkne +
##     (Duti_C * retworkne), family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.6320  -1.0170  -0.7524   1.1912   2.2405
##
## Coefficients:
##                    Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -0.513634   0.131277  -3.913 9.13e-05 ***
## AGE_C              0.006382   0.020424   0.312 0.754671
## EDU_C              0.356801   0.044271   8.060 7.66e-16 ***
## GENDER2            0.411312   0.109486   3.757 0.000172 ***
## Duti_C             0.675606   0.367057   1.841 0.065680 .
## retworkne1        -0.116612   0.140609  -0.829 0.406916
## retworkne2        -0.378432   0.191542  -1.976 0.048187 *
## Duti_C:retworkne1 -0.354622   0.422050  -0.840 0.400775
## Duti_C:retworkne2 -0.282764   0.552943  -0.511 0.609085
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2072.5  on 1534   degrees of freedom
## Residual deviance: 1966.9  on 1526   degrees of freedom
##   (95 observations deleted due to missingness)
## AIC: 1984.9
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Duti), confint(Duti))), 2)

## Waiting for profiling to be done...

##                     OR 2.5 % 97.5 %
## (Intercept)       0.60  0.46   0.77
## AGE_C             1.01  0.97   1.05
## EDU_C             1.43  1.31   1.56
## GENDER2           1.51  1.22   1.87
```

```
## Duti_C              1.97  0.97   4.09
## retworkne1          0.89  0.68   1.17
## retworkne2          0.68  0.47   1.00
## Duti_C:retworkne1 0.70  0.30   1.59
## Duti_C:retworkne2 0.75  0.26   2.24
```

```
# Interaction term with EDU, Gender, Age, big 5
Duti <- glm(PVol ~ AGE_C + EDU_C + GENDER + Duti_C + retworkne + Agree_C + Extr_C +
    Open_C + Neur_C + (Duti_C * retworkne), data = SPAN, family = binomial)
summary(Duti)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Duti_C + retworkne +
##     Agree_C + Extr_C + Open_C + Neur_C + (Duti_C * retworkne),
##     family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.8291  -0.9950  -0.6967   1.1587   2.4724
##
## Coefficients:
##                   Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -0.441737   0.147542  -2.994  0.00275 **
## AGE_C             -0.002223   0.022315  -0.100  0.92065
## EDU_C              0.355063   0.051649   6.875 6.22e-12 ***
## GENDER2            0.338606   0.125755   2.693  0.00709 **
## Duti_C             0.364992   0.415934   0.878  0.38020
## retworkne1        -0.183961   0.156793  -1.173  0.24069
## retworkne2        -0.367289   0.212284  -1.730  0.08360 .
## Agree_C            0.529157   0.208364   2.540  0.01110 *
## Extr_C             0.873059   0.182788   4.776 1.79e-06 ***
## Open_C            -0.123621   0.172784  -0.715  0.47432
## Neur_C            -0.140066   0.158393  -0.884  0.37654
## Duti_C:retworkne1 -0.392223   0.475498  -0.825  0.40945
## Duti_C:retworkne2  0.092023   0.630420   0.146  0.88394
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1792.8  on 1324  degrees of freedom
## Residual deviance: 1658.4  on 1312  degrees of freedom
##   (305 observations deleted due to missingness)
## AIC: 1684.4
##
```

```
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Duti), confint(Duti))), 2)

## Waiting for profiling to be done...

##                     OR 2.5 % 97.5 %
## (Intercept)       0.64  0.48   0.86
## AGE_C             1.00  0.96   1.04
## EDU_C             1.43  1.29   1.58
## GENDER2           1.40  1.10   1.80
## Duti_C            1.44  0.64   3.30
## retworkne1        0.83  0.61   1.13
## retworkne2        0.69  0.46   1.05
## Agree_C           1.70  1.13   2.56
## Extr_C            2.39  1.68   3.44
## Open_C            0.88  0.63   1.24
## Neur_C            0.87  0.64   1.19
## Duti_C:retworkne1 0.68  0.26   1.70
## Duti_C:retworkne2 1.10  0.32   3.81

# self discipline SD C predict volunteering, control: EDU, AGE, GENDER
SD <- (glm(PVol ~ EDU + GENDER + AGE + SD_C, data = SPAN, family = "binomial"))
summary(SD)

##
## Call:
## glm(formula = PVol ~ EDU + GENDER + AGE + SD_C, family = "binomial",
##     data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.3633  -1.0099  -0.7484   1.2011   2.0283
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -3.18405    1.17146  -2.718  0.00657 **
## EDU          0.37181    0.04256   8.737  < 2e-16 ***
## GENDER2      0.35076    0.10686   3.282  0.00103 **
## AGE          0.01545    0.01929   0.801  0.42302
## SD_C         0.04472    0.18873   0.237  0.81271
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2134.9  on 1587  degrees of freedom
```

```
## Residual deviance: 2041.9  on 1583  degrees of freedom
##   (42 observations deleted due to missingness)
## AIC: 2051.9
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(SD), confint(SD))), 2)
```

## *Waiting for profiling to be done...*

```
##                OR 2.5 % 97.5 %
## (Intercept) 0.04  0.00   0.41
## EDU         1.45  1.34   1.58
## GENDER2     1.42  1.15   1.75
## AGE         1.02  0.98   1.05
## SD_C        1.05  0.72   1.51
```

```
# C plus big 5 predict volunteer, control: EDU, AGE, GENDER
SD <- (glm(PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN + pneoO + SD_C,
    data = SPAN, family = "binomial"))
summary(SD)
```

```
##
## Call:
## glm(formula = PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN +
##     pneoO + SD_C, family = "binomial", data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.8083  -0.9901  -0.7075   1.1594   2.2762
##
## Coefficients:
##             Estimate Std. Error z value Pr(>|z|)
## (Intercept) -5.662394   1.529078  -3.703 0.000213 ***
## GENDER2      0.321031   0.123702   2.595 0.009454 **
## AGE          0.009808   0.021203   0.463 0.643670
## EDU          0.372116   0.049870   7.462 8.54e-14 ***
## pneoE        0.859507   0.181181   4.744 2.10e-06 ***
## pneoA        0.526029   0.207091   2.540 0.011082 *
## pneoN       -0.195088   0.157477  -1.239 0.215408
## pneoO       -0.106134   0.170721  -0.622 0.534152
## SD_C        -0.136623   0.215701  -0.633 0.526480
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
```

```
##     Null deviance: 1827.8  on 1354  degrees of freedom
## Residual deviance: 1693.0  on 1346  degrees of freedom
##   (275 observations deleted due to missingness)
## AIC: 1711
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(SD), confint(SD))), 2)

## Waiting for profiling to be done...

##               OR 2.5 % 97.5 %
## (Intercept) 0.00  0.00   0.07
## GENDER2     1.38  1.08   1.76
## AGE         1.01  0.97   1.05
## EDU         1.45  1.32   1.60
## pneoE       2.36  1.66   3.38
## pneoA       1.69  1.13   2.54
## pneoN       0.82  0.60   1.12
## pneoO       0.90  0.64   1.26
## SD_C        0.87  0.57   1.33

# interaction
SD <- glm(PVol ~ AGE_C + EDU_C + GENDER + SD_C + retworkne + (SD_C * retworkne),
    data = SPAN, family = binomial)
summary(SD)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + SD_C + retworkne +
##     (SD_C * retworkne), family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.4667  -1.0178  -0.7647   1.1970   2.1143
##
## Coefficients:
##                  Estimate Std. Error z value Pr(>|z|)
## (Intercept)     -0.505554   0.129868  -3.893 9.91e-05 ***
## AGE_C            0.009228   0.020310   0.454 0.649569
## EDU_C            0.352092   0.043924   8.016 1.09e-15 ***
## GENDER2          0.379766   0.108359   3.505 0.000457 ***
## SD_C             0.428971   0.451031   0.951 0.341559
## retworkne1      -0.101352   0.139126  -0.728 0.466316
## retworkne2      -0.374797   0.189140  -1.982 0.047525 *
## SD_C:retworkne1 -0.562929   0.505362  -1.114 0.265317
## SD_C:retworkne2 -0.030066   0.684459  -0.044 0.964962
```

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```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2089.5  on 1549  degrees of freedom
## Residual deviance: 1996.1  on 1541  degrees of freedom
##   (80 observations deleted due to missingness)
## AIC: 2014.1
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(SD), confint(SD))), 2)

## Waiting for profiling to be done...

##                   OR 2.5 % 97.5 %
## (Intercept)     0.60  0.47   0.78
## AGE_C           1.01  0.97   1.05
## EDU_C           1.42  1.31   1.55
## GENDER2         1.46  1.18   1.81
## SD_C            1.54  0.64   3.75
## retworkne1      0.90  0.69   1.19
## retworkne2      0.69  0.47   0.99
## SD_C:retworkne1 0.57  0.21   1.53
## SD_C:retworkne2 0.97  0.25   3.74

# Interaction term with EDU, Gender, Age, big 5
SD <- glm(PVol ~ AGE_C + EDU_C + GENDER + SD_C + retworkne + Agree_C + Extr_C +
    Open_C + Neur_C + (SD_C * retworkne), data = SPAN, family = binomial)
summary(SD)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + SD_C + retworkne +
##     Agree_C + Extr_C + Open_C + Neur_C + (SD_C * retworkne),
##     family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.8044  -0.9969  -0.6975   1.1568   2.3845
##
## Coefficients:
##                Estimate Std. Error z value Pr(>|z|)
## (Intercept)   -0.433620   0.147322  -2.943  0.00325 **
## AGE_C          0.001769   0.022366   0.079  0.93696
## EDU_C          0.360399   0.051664   6.976 3.04e-12 ***
```

```
## GENDER2           0.349108   0.125011   2.793  0.00523 **
## SD_C              0.429244   0.513411   0.836  0.40312
## retworkne1       -0.204396   0.156717  -1.304  0.19215
## retworkne2       -0.394868   0.212400  -1.859  0.06302 .
## Agree_C           0.536678   0.208403   2.575  0.01002 *
## Extr_C            0.887487   0.182800   4.855 1.20e-06 ***
## Open_C           -0.096782   0.173183  -0.559  0.57627
## Neur_C           -0.172028   0.160300  -1.073  0.28320
## SD_C:retworkne1  -0.757915   0.572717  -1.323  0.18571
## SD_C:retworkne2  -0.427695   0.767416  -0.557  0.57731
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1795.2  on 1327  degrees of freedom
## Residual deviance: 1660.6  on 1315  degrees of freedom
##   (302 observations deleted due to missingness)
## AIC: 1686.6
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(SD), confint(SD))), 2)

## Waiting for profiling to be done...

##                   OR 2.5 % 97.5 %
## (Intercept)     0.65  0.48   0.86
## AGE_C           1.00  0.96   1.05
## EDU_C           1.43  1.30   1.59
## GENDER2         1.42  1.11   1.81
## SD_C            1.54  0.57   4.26
## retworkne1      0.82  0.60   1.11
## retworkne2      0.67  0.44   1.02
## Agree_C         1.71  1.14   2.58
## Extr_C          2.43  1.70   3.49
## Open_C          0.91  0.65   1.27
## Neur_C          0.84  0.61   1.15
## SD_C:retworkne1 0.47  0.15   1.43
## SD_C:retworkne2 0.65  0.14   2.95

# Delib C predict volunteering, control: EDU, AGE, GENDER
Delib <- (glm(PVol ~ EDU + GENDER + AGE + Delib_C, data = SPAN, family = "binomial"))
summary(Delib)

##
## Call:
```

```
## glm(formula = PVol ~ EDU + GENDER + AGE + Delib_C, family = "binomial",
##     data = SPAN)
##
## Deviance Residuals:
##     Min      1Q  Median      3Q     Max
## -1.362  -1.013  -0.744   1.198   2.040
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) -3.222849   1.168254  -2.759 0.005803 **
## EDU          0.380071   0.042060   9.036  < 2e-16 ***
## GENDER2      0.379452   0.107003   3.546 0.000391 ***
## AGE          0.015414   0.019249   0.801 0.423256
## Delib_C     -0.002938   0.171816  -0.017 0.986355
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 2142.8  on 1590  degrees of freedom
## Residual deviance: 2045.9  on 1586  degrees of freedom
##   (39 observations deleted due to missingness)
## AIC: 2055.9
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Delib), confint(Delib))), 2)

## Waiting for profiling to be done...

##               OR 2.5 % 97.5 %
## (Intercept) 0.04  0.00   0.39
## EDU         1.46  1.35   1.59
## GENDER2     1.46  1.19   1.80
## AGE         1.02  0.98   1.05
## Delib_C     1.00  0.71   1.40

# C plus big 5 predict volunteer, control: EDU, AGE, GENDER
Delib <- (glm(PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN + pneoO + Delib_C,
    data = SPAN, family = "binomial"))
summary(Delib)

##
## Call:
## glm(formula = PVol ~ GENDER + AGE + EDU + pneoE + pneoA + pneoN +
##     pneoO + Delib_C, family = "binomial", data = SPAN)
```

```
## 
## Deviance Residuals:
##     Min      1Q   Median      3Q      Max
## -1.8651  -0.9866  -0.6983   1.1567   2.3106
## 
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) -5.767997   1.532329  -3.764 0.000167 ***
## GENDER2      0.308475   0.123880   2.490 0.012771 *
## AGE          0.008903   0.021179   0.420 0.674213
## EDU          0.366037   0.049415   7.407 1.29e-13 ***
## pneoE        0.873640   0.181359   4.817 1.46e-06 ***
## pneoA        0.561374   0.207203   2.709 0.006743 **
## pneoN       -0.168140   0.155252  -1.083 0.278804
## pneoO       -0.094256   0.171668  -0.549 0.582962
## Delib_C     -0.265323   0.199631  -1.329 0.183827
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 1829.4  on 1354  degrees of freedom
## Residual deviance: 1692.3  on 1346  degrees of freedom
##   (275 observations deleted due to missingness)
## AIC: 1710.3
## 
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Delib), confint(Delib))), 2)

## Waiting for profiling to be done...

##               OR 2.5 % 97.5 %
## (Intercept) 0.00  0.00   0.06
## GENDER2     1.36  1.07   1.74
## AGE         1.01  0.97   1.05
## EDU         1.44  1.31   1.59
## pneoE       2.40  1.68   3.43
## pneoA       1.75  1.17   2.64
## pneoN       0.85  0.62   1.15
## pneoO       0.91  0.65   1.27
## Delib_C     0.77  0.52   1.13

# interaction
Delib <- glm(PVol ~ AGE_C + EDU_C + GENDER + Delib_C + retworkne + (Delib_C *
    retworkne), data = SPAN, family = binomial)
summary(Delib)
```

```
## 
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Delib_C + retworkne +
##     (Delib_C * retworkne), family = binomial, data = SPAN)
## 
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.4689  -1.0219  -0.7555   1.1878   2.0726
## 
## Coefficients:
##                    Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -0.494419   0.129698  -3.812 0.000138 ***
## AGE_C              0.007317   0.020254   0.361 0.717912
## EDU_C              0.357789   0.043590   8.208 2.25e-16 ***
## GENDER2            0.404553   0.108606   3.725 0.000195 ***
## Delib_C            0.367998   0.382905   0.961 0.336517
## retworkne1        -0.123852   0.138840  -0.892 0.372366
## retworkne2        -0.408077   0.188727  -2.162 0.030598 *
## Delib_C:retworkne1 -0.386193   0.438224  -0.881 0.378173
## Delib_C:retworkne2 -0.866607   0.620063  -1.398 0.162230
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 2094.5  on 1550  degrees of freedom
## Residual deviance: 1996.5  on 1542  degrees of freedom
##   (79 observations deleted due to missingness)
## AIC: 2014.5
## 
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Delib), confint(Delib))), 2)

## Waiting for profiling to be done...

##                    OR 2.5 % 97.5 %
## (Intercept)       0.61  0.47   0.79
## AGE_C             1.01  0.97   1.05
## EDU_C             1.43  1.31   1.56
## GENDER2           1.50  1.21   1.86
## Delib_C           1.44  0.69   3.09
## retworkne1        0.88  0.67   1.16
## retworkne2        0.66  0.46   0.96
## Delib_C:retworkne1 0.68  0.29   1.60
## Delib_C:retworkne2 0.42  0.12   1.41
```

```
# Interaction term with EDU, Gender, Age, big 5
Delib <- glm(PVol ~ AGE_C + EDU_C + GENDER + Delib_C + retworkne + Agree_C +
    Extr_C + Open_C + Neur_C + (Delib_C * retworkne), data = SPAN, family = binomial)
summary(Delib)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Delib_C + retworkne +
##     Agree_C + Extr_C + Open_C + Neur_C + (Delib_C * retworkne),
##     family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.8692  -0.9991  -0.6960   1.1528   2.2794
##
## Coefficients:
##                    Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -0.419860   0.147095  -2.854  0.00431 **
## AGE_C             -0.001352   0.022319  -0.061  0.95171
## EDU_C              0.353306   0.051274   6.891 5.56e-12 ***
## GENDER2            0.336826   0.125356   2.687  0.00721 **
## Delib_C            0.051187   0.455677   0.112  0.91056
## retworkne1        -0.213384   0.156638  -1.362  0.17311
## retworkne2        -0.400061   0.212894  -1.879  0.06022 .
## Agree_C            0.571835   0.208673   2.740  0.00614 **
## Extr_C             0.875048   0.182669   4.790 1.66e-06 ***
## Open_C            -0.100241   0.173915  -0.576  0.56436
## Neur_C            -0.145519   0.158293  -0.919  0.35794
## Delib_C:retworkne1 -0.243054   0.513490  -0.473  0.63597
## Delib_C:retworkne2 -1.028944   0.735885  -1.398  0.16204
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1795.6  on 1326  degrees of freedom
## Residual deviance: 1658.7  on 1314  degrees of freedom
##   (303 observations deleted due to missingness)
## AIC: 1684.7
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(Delib), confint(Delib))), 2)

## Waiting for profiling to be done...

##                     OR 2.5 % 97.5 %
```

```
## (Intercept)           0.66  0.49   0.88
## AGE_C                  1.00  0.96   1.04
## EDU_C                  1.42  1.29   1.58
## GENDER2                1.40  1.10   1.79
## Delib_C                1.05  0.43   2.59
## retworkne1             0.81  0.59   1.10
## retworkne2             0.67  0.44   1.01
## Agree_C                1.77  1.18   2.67
## Extr_C                 2.40  1.68   3.44
## Open_C                 0.90  0.64   1.27
## Neur_C                 0.86  0.63   1.18
## Delib_C:retworkne1 0.78  0.29   2.14
## Delib_C:retworkne2 0.36  0.08   1.49
```

```
####################### Test simple slopes for base C interaction #######################
tempwork <- SPAN$retworkne
mat = matrix(c(0, 0, 1, 1, 0, 0), ncol = 2)  #contrasts for retired as 0
mat = matrix(c(0, 1, 0, 0, 0, 1), ncol = 2)  #contrast with unemployed as 0
mat = matrix(c(0, 1, 0, 1, 0, 0), ncol = 2)  # contrasts with working as 0
mat
```

```
##      [,1] [,2]
## [1,]   0    1
## [2,]   1    0
## [3,]   0    0
```

```
contrasts(tempwork) <- mat
contrasts(tempwork)
```

```
##          [,1] [,2]
## NE          0    1
## retired     1    0
## working     0    0
```

```
tempworkreg <- glm(PVol ~ AGE_C + EDU_C + GENDER + Con_C + tempwork + Agree_C +
    Extr_C + Open_C + Neur_C + (Con_C * tempwork), data = SPAN, family = binomial)
summary(tempworkreg)
```

```
##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Con_C + tempwork +
##     Agree_C + Extr_C + Open_C + Neur_C + (Con_C * tempwork),
##     family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -2.0017  -0.9944  -0.6814   1.1475   2.5080
```

```
## 
## Coefficients:
##                  Estimate Std. Error z value Pr(>|z|)
## (Intercept)     -0.629977   0.104257  -6.043 1.52e-09 ***
## AGE_C            0.003924   0.022471   0.175  0.86137
## EDU_C            0.370345   0.052752   7.021 2.21e-12 ***
## GENDER2          0.351502   0.126394   2.781  0.00542 **
## Con_C           -0.613551   0.239888  -2.558  0.01054 *
## tempwork1        0.197745   0.159067   1.243  0.21381
## tempwork2       -0.135116   0.184071  -0.734  0.46292
## Agree_C          0.579250   0.209978   2.759  0.00580 **
## Extr_C           0.974420   0.187836   5.188 2.13e-07 ***
## Open_C          -0.157474   0.174614  -0.902  0.36714
## Neur_C          -0.217337   0.180339  -1.205  0.22814
## Con_C:tempwork1  1.105190   0.454946   2.429  0.01513 *
## Con_C:tempwork2  1.131503   0.510302   2.217  0.02660 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
## 
## (Dispersion parameter for binomial family taken to be 1)
## 
##     Null deviance: 1768.7  on 1306  degrees of freedom
## Residual deviance: 1628.0  on 1294  degrees of freedom
##   (323 observations deleted due to missingness)
## AIC: 1654
## 
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(tempworkreg), confint(tempworkreg))), 2)

## Waiting for profiling to be done...

##                   OR 2.5 % 97.5 %
## (Intercept)     0.53  0.43   0.65
## AGE_C           1.00  0.96   1.05
## EDU_C           1.45  1.31   1.61
## GENDER2         1.42  1.11   1.82
## Con_C           0.54  0.34   0.87
## tempwork1       1.22  0.89   1.66
## tempwork2       0.87  0.61   1.25
## Agree_C         1.78  1.18   2.70
## Extr_C          2.65  1.84   3.84
## Open_C          0.85  0.61   1.20
## Neur_C          0.80  0.56   1.14
## Con_C:tempwork1 3.02  1.26   7.51
## Con_C:tempwork2 3.10  1.17   8.71
```

```
### No Controls (Big 5)
tempworkreg <- glm(PVol ~ AGE_C + EDU_C + GENDER + Con_C + tempwork + (Con_C *
    tempwork), data = SPAN, family = binomial)
summary(tempworkreg)

##
## Call:
## glm(formula = PVol ~ AGE_C + EDU_C + GENDER + Con_C + tempwork +
##     (Con_C * tempwork), family = binomial, data = SPAN)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -1.6655  -1.0150  -0.7511   1.2019   2.0890
##
## Coefficients:
##                 Estimate Std. Error z value Pr(>|z|)
## (Intercept)    -0.638430   0.095292  -6.700 2.09e-11 ***
## AGE_C           0.004608   0.020815   0.221 0.824805
## EDU_C           0.341416   0.045618   7.484 7.19e-14 ***
## GENDER2         0.433067   0.111553   3.882 0.000104 ***
## Con_C           0.063756   0.189665   0.336 0.736757
## tempwork1       0.165857   0.144416   1.148 0.250775
## tempwork2      -0.201573   0.168764  -1.194 0.232318
## Con_C:tempwork1 0.745258   0.407591   1.828 0.067483 .
## Con_C:tempwork2 0.924603   0.467307   1.979 0.047864 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 1982.3  on 1465  degrees of freedom
## Residual deviance: 1884.0  on 1457  degrees of freedom
##   (164 observations deleted due to missingness)
## AIC: 1902
##
## Number of Fisher Scoring iterations: 4

round(exp(cbind(OR = coef(tempworkreg), confint(tempworkreg))), 2)

## Waiting for profiling to be done...

##                 OR 2.5 % 97.5 %
## (Intercept)    0.53  0.44   0.64
## AGE_C          1.00  0.96   1.05
## EDU_C          1.41  1.29   1.54
## GENDER2        1.54  1.24   1.92
```

```
## Con_C            1.07  0.74   1.55
## tempwork1        1.18  0.89   1.57
## tempwork2        0.82  0.59   1.14
## Con_C:tempwork1 2.11  0.96   4.75
## Con_C:tempwork2 2.52  1.03   6.47
```