Descriptive Statistics, Bivariate Correlations, and Reliability Coefficients

Zachary Himmelberger

Import Packages

```
library(psych)
```

Import Data

```
source("Data-Processing.R")
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
## v ggplot2 3.3.5     v purrr   0.3.4
## v tibble  3.1.2     v dplyr   1.0.6
## v tidyr   1.1.3     v stringr 1.4.0
## v readr   2.0.2     v forcats 0.5.1
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x ggplot2::%+%()   masks psych::%+%()
## x ggplot2::alpha() masks psych::alpha()
## x dplyr::filter()  masks stats::filter()
## x dplyr::lag()     masks stats::lag()
```

Descriptive Statistics

For the participant section.

```
describe(analysis.df$age)
```

```
##    vars   n mean   sd median trimmed  mad   min   max range skew kurtosis   se
## X1    1 216 19.1 0.96  18.81   18.96 0.63 18.01 25.41   7.4 2.85    13.71 0.07
```

```
table(analysis.df$gender)
```

```
##
##     female       male non-binary
##        158         60          3
```

```
table(analysis.df$ethnicity)
```

```
##
##           American Indian Asian or Pacific Islander                    black
##                         2                         5                       46
##            black Hispanic                     other                    white
##                         2                         5                      154
```

```
##            white Hispanic
##                         7
```

Descriptive statistics for Table 1.

```
describe(analysis.df$attitude)
```

```
##    vars   n mean sd median trimmed  mad  min  max range skew kurtosis   se
## X1    1 221 6.98  1   7.07    7.03 1.02 4.17 8.79  4.62 -0.4    -0.49 0.07
```

```
describe(analysis.df$social.desirability)
```

```
##    vars   n  mean   sd median trimmed  mad min max range  skew kurtosis   se
## X1    1 221 16.55 5.26     17    16.6 5.93   5  30    25 -0.07     -0.6 0.35
```

```
describe(analysis.df$quantity)
```

```
##    vars   n mean   sd median trimmed  mad min max range  skew kurtosis   se
## X1    1 221 4.92 1.63      5    4.94 1.63 1.6 8.4   6.8 -0.14     -0.7 0.11
```

```
describe(analysis.df$quality)
```

```
##    vars   n mean   sd median trimmed  mad min max range  skew kurtosis   se
## X1    1 221 7.21 1.69   7.57    7.46 1.48   1   9     8 -1.43     2.24 0.11
```

```
describe(analysis.df$knowledge)
```

```
##    vars   n mean   sd median trimmed  mad min max range skew kurtosis   se
## X1    1 221 4.57 1.72    4.5    4.53 1.85   1 8.8   7.8 0.18     -0.7 0.12
```

```
describe(analysis.df$openness)
```

```
##    vars   n mean   sd median trimmed  mad min max range  skew kurtosis   se
## X1    1 221 3.47 0.59    3.5    3.48 0.59 1.8 4.7   2.9 -0.21    -0.13 0.04
```

```
describe(analysis.df$conscientiousness)
```

```
##    vars   n mean   sd median trimmed  mad  min max range  skew kurtosis   se
## X1    1 221 3.73 0.61   3.78    3.74 0.66 2.22   5  2.78 -0.24    -0.51 0.04
```

```
describe(analysis.df$extroversion)
```

```
##    vars   n mean   sd median trimmed  mad min max range  skew kurtosis   se
## X1    1 221 3.38 0.83   3.38    3.41 0.93 1.5   5   3.5 -0.17    -0.59 0.06
```

```
describe(analysis.df$agreeableness)
```

```
##    vars   n mean   sd median trimmed  mad  min max range  skew kurtosis   se
## X1    1 221 4.02 0.59   4.11    4.05 0.66 2.44   5  2.56 -0.42    -0.41 0.04
```

```
describe(analysis.df$neuroticism)
```

```
##    vars   n mean   sd median trimmed  mad min  max range skew kurtosis   se
## X1    1 221 2.94 0.81      3    2.94 0.74   1 4.75  3.75    0     -0.5 0.05
```

Bivariate Correlations

Correlations for Table 2. Note that all correlations above .132 are significant at the .05 level and all correlations above .173 are significant at the .01 level.

```
analysis.df %>%
  select(attitude, social.desirability, quantity, quality,
```

```
        knowledge, openness, conscientiousness, extroversion,
        agreeableness, neuroticism) %>%
  cor() %>%
  round(digits=2)
```

```
##                     attitude social.desirability quantity quality knowledge
## attitude                1.00                0.19     0.41    0.56      0.44
## social.desirability     0.19                1.00     0.20    0.31      0.24
## quantity                0.41                0.20     1.00    0.59      0.69
## quality                 0.56                0.31     0.59    1.00      0.59
## knowledge               0.44                0.24     0.69    0.59      1.00
## openness                0.25                0.14     0.25    0.19      0.20
## conscientiousness       0.15                0.43     0.07    0.19      0.07
## extroversion            0.14                0.27     0.25    0.24      0.23
## agreeableness           0.35                0.46     0.17    0.39      0.16
## neuroticism            -0.11               -0.45     0.01   -0.10     -0.07
##                     openness conscientiousness extroversion agreeableness
## attitude                0.25              0.15         0.14          0.35
## social.desirability     0.14              0.43         0.27          0.46
## quantity                0.25              0.07         0.25          0.17
## quality                 0.19              0.19         0.24          0.39
## knowledge               0.20              0.07         0.23          0.16
## openness                1.00              0.01         0.10          0.14
## conscientiousness       0.01              1.00         0.25          0.34
## extroversion            0.10              0.25         1.00          0.23
## agreeableness           0.14              0.34         0.23          1.00
## neuroticism            -0.07             -0.29        -0.24         -0.38
##                     neuroticism
## attitude                  -0.11
## social.desirability       -0.45
## quantity                   0.01
## quality                   -0.10
## knowledge                 -0.07
## openness                  -0.07
## conscientiousness         -0.29
## extroversion              -0.24
## agreeableness             -0.38
## neuroticism                1.00
```

Reliability Coefficients

Cronbach's alpha for each scale.

```
chronbach.df <- raw.df %>%
  drop_na(attitude, social.desirability, openness,
                      conscientiousness, extroversion, agreeableness, neuroticism,
                      quantity, quality, knowledge)
```

BFI subscales

Openness = .74

```
chronbach.df %>%
  select(BFI_5, BFI_10, BFI_15, BFI_20,
```

```
        BFI_25, BFI_30, BFI_35.r, BFI_40,
        BFI_41.r, BFI_44) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
##       0.74      0.75    0.76      0.23 2.9 0.026  3.5 0.59     0.26
##
##  lower alpha upper     95% confidence boundaries
## 0.69 0.74 0.79
##
##  Reliability if an item is dropped:
##          raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
## BFI_5         0.70      0.70    0.72      0.21 2.4    0.030 0.024  0.22
## BFI_10        0.72      0.73    0.75      0.23 2.7    0.027 0.024  0.27
## BFI_15        0.73      0.73    0.75      0.23 2.8    0.027 0.022  0.27
## BFI_20        0.69      0.70    0.71      0.20 2.3    0.031 0.021  0.24
## BFI_25        0.71      0.71    0.73      0.22 2.5    0.029 0.022  0.24
## BFI_30        0.70      0.72    0.73      0.22 2.5    0.030 0.022  0.25
## BFI_35.r      0.76      0.78    0.78      0.28 3.4    0.024 0.013  0.29
## BFI_40        0.71      0.71    0.73      0.22 2.5    0.029 0.021  0.24
## BFI_41.r      0.74      0.75    0.76      0.25 3.0    0.025 0.022  0.28
## BFI_44        0.70      0.72    0.73      0.22 2.5    0.030 0.022  0.26
##
##  Item statistics
##            n raw.r std.r r.cor r.drop mean   sd
## BFI_5    221  0.67  0.68 0.646  0.562  3.7 0.94
## BFI_10   221  0.49  0.54 0.451  0.373  4.3 0.82
## BFI_15   221  0.48  0.50 0.421  0.339  3.8 1.00
## BFI_20   221  0.69  0.71 0.684  0.587  4.0 1.00
## BFI_25   221  0.61  0.62 0.563  0.474  3.3 1.06
## BFI_30   221  0.64  0.61 0.560  0.498  3.6 1.18
## BFI_35.r 221  0.22  0.23 0.076  0.045  2.1 1.02
## BFI_40   221  0.59  0.62 0.572  0.473  3.8 0.95
## BFI_41.r 221  0.46  0.41 0.296  0.255  3.1 1.30
## BFI_44   221  0.65  0.60 0.554  0.478  3.0 1.39
##
## Non missing response frequency for each item
##             1    2    3    4    5 miss
## BFI_5    0.01 0.12 0.25 0.44 0.18    0
## BFI_10   0.02 0.01 0.09 0.44 0.44    0
## BFI_15   0.01 0.10 0.23 0.38 0.29    0
## BFI_20   0.02 0.06 0.21 0.34 0.37    0
## BFI_25   0.06 0.15 0.36 0.30 0.13    0
## BFI_30   0.06 0.13 0.21 0.33 0.27    0
## BFI_35.r 0.31 0.38 0.21 0.07 0.03    0
## BFI_40   0.02 0.07 0.23 0.43 0.25    0
## BFI_41.r 0.13 0.25 0.18 0.28 0.16    0
## BFI_44   0.19 0.21 0.18 0.24 0.17    0
```

Conscientiousness = .76

```
chronbach.df %>%
  select(BFI_3, BFI_8.r, BFI_13, BFI_18.r,
         BFI_23.r, BFI_28, BFI_33, BFI_38,
         BFI_43.r) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
##       0.76      0.78    0.79      0.29 3.6 0.023  3.7 0.61      0.3
##
##  lower alpha upper     95% confidence boundaries
## 0.72 0.76 0.81
##
##  Reliability if an item is dropped:
##          raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
## BFI_3         0.74      0.76    0.76      0.28 3.1    0.025 0.0123  0.30
## BFI_8.r       0.75      0.77    0.77      0.30 3.4    0.025 0.0110  0.30
## BFI_13        0.75      0.77    0.76      0.29 3.3    0.024 0.0085  0.29
## BFI_18.r      0.74      0.76    0.76      0.29 3.2    0.026 0.0129  0.30
## BFI_23.r      0.73      0.76    0.76      0.28 3.1    0.027 0.0145  0.27
## BFI_28        0.73      0.75    0.75      0.27 3.0    0.026 0.0108  0.28
## BFI_33        0.74      0.75    0.75      0.27 3.0    0.026 0.0102  0.30
## BFI_38        0.74      0.76    0.77      0.29 3.2    0.025 0.0133  0.30
## BFI_43.r      0.75      0.78    0.77      0.30 3.5    0.025 0.0109  0.31
##
##  Item statistics
##            n raw.r std.r r.cor r.drop mean   sd
## BFI_3    221  0.56  0.62  0.56   0.46  4.4 0.76
## BFI_8.r  221  0.60  0.54  0.45   0.43  3.1 1.23
## BFI_13   221  0.49  0.58  0.51   0.39  4.6 0.65
## BFI_18.r 221  0.67  0.60  0.52   0.48  3.4 1.44
## BFI_23.r 221  0.67  0.64  0.57   0.52  3.0 1.22
## BFI_28   221  0.63  0.67  0.63   0.51  4.1 0.89
## BFI_33   221  0.61  0.68  0.64   0.51  4.4 0.79
## BFI_38   221  0.56  0.60  0.51   0.43  4.1 0.95
## BFI_43.r 221  0.57  0.52  0.42   0.40  2.5 1.18
##
## Non missing response frequency for each item
##             1    2    3    4    5 miss
## BFI_3    0.00 0.03 0.06 0.40 0.51    0
## BFI_8.r  0.08 0.29 0.20 0.26 0.16    0
## BFI_13   0.00 0.01 0.03 0.33 0.62    0
## BFI_18.r 0.12 0.23 0.11 0.21 0.33    0
## BFI_23.r 0.11 0.30 0.20 0.26 0.12    0
## BFI_28   0.00 0.05 0.18 0.41 0.36    0
## BFI_33   0.00 0.03 0.08 0.38 0.51    0
## BFI_38   0.01 0.08 0.10 0.43 0.38    0
## BFI_43.r 0.22 0.32 0.20 0.22 0.05    0
```

Extroversion = .86

```
chronbach.df %>%
  select(BFI_1, BFI_6.r, BFI_11, BFI_16,
         BFI_21.r, BFI_26, BFI_31.r, BFI_36) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
##       0.86      0.87    0.88      0.45 6.5 0.014  3.4 0.83     0.45
##
##  lower alpha upper     95% confidence boundaries
## 0.84 0.86 0.89
##
##  Reliability if an item is dropped:
##          raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
## BFI_1         0.84      0.84    0.85      0.43 5.4    0.016 0.022  0.40
## BFI_6.r       0.85      0.85    0.86      0.45 5.8    0.015 0.019  0.47
## BFI_11        0.85      0.85    0.85      0.44 5.5    0.016 0.020  0.42
## BFI_16        0.85      0.85    0.86      0.45 5.7    0.015 0.020  0.46
## BFI_21.r      0.83      0.84    0.84      0.43 5.2    0.017 0.015  0.42
## BFI_26        0.87      0.88    0.88      0.50 7.0    0.013 0.012  0.49
## BFI_31.r      0.85      0.85    0.86      0.45 5.7    0.016 0.018  0.46
## BFI_36        0.84      0.84    0.85      0.43 5.2    0.016 0.020  0.42
##
##  Item statistics
##            n raw.r std.r r.cor r.drop mean   sd
## BFI_1    221  0.76  0.77  0.73   0.68  3.8 1.09
## BFI_6.r  221  0.71  0.70  0.65   0.60  2.7 1.18
## BFI_11   221  0.74  0.75  0.71   0.64  3.8 1.10
## BFI_16   221  0.69  0.71  0.66   0.60  3.9 0.99
## BFI_21.r 221  0.81  0.80  0.79   0.73  2.9 1.33
## BFI_26   221  0.52  0.52  0.40   0.37  3.4 1.17
## BFI_31.r 221  0.73  0.72  0.68   0.62  2.6 1.26
## BFI_36   221  0.78  0.79  0.77   0.71  4.0 1.07
##
## Non missing response frequency for each item
##             1    2    3    4    5 miss
## BFI_1    0.03 0.12 0.16 0.39 0.30    0
## BFI_6.r  0.18 0.29 0.27 0.19 0.07    0
## BFI_11   0.02 0.14 0.20 0.33 0.31    0
## BFI_16   0.01 0.09 0.23 0.35 0.33    0
## BFI_21.r 0.17 0.25 0.23 0.19 0.16    0
## BFI_26   0.08 0.16 0.21 0.38 0.17    0
## BFI_31.r 0.20 0.38 0.16 0.16 0.10    0
## BFI_36   0.02 0.11 0.12 0.36 0.38    0
```

Agreeableness = .78

```
chronbach.df %>%
  select(BFI_2.r, BFI_7, BFI_12.r, BFI_17,
         BFI_22, BFI_27.r, BFI_32, BFI_37.r,
         BFI_42) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
##       0.78      0.78    0.78      0.29 3.6 0.022    4 0.59     0.27
##
##  lower alpha upper     95% confidence boundaries
## 0.73 0.78 0.82
##
##  Reliability if an item is dropped:
##          raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
## BFI_2.r       0.75      0.77    0.76      0.29 3.3    0.025 0.0069  0.27
## BFI_7         0.76      0.76    0.75      0.29 3.2    0.024 0.0065  0.27
## BFI_12.r      0.76      0.77    0.76      0.29 3.3    0.024 0.0076  0.26
## BFI_17        0.76      0.77    0.76      0.29 3.3    0.024 0.0078  0.26
## BFI_22        0.76      0.77    0.77      0.30 3.4    0.024 0.0074  0.27
## BFI_27.r      0.75      0.76    0.75      0.29 3.2    0.025 0.0065  0.28
## BFI_32        0.75      0.75    0.74      0.28 3.0    0.025 0.0063  0.25
## BFI_37.r      0.74      0.76    0.75      0.28 3.2    0.026 0.0055  0.26
## BFI_42        0.76      0.77    0.76      0.29 3.3    0.024 0.0072  0.27
##
##  Item statistics
##            n raw.r std.r r.cor r.drop mean   sd
## BFI_2.r  221  0.62  0.59  0.52   0.47  3.5 1.08
## BFI_7    221  0.58  0.62  0.56   0.46  4.2 0.81
## BFI_12.r 221  0.58  0.58  0.50   0.44  4.2 0.97
## BFI_17   221  0.59  0.60  0.52   0.44  4.2 0.99
## BFI_22   221  0.54  0.55  0.46   0.40  4.3 0.96
## BFI_27.r 221  0.67  0.61  0.55   0.49  3.4 1.28
## BFI_32   221  0.63  0.68  0.63   0.53  4.5 0.73
## BFI_37.r 221  0.67  0.63  0.58   0.52  3.5 1.13
## BFI_42   221  0.54  0.59  0.52   0.44  4.3 0.72
##
## Non missing response frequency for each item
##             1    2    3    4    5 miss
## BFI_2.r  0.03 0.20 0.24 0.36 0.18    0
## BFI_7    0.00 0.03 0.11 0.43 0.42    0
## BFI_12.r 0.01 0.05 0.18 0.24 0.52    0
## BFI_17   0.02 0.07 0.08 0.33 0.51    0
## BFI_22   0.02 0.06 0.05 0.32 0.55    0
## BFI_27.r 0.08 0.19 0.17 0.30 0.25    0
## BFI_32   0.00 0.01 0.09 0.33 0.57    0
## BFI_37.r 0.03 0.21 0.20 0.35 0.22    0
## BFI_42   0.00 0.02 0.10 0.47 0.42    0
```

Neuroticism = .82

```
chronbach.df %>%
  select(BFI_4, BFI_9.r, BFI_14, BFI_19,
         BFI_24.r, BFI_29, BFI_34.r, BFI_39) %>%
  psych::alpha()
```

```
##
```

```
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
##       0.82      0.82    0.83      0.37 4.7 0.018  2.9 0.81     0.36
##
##  lower alpha upper     95% confidence boundaries
## 0.79 0.82 0.86
##
##  Reliability if an item is dropped:
##          raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
## BFI_4         0.81      0.81    0.81      0.38 4.3    0.019 0.0132  0.39
## BFI_9.r       0.78      0.78    0.78      0.34 3.6    0.022 0.0093  0.31
## BFI_14        0.80      0.80    0.80      0.37 4.1    0.020 0.0103  0.35
## BFI_19        0.79      0.79    0.78      0.35 3.7    0.021 0.0084  0.35
## BFI_24.r      0.81      0.81    0.81      0.38 4.3    0.019 0.0108  0.38
## BFI_29        0.81      0.81    0.81      0.37 4.2    0.020 0.0123  0.35
## BFI_34.r      0.81      0.81    0.81      0.38 4.3    0.019 0.0097  0.38
## BFI_39        0.81      0.80    0.80      0.37 4.1    0.020 0.0111  0.35
##
##  Item statistics
##            n raw.r std.r r.cor r.drop mean  sd
## BFI_4    221  0.61  0.61  0.52   0.47  2.0 1.2
## BFI_9.r  221  0.79  0.78  0.76   0.69  2.7 1.3
## BFI_14   221  0.66  0.67  0.61   0.55  3.4 1.1
## BFI_19   221  0.75  0.75  0.72   0.64  3.7 1.2
## BFI_24.r 221  0.62  0.61  0.53   0.48  2.6 1.2
## BFI_29   221  0.65  0.65  0.58   0.52  3.4 1.2
## BFI_34.r 221  0.61  0.61  0.54   0.48  2.1 1.1
## BFI_39   221  0.67  0.67  0.60   0.54  3.5 1.2
##
## Non missing response frequency for each item
##             1    2    3    4    5 miss
## BFI_4    0.45 0.25 0.14 0.12 0.04    0
## BFI_9.r  0.20 0.33 0.16 0.17 0.14    0
## BFI_14   0.07 0.15 0.22 0.41 0.16    0
## BFI_19   0.05 0.15 0.18 0.29 0.33    0
## BFI_24.r 0.23 0.31 0.20 0.18 0.08    0
## BFI_29   0.06 0.19 0.18 0.38 0.19    0
## BFI_34.r 0.34 0.38 0.13 0.11 0.04    0
## BFI_39   0.06 0.18 0.19 0.33 0.24    0
```

MRAI-R (Attitudes)

Overall = .88

```
chronbach.df %>%
  select(Attitudes_1.r, Attitudes_2, Attitudes_3,
         Attitudes_4.r, Attitudes_5, Attitudes_6.r,
         Attitudes_7.r, Attitudes_8, Attitudes_9.r,
         Attitudes_10.r, Attitudes_11, Attitudes_12.r,
         Attitudes_13.r, Attitudes_14, Attitudes_15.r,
         Attitudes_16.r, Attitudes_17, Attitudes_18.r,
         Attitudes_19, Attitudes_20.r, Attitudes_21.r,
```

```
        Attitudes_22.r, Attitudes_23.r, Attitudes_24,
        Attitudes_25.r, Attitudes_26.r, Attitudes_27.r,
        Attitudes_28, Attitudes_29) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean sd median_r
##       0.88      0.89    0.91      0.22   8 0.011    7  1     0.21
##
##  lower alpha upper     95% confidence boundaries
## 0.86 0.88 0.9
##
##  Reliability if an item is dropped:
##                raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
## Attitudes_1.r       0.88      0.89    0.91      0.22 7.8    0.012 0.011  0.21
## Attitudes_2         0.88      0.89    0.91      0.22 7.9    0.012 0.011  0.21
## Attitudes_3         0.88      0.89    0.91      0.22 8.0    0.012 0.011  0.21
## Attitudes_4.r       0.88      0.89    0.91      0.22 7.7    0.012 0.012  0.21
## Attitudes_5         0.88      0.88    0.91      0.21 7.6    0.012 0.011  0.20
## Attitudes_6.r       0.88      0.89    0.91      0.22 7.7    0.012 0.012  0.21
## Attitudes_7.r       0.88      0.89    0.91      0.22 8.0    0.011 0.011  0.21
## Attitudes_8         0.88      0.89    0.91      0.22 8.0    0.011 0.011  0.21
## Attitudes_9.r       0.88      0.89    0.91      0.22 7.9    0.012 0.011  0.21
## Attitudes_10.r      0.88      0.89    0.91      0.22 7.8    0.012 0.011  0.21
## Attitudes_11        0.88      0.89    0.91      0.22 7.9    0.012 0.011  0.21
## Attitudes_12.r      0.88      0.88    0.91      0.22 7.7    0.012 0.012  0.20
## Attitudes_13.r      0.87      0.88    0.91      0.21 7.5    0.012 0.011  0.20
## Attitudes_14        0.88      0.89    0.91      0.22 8.0    0.011 0.011  0.21
## Attitudes_15.r      0.87      0.88    0.91      0.21 7.5    0.012 0.011  0.20
## Attitudes_16.r      0.87      0.88    0.91      0.21 7.5    0.012 0.011  0.20
## Attitudes_17        0.87      0.88    0.91      0.21 7.6    0.012 0.011  0.20
## Attitudes_18.r      0.88      0.88    0.91      0.21 7.6    0.012 0.011  0.20
## Attitudes_19        0.88      0.88    0.91      0.21 7.6    0.012 0.011  0.21
## Attitudes_20.r      0.88      0.89    0.91      0.22 8.0    0.011 0.012  0.21
## Attitudes_21.r      0.88      0.89    0.91      0.22 8.0    0.011 0.012  0.21
## Attitudes_22.r      0.88      0.88    0.91      0.22 7.7    0.012 0.011  0.21
## Attitudes_23.r      0.87      0.88    0.91      0.21 7.5    0.012 0.011  0.20
## Attitudes_24        0.88      0.88    0.91      0.22 7.7    0.012 0.012  0.20
## Attitudes_25.r      0.88      0.89    0.91      0.22 7.7    0.012 0.012  0.21
## Attitudes_26.r      0.88      0.89    0.91      0.22 8.0    0.011 0.011  0.21
## Attitudes_27.r      0.88      0.88    0.91      0.21 7.6    0.012 0.011  0.20
## Attitudes_28        0.88      0.89    0.91      0.22 8.0    0.011 0.011  0.21
## Attitudes_29        0.87      0.88    0.91      0.21 7.6    0.012 0.011  0.21
##
##  Item statistics
##                  n raw.r std.r r.cor r.drop mean  sd
## Attitudes_1.r  221  0.52  0.49  0.48   0.45  5.1 2.4
## Attitudes_2    221  0.43  0.42  0.39   0.36  6.8 2.4
## Attitudes_3    221  0.32  0.36  0.33   0.28  8.6 1.1
## Attitudes_4.r  221  0.51  0.51  0.48   0.46  6.4 1.9
## Attitudes_5    221  0.56  0.58  0.57   0.52  8.0 1.6
```

```
## Attitudes_6.r  221  0.53  0.52  0.49   0.46  6.4 2.4
## Attitudes_7.r  221  0.39  0.38  0.35   0.32  5.3 2.5
## Attitudes_8    221  0.36  0.35  0.31   0.28  6.8 2.3
## Attitudes_9.r  221  0.40  0.40  0.36   0.34  6.6 2.1
## Attitudes_10.r 221  0.48  0.48  0.46   0.42  6.4 2.0
## Attitudes_11   221  0.43  0.44  0.41   0.37  7.7 2.1
## Attitudes_12.r 221  0.56  0.54  0.53   0.50  6.8 2.5
## Attitudes_13.r 221  0.63  0.62  0.61   0.59  7.0 1.9
## Attitudes_14   221  0.38  0.38  0.34   0.31  6.9 2.5
## Attitudes_15.r 221  0.61  0.62  0.61   0.57  7.3 2.1
## Attitudes_16.r 221  0.64  0.66  0.65   0.61  7.7 1.6
## Attitudes_17   221  0.62  0.61  0.59   0.57  6.5 2.1
## Attitudes_18.r 221  0.54  0.57  0.56   0.50  8.2 1.5
## Attitudes_19   221  0.56  0.59  0.58   0.53  8.1 1.4
## Attitudes_20.r 221  0.36  0.37  0.33   0.30  7.7 1.9
## Attitudes_21.r 221  0.38  0.37  0.33   0.31  6.3 2.3
## Attitudes_22.r 221  0.51  0.54  0.52   0.47  8.3 1.5
## Attitudes_23.r 221  0.66  0.64  0.64   0.61  6.4 2.4
## Attitudes_24   221  0.55  0.53  0.51   0.48  6.2 2.5
## Attitudes_25.r 221  0.49  0.51  0.48   0.44  7.8 1.8
## Attitudes_26.r 221  0.32  0.34  0.29   0.26  6.8 1.9
## Attitudes_27.r 221  0.57  0.60  0.60   0.54  8.3 1.4
## Attitudes_28   221  0.36  0.33  0.30   0.28  6.4 2.6
## Attitudes_29   221  0.60  0.58  0.57   0.55  5.7 2.2
##
## Non missing response frequency for each item
##                    1    2    3    4    5    6    7    8    9 miss
## Attitudes_1.r  0.10 0.06 0.14 0.12 0.14 0.11 0.15 0.09 0.10    0
## Attitudes_2    0.07 0.02 0.02 0.05 0.11 0.07 0.16 0.14 0.37    0
## Attitudes_3    0.01 0.00 0.00 0.01 0.01 0.01 0.05 0.10 0.81    0
## Attitudes_4.r  0.01 0.00 0.06 0.08 0.17 0.19 0.17 0.16 0.16    0
## Attitudes_5    0.00 0.00 0.02 0.02 0.04 0.04 0.14 0.13 0.61    0
## Attitudes_6.r  0.05 0.03 0.08 0.07 0.12 0.08 0.15 0.14 0.27    0
## Attitudes_7.r  0.10 0.05 0.14 0.07 0.21 0.10 0.14 0.07 0.14    0
## Attitudes_8    0.03 0.05 0.05 0.05 0.10 0.09 0.14 0.15 0.34    0
## Attitudes_9.r  0.02 0.03 0.04 0.09 0.13 0.07 0.23 0.19 0.20    0
## Attitudes_10.r 0.02 0.01 0.04 0.09 0.18 0.14 0.17 0.15 0.20    0
## Attitudes_11   0.04 0.02 0.02 0.02 0.04 0.04 0.11 0.18 0.53    0
## Attitudes_12.r 0.06 0.02 0.05 0.06 0.10 0.05 0.11 0.14 0.40    0
## Attitudes_13.r 0.00 0.01 0.03 0.06 0.13 0.10 0.16 0.21 0.29    0
## Attitudes_14   0.03 0.06 0.06 0.04 0.06 0.08 0.10 0.14 0.42    0
## Attitudes_15.r 0.02 0.01 0.05 0.06 0.07 0.08 0.13 0.15 0.43    0
## Attitudes_16.r 0.00 0.01 0.00 0.04 0.06 0.10 0.14 0.22 0.43    0
## Attitudes_17   0.03 0.01 0.06 0.05 0.17 0.14 0.18 0.13 0.23    0
## Attitudes_18.r 0.00 0.01 0.00 0.02 0.05 0.03 0.06 0.12 0.70    0
## Attitudes_19   0.00 0.00 0.01 0.00 0.03 0.06 0.12 0.17 0.59    0
## Attitudes_20.r 0.02 0.00 0.01 0.05 0.05 0.05 0.11 0.19 0.52    0
## Attitudes_21.r 0.06 0.02 0.06 0.08 0.12 0.13 0.15 0.17 0.22    0
## Attitudes_22.r 0.01 0.00 0.01 0.01 0.03 0.03 0.04 0.16 0.70    0
## Attitudes_23.r 0.05 0.03 0.08 0.08 0.10 0.10 0.16 0.14 0.26    0
## Attitudes_24   0.06 0.05 0.06 0.08 0.09 0.11 0.14 0.15 0.25    0
## Attitudes_25.r 0.01 0.01 0.02 0.03 0.07 0.05 0.08 0.20 0.53    0
## Attitudes_26.r 0.01 0.01 0.02 0.05 0.20 0.10 0.19 0.19 0.23    0
## Attitudes_27.r 0.00 0.01 0.00 0.04 0.01 0.03 0.05 0.21 0.65    0
```

```
## Attitudes_28   0.08 0.05 0.05 0.08 0.10 0.07 0.13 0.14 0.31    0
## Attitudes_29   0.05 0.04 0.09 0.10 0.22 0.14 0.13 0.10 0.14    0
```

Integration-segregation = .77

```
chronbach.df %>%
  select(Attitudes_1.r, Attitudes_2, Attitudes_7.r, Attitudes_13.r,
         Attitudes_17, Attitudes_23.r, Attitudes_29) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean  sd median_r
##       0.77      0.78    0.78      0.34 3.5 0.023  6.1 1.5     0.32
##
##  lower alpha upper     95% confidence boundaries
## 0.73 0.77 0.82
##
##  Reliability if an item is dropped:
##                raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
## Attitudes_1.r       0.73      0.74    0.74      0.32 2.9    0.028 0.020  0.32
## Attitudes_2         0.78      0.78    0.77      0.38 3.6    0.023 0.015  0.38
## Attitudes_7.r       0.78      0.79    0.77      0.38 3.7    0.023 0.013  0.38
## Attitudes_13.r      0.74      0.75    0.74      0.33 2.9    0.027 0.024  0.32
## Attitudes_17        0.74      0.75    0.74      0.34 3.0    0.027 0.020  0.32
## Attitudes_23.r      0.72      0.73    0.71      0.31 2.7    0.029 0.013  0.32
## Attitudes_29        0.71      0.72    0.71      0.30 2.6    0.030 0.015  0.32
##
##  Item statistics
##                   n raw.r std.r r.cor r.drop mean  sd
## Attitudes_1.r   221  0.70  0.69  0.62   0.55  5.1 2.4
## Attitudes_2     221  0.53  0.53  0.40   0.33  6.8 2.4
## Attitudes_7.r   221  0.53  0.52  0.39   0.32  5.3 2.5
## Attitudes_13.r 221  0.66  0.68  0.61   0.54  7.0 1.9
## Attitudes_17    221  0.65  0.66  0.58   0.51  6.5 2.1
## Attitudes_23.r 221  0.75  0.75  0.72   0.62  6.4 2.4
## Attitudes_29    221  0.77  0.76  0.74   0.65  5.7 2.2
##
## Non missing response frequency for each item
##                    1    2    3    4    5    6    7    8    9 miss
## Attitudes_1.r   0.10 0.06 0.14 0.12 0.14 0.11 0.15 0.09 0.10    0
## Attitudes_2     0.07 0.02 0.02 0.05 0.11 0.07 0.16 0.14 0.37    0
## Attitudes_7.r   0.10 0.05 0.14 0.07 0.21 0.10 0.14 0.07 0.14    0
## Attitudes_13.r 0.00 0.01 0.03 0.06 0.13 0.10 0.16 0.21 0.29    0
## Attitudes_17    0.03 0.01 0.06 0.05 0.17 0.14 0.18 0.13 0.23    0
## Attitudes_23.r 0.05 0.03 0.08 0.08 0.10 0.10 0.16 0.14 0.26    0
## Attitudes_29    0.05 0.04 0.09 0.10 0.22 0.14 0.13 0.10 0.14    0
```

Social distance = .77

```
chronbach.df %>%
  select(Attitudes_3, Attitudes_5, Attitudes_11, Attitudes_15.r,
         Attitudes_18.r, Attitudes_19, Attitudes_24, Attitudes_27.r) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean  sd median_r
##       0.77      0.79    0.79      0.32 3.8 0.023  7.8 1.1     0.31
##
##  lower alpha upper     95% confidence boundaries
## 0.73 0.77 0.81
##
##  Reliability if an item is dropped:
##                raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
## Attitudes_3         0.77      0.79    0.78      0.35 3.8    0.024 0.008  0.34
## Attitudes_5         0.73      0.76    0.75      0.31 3.2    0.026 0.012  0.30
## Attitudes_11        0.75      0.78    0.78      0.33 3.5    0.025 0.012  0.32
## Attitudes_15.r      0.73      0.76    0.76      0.31 3.1    0.027 0.011  0.30
## Attitudes_18.r      0.74      0.77    0.76      0.32 3.3    0.025 0.012  0.32
## Attitudes_19        0.73      0.75    0.76      0.30 3.0    0.027 0.012  0.29
## Attitudes_24        0.77      0.78    0.78      0.34 3.6    0.023 0.012  0.34
## Attitudes_27.r      0.73      0.76    0.75      0.31 3.1    0.026 0.011  0.30
##
##  Item statistics
##                   n raw.r std.r r.cor r.drop mean  sd
## Attitudes_3     221  0.45  0.52  0.42   0.34  8.6 1.1
## Attitudes_5     221  0.67  0.68  0.64   0.55  8.0 1.6
## Attitudes_11    221  0.62  0.59  0.50   0.44  7.7 2.1
## Attitudes_15.r 221  0.70  0.69  0.64   0.55  7.3 2.1
## Attitudes_18.r 221  0.62  0.63  0.57   0.49  8.2 1.5
## Attitudes_19    221  0.69  0.71  0.66   0.60  8.1 1.4
## Attitudes_24    221  0.64  0.57  0.46   0.41  6.2 2.5
## Attitudes_27.r 221  0.68  0.70  0.65   0.57  8.3 1.4
##
## Non missing response frequency for each item
##                    1    2    3    4    5    6    7    8    9 miss
## Attitudes_3     0.01 0.00 0.00 0.01 0.01 0.01 0.05 0.10 0.81    0
## Attitudes_5     0.00 0.00 0.02 0.02 0.04 0.04 0.14 0.13 0.61    0
## Attitudes_11    0.04 0.02 0.02 0.02 0.04 0.04 0.11 0.18 0.53    0
## Attitudes_15.r 0.02 0.01 0.05 0.06 0.07 0.08 0.13 0.15 0.43    0
## Attitudes_18.r 0.00 0.01 0.00 0.02 0.05 0.03 0.06 0.12 0.70    0
## Attitudes_19    0.00 0.00 0.01 0.00 0.03 0.06 0.12 0.17 0.59    0
## Attitudes_24    0.06 0.05 0.06 0.08 0.09 0.11 0.14 0.15 0.25    0
## Attitudes_27.r 0.00 0.01 0.00 0.04 0.01 0.03 0.05 0.21 0.65    0
```

Private rights = .58

```
chronbach.df %>%
  select(Attitudes_6.r, Attitudes_8, Attitudes_12.r, Attitudes_14,
         Attitudes_20.r, Attitudes_22.r, Attitudes_28) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean  sd median_r
```

```
##       0.58      0.59    0.57      0.17 1.4 0.043    7 1.2     0.16
##
##  lower alpha upper     95% confidence boundaries
## 0.49 0.58 0.66
##
##  Reliability if an item is dropped:
##                raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
## Attitudes_6.r       0.51      0.52    0.49      0.15 1.1    0.051 0.0044  0.14
## Attitudes_8         0.53      0.55    0.53      0.17 1.2    0.048 0.0093  0.16
## Attitudes_12.r      0.51      0.53    0.50      0.16 1.1    0.050 0.0057  0.16
## Attitudes_14        0.56      0.57    0.54      0.18 1.3    0.044 0.0072  0.18
## Attitudes_20.r      0.56      0.57    0.54      0.18 1.3    0.046 0.0067  0.19
## Attitudes_22.r      0.54      0.54    0.52      0.16 1.2    0.048 0.0080  0.16
## Attitudes_28        0.55      0.56    0.54      0.18 1.3    0.047 0.0073  0.14
##
##  Item statistics
##                   n raw.r std.r r.cor r.drop mean  sd
## Attitudes_6.r   221  0.61  0.60  0.52   0.38  6.4 2.4
## Attitudes_8     221  0.55  0.54  0.40   0.31  6.8 2.3
## Attitudes_12.r 221  0.60  0.58  0.48   0.36  6.8 2.5
## Attitudes_14    221  0.50  0.49  0.33   0.23  6.9 2.5
## Attitudes_20.r 221  0.45  0.49  0.33   0.24  7.7 1.9
## Attitudes_22.r 221  0.48  0.56  0.44   0.33  8.3 1.5
## Attitudes_28    221  0.55  0.50  0.34   0.27  6.4 2.6
##
## Non missing response frequency for each item
##                    1    2    3    4    5    6    7    8    9 miss
## Attitudes_6.r   0.05 0.03 0.08 0.07 0.12 0.08 0.15 0.14 0.27    0
## Attitudes_8     0.03 0.05 0.05 0.05 0.10 0.09 0.14 0.15 0.34    0
## Attitudes_12.r 0.06 0.02 0.05 0.06 0.10 0.05 0.11 0.14 0.40    0
## Attitudes_14    0.03 0.06 0.06 0.04 0.06 0.08 0.10 0.14 0.42    0
## Attitudes_20.r 0.02 0.00 0.01 0.05 0.05 0.05 0.11 0.19 0.52    0
## Attitudes_22.r 0.01 0.00 0.01 0.01 0.03 0.03 0.04 0.16 0.70    0
## Attitudes_28    0.08 0.05 0.05 0.08 0.10 0.07 0.13 0.14 0.31    0
```

Subtle derogatory beliefs = .64

```
chronbach.df %>%
  select(Attitudes_4.r, Attitudes_9.r, Attitudes_10.r, Attitudes_16.r,
         Attitudes_21.r, Attitudes_25.r, Attitudes_26.r) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean  sd median_r
##       0.64      0.66    0.64      0.22 1.9 0.037  6.8 1.1      0.2
##
##  lower alpha upper     95% confidence boundaries
## 0.57 0.64 0.72
##
##  Reliability if an item is dropped:
##                raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
## Attitudes_4.r       0.62      0.64    0.61      0.23 1.7    0.040 0.0122  0.20
```

```
## Attitudes_9.r       0.61      0.63    0.60      0.22 1.7    0.041 0.0081  0.20
## Attitudes_10.r      0.58      0.60    0.57      0.20 1.5    0.044 0.0067  0.19
## Attitudes_16.r      0.56      0.57    0.54      0.18 1.3    0.046 0.0060  0.15
## Attitudes_21.r      0.65      0.66    0.63      0.24 1.9    0.036 0.0099  0.21
## Attitudes_25.r      0.60      0.61    0.59      0.21 1.6    0.042 0.0103  0.20
## Attitudes_26.r      0.63      0.65    0.63      0.24 1.9    0.039 0.0111  0.20
##
##  Item statistics
##                   n raw.r std.r r.cor r.drop mean  sd
## Attitudes_4.r   221  0.53  0.54  0.40   0.32  6.4 1.9
## Attitudes_9.r   221  0.58  0.57  0.45   0.35  6.6 2.1
## Attitudes_10.r 221  0.64  0.64  0.57   0.44  6.4 2.0
## Attitudes_16.r 221  0.68  0.70  0.67   0.54  7.7 1.6
## Attitudes_21.r 221  0.51  0.47  0.30   0.24  6.3 2.3
## Attitudes_25.r 221  0.58  0.60  0.49   0.39  7.8 1.8
## Attitudes_26.r 221  0.49  0.49  0.33   0.27  6.8 1.9
##
## Non missing response frequency for each item
##                    1    2    3    4    5    6    7    8    9 miss
## Attitudes_4.r  0.01 0.00 0.06 0.08 0.17 0.19 0.17 0.16 0.16    0
## Attitudes_9.r  0.02 0.03 0.04 0.09 0.13 0.07 0.23 0.19 0.20    0
## Attitudes_10.r 0.02 0.01 0.04 0.09 0.18 0.14 0.17 0.15 0.20    0
## Attitudes_16.r 0.00 0.01 0.00 0.04 0.06 0.10 0.14 0.22 0.43    0
## Attitudes_21.r 0.06 0.02 0.06 0.08 0.12 0.13 0.15 0.17 0.22    0
## Attitudes_25.r 0.01 0.01 0.02 0.03 0.07 0.05 0.08 0.20 0.53    0
## Attitudes_26.r 0.01 0.01 0.02 0.05 0.20 0.10 0.19 0.19 0.23    0
```

Contact and Knowledge

Quality of contact = .89

```
chronbach.df %>%
  select(Quality_2, Quality_3, Quality_4,
         Quality_5, Quality_6, Quality_7.r, Quality_8.r) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean  sd median_r
##       0.89      0.91    0.93      0.59 9.9 0.011  7.2 1.7     0.57
##
##  lower alpha upper     95% confidence boundaries
## 0.87 0.89 0.92
##
##  Reliability if an item is dropped:
##             raw_alpha std.alpha G6(smc) average_r  S/N alpha se var.r med.r
## Quality_2        0.87      0.89    0.91      0.57  7.8   0.0143 0.033  0.56
## Quality_3        0.92      0.92    0.93      0.65 11.0   0.0088 0.023  0.66
## Quality_4        0.87      0.89    0.91      0.57  7.8   0.0141 0.035  0.56
## Quality_5        0.86      0.88    0.89      0.55  7.3   0.0151 0.028  0.56
## Quality_6        0.86      0.88    0.89      0.55  7.3   0.0153 0.029  0.53
## Quality_7.r      0.88      0.90    0.91      0.59  8.7   0.0128 0.038  0.53
## Quality_8.r      0.90      0.92    0.92      0.64 10.8   0.0112 0.024  0.64
```

```
##
##  Item statistics
##                n raw.r std.r r.cor r.drop mean  sd
## Quality_2    214  0.87  0.86  0.84   0.80  7.7 1.7
## Quality_3    215  0.69  0.65  0.55   0.52  4.9 2.8
## Quality_4    215  0.85  0.86  0.84   0.79  7.8 1.7
## Quality_5    217  0.91  0.91  0.92   0.86  7.6 1.8
## Quality_6    216  0.91  0.91  0.92   0.87  7.4 1.9
## Quality_7.r  217  0.80  0.79  0.75   0.69  7.6 1.8
## Quality_8.r  216  0.64  0.65  0.58   0.51  7.9 1.7
##
## Non missing response frequency for each item
##                 1    2    3    4    5    6    7    8    9 miss
## Quality_2    0.00 0.00 0.02 0.04 0.07 0.08 0.10 0.16 0.51 0.03
## Quality_3    0.15 0.12 0.12 0.08 0.09 0.11 0.13 0.02 0.19 0.03
## Quality_4    0.00 0.00 0.02 0.03 0.06 0.07 0.09 0.20 0.53 0.03
## Quality_5    0.01 0.01 0.02 0.05 0.05 0.05 0.18 0.18 0.45 0.02
## Quality_6    0.01 0.01 0.02 0.05 0.08 0.07 0.17 0.19 0.40 0.02
## Quality_7.r  0.01 0.01 0.03 0.03 0.04 0.07 0.12 0.28 0.41 0.02
## Quality_8.r  0.01 0.00 0.01 0.04 0.02 0.06 0.09 0.21 0.55 0.02
```

Quantity of contact = .78

```
chronbach.df %>%
  select(Quantity_1, Quantity_2, Quantity_3, Quantity_4.r,
         Quantity_5, Quantity_6, Quantity_7, Quantity_8,
         Quantity_9, Quantity_10) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N   ase mean  sd median_r
##       0.78      0.78    0.81      0.27 3.6 0.021  4.9 1.6     0.29
##
##  lower alpha upper     95% confidence boundaries
## 0.74 0.78 0.82
##
##  Reliability if an item is dropped:
##              raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
## Quantity_1        0.74      0.74    0.76      0.24 2.8    0.026 0.028  0.26
## Quantity_2        0.76      0.76    0.79      0.26 3.2    0.024 0.038  0.28
## Quantity_3        0.82      0.82    0.83      0.33 4.5    0.018 0.020  0.32
## Quantity_4.r      0.76      0.76    0.78      0.26 3.2    0.024 0.030  0.29
## Quantity_5        0.76      0.76    0.78      0.26 3.2    0.024 0.034  0.28
## Quantity_6        0.74      0.74    0.76      0.24 2.9    0.025 0.032  0.26
## Quantity_7        0.74      0.75    0.77      0.25 2.9    0.025 0.030  0.27
## Quantity_8        0.78      0.79    0.81      0.29 3.7    0.022 0.036  0.31
## Quantity_9        0.77      0.77    0.80      0.27 3.4    0.023 0.039  0.30
## Quantity_10       0.76      0.76    0.79      0.26 3.2    0.023 0.039  0.28
##
##  Item statistics
##                n raw.r std.r r.cor r.drop mean  sd
## Quantity_1   217  0.75  0.76 0.764  0.679  6.8 2.4
```

```
## Quantity_2   199  0.63  0.62 0.546  0.492  4.8 3.1
## Quantity_3   213  0.20  0.19 0.022  0.015  6.5 2.9
## Quantity_4.r 220  0.63  0.62 0.589  0.498  6.4 2.6
## Quantity_5   211  0.62  0.63 0.589  0.500  4.8 2.9
## Quantity_6   216  0.71  0.72 0.712  0.626  4.5 2.7
## Quantity_7   219  0.72  0.72 0.706  0.610  5.7 2.9
## Quantity_8   208  0.39  0.43 0.322  0.278  2.6 2.1
## Quantity_9   197  0.57  0.55 0.457  0.409  3.2 2.9
## Quantity_10  206  0.61  0.61 0.545  0.477  3.4 2.8
##
## Non missing response frequency for each item
##                 1    2    3    4    5    6    7    8    9 miss
## Quantity_1   0.04 0.05 0.05 0.05 0.05 0.10 0.20 0.12 0.35 0.02
## Quantity_2   0.22 0.13 0.09 0.03 0.09 0.09 0.07 0.09 0.20 0.10
## Quantity_3   0.12 0.06 0.03 0.03 0.06 0.08 0.12 0.12 0.39 0.04
## Quantity_4.r 0.08 0.03 0.08 0.05 0.08 0.07 0.10 0.25 0.25 0.00
## Quantity_5   0.20 0.11 0.06 0.07 0.11 0.11 0.14 0.05 0.16 0.05
## Quantity_6   0.20 0.14 0.10 0.06 0.08 0.15 0.09 0.08 0.10 0.02
## Quantity_7   0.12 0.10 0.07 0.05 0.08 0.08 0.12 0.14 0.23 0.01
## Quantity_8   0.42 0.22 0.12 0.07 0.05 0.04 0.01 0.03 0.03 0.06
## Quantity_9   0.50 0.12 0.05 0.04 0.04 0.05 0.06 0.02 0.13 0.11
## Quantity_10  0.43 0.12 0.06 0.05 0.07 0.09 0.06 0.05 0.07 0.07
```

Knowledge = .90

```
chronbach.df %>%
  select(Knowledge_1, Knowledge_2, Knowledge_3, Knowledge_4,
         Knowledge_5, Knowledge_6, Knowledge_7, Knowledge_8,
         Knowledge_9.r, Knowledge_10, Knowledge_11.r, Knowledge_12,
         Knowledge_13, Knowledge_14, Knowledge_15, Knowledge_16) %>%
  psych::alpha()
```

```
##
## Reliability analysis
## Call: psych::alpha(x = .)
##
##   raw_alpha std.alpha G6(smc) average_r S/N    ase mean  sd median_r
##        0.9       0.9    0.92      0.36 8.9 0.0098  4.6 1.7     0.34
##
##  lower alpha upper     95% confidence boundaries
## 0.88 0.9 0.92
##
##  Reliability if an item is dropped:
##                raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
## Knowledge_1         0.89      0.89    0.91      0.36 8.3   0.0105 0.022  0.34
## Knowledge_2         0.89      0.89    0.91      0.34 7.8   0.0109 0.020  0.33
## Knowledge_3         0.90      0.90    0.92      0.37 8.9   0.0097 0.021  0.36
## Knowledge_4         0.90      0.90    0.92      0.36 8.6   0.0101 0.023  0.36
## Knowledge_5         0.89      0.89    0.91      0.35 8.1   0.0107 0.023  0.33
## Knowledge_6         0.90      0.90    0.92      0.38 9.2   0.0098 0.018  0.36
## Knowledge_7         0.89      0.89    0.91      0.35 8.0   0.0108 0.021  0.33
## Knowledge_8         0.89      0.89    0.91      0.35 8.1   0.0106 0.021  0.34
## Knowledge_9.r       0.90      0.90    0.92      0.37 9.0   0.0099 0.020  0.36
## Knowledge_10        0.89      0.89    0.91      0.34 7.7   0.0111 0.020  0.33
## Knowledge_11.r      0.89      0.89    0.91      0.36 8.4   0.0103 0.022  0.35
```

```
## Knowledge_12        0.90      0.90    0.92      0.36 8.6   0.0101 0.022  0.35
## Knowledge_13        0.89      0.89    0.91      0.35 8.0   0.0108 0.020  0.34
## Knowledge_14        0.89      0.89    0.91      0.35 8.0   0.0109 0.020  0.34
## Knowledge_15        0.90      0.90    0.91      0.36 8.6   0.0101 0.021  0.36
## Knowledge_16        0.89      0.89    0.91      0.36 8.4   0.0103 0.022  0.34
##
##  Item statistics
##                   n raw.r std.r r.cor r.drop mean  sd
## Knowledge_1     217  0.64  0.65  0.62   0.58  5.6 2.7
## Knowledge_2     220  0.76  0.78  0.77   0.73  4.4 2.4
## Knowledge_3     200  0.50  0.49  0.43   0.40  3.8 3.0
## Knowledge_4     215  0.56  0.55  0.51   0.48  6.2 2.8
## Knowledge_5     212  0.72  0.71  0.68   0.65  4.5 3.1
## Knowledge_6     185  0.38  0.38  0.32   0.30  2.2 2.1
## Knowledge_7     217  0.74  0.74  0.73   0.69  4.1 2.6
## Knowledge_8     218  0.70  0.70  0.68   0.64  3.6 2.5
## Knowledge_9.r   218  0.45  0.46  0.41   0.37  6.0 2.4
## Knowledge_10    220  0.80  0.81  0.81   0.77  5.2 2.5
## Knowledge_11.r 214  0.61  0.60  0.58   0.53  6.0 2.7
## Knowledge_12    214  0.55  0.56  0.53   0.48  3.0 2.5
## Knowledge_13    218  0.74  0.74  0.73   0.69  3.9 2.6
## Knowledge_14    216  0.75  0.74  0.75   0.70  4.2 2.8
## Knowledge_15    214  0.58  0.56  0.54   0.50  4.9 2.9
## Knowledge_16    205  0.63  0.61  0.58   0.55  5.0 3.1
##
## Non missing response frequency for each item
##                    1    2    3    4    5    6    7    8    9 miss
## Knowledge_1     0.10 0.09 0.10 0.07 0.07 0.12 0.18 0.10 0.18 0.02
## Knowledge_2     0.12 0.18 0.13 0.09 0.15 0.14 0.08 0.04 0.08 0.00
## Knowledge_3     0.36 0.14 0.07 0.03 0.09 0.06 0.09 0.03 0.14 0.10
## Knowledge_4     0.14 0.03 0.04 0.02 0.07 0.15 0.13 0.13 0.28 0.03
## Knowledge_5     0.29 0.10 0.08 0.04 0.07 0.08 0.11 0.07 0.17 0.04
## Knowledge_6     0.61 0.15 0.06 0.03 0.04 0.03 0.03 0.03 0.02 0.16
## Knowledge_7     0.26 0.11 0.08 0.09 0.17 0.10 0.07 0.06 0.07 0.02
## Knowledge_8     0.31 0.15 0.08 0.09 0.15 0.06 0.07 0.03 0.06 0.01
## Knowledge_9.r   0.05 0.06 0.07 0.07 0.18 0.10 0.15 0.13 0.19 0.01
## Knowledge_10    0.09 0.09 0.10 0.08 0.18 0.11 0.15 0.07 0.14 0.00
## Knowledge_11.r 0.05 0.09 0.10 0.08 0.08 0.07 0.10 0.18 0.25 0.03
## Knowledge_12    0.41 0.18 0.10 0.05 0.06 0.06 0.05 0.05 0.04 0.03
## Knowledge_13    0.24 0.17 0.11 0.08 0.10 0.09 0.09 0.05 0.06 0.01
## Knowledge_14    0.24 0.16 0.10 0.06 0.06 0.06 0.13 0.09 0.08 0.02
## Knowledge_15    0.21 0.10 0.07 0.05 0.07 0.11 0.14 0.10 0.14 0.03
## Knowledge_16    0.24 0.08 0.07 0.03 0.07 0.08 0.13 0.12 0.18 0.07
```