Supplementary Material 2

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Inter-rater reliability methods

As Cohen's Kappa resulted in suspicious values during the first step of the agreement analysis, we have decided to use other inter reliability tests to examine the degree of agreement. It was possible to use Matthews correlation coefficient or other methods such as Gwet's AC1. The latter was chosen because it overcomes problems associated with Cohen's Kappa if the degree of agreement is in fact high (Gwet, 2008). Moreover, Gwet's AC1 also does not have assumptions, which are sometimes difficult to fulfil, e.g., independence between raters (Gwet, 2008). The text below presents statistical calculations conducted in the present study to evaluate the degree of agreement between raters.

```
data.abs.scr <- openxlsx::read.xlsx(
  paste0(getwd(),"/Data/R_data_study_selection.xlsx"))
data.qual.scr <- openxlsx::read.xlsx(
  paste0(getwd(),"/Data/R_data_quality_assessment.xlsx"))
```

```
# set seed in order to assure computaional reproducitiblity
set.seed(874354)


# percent ageement
agree(data.abs.scr, tolerance=0)
```

```
##  Percentage agreement (Tolerance=0)
##
##  Subjects = 627
##    Raters = 2
##   %-agree = 93.3
```

```
# cohens kappa
# psych package
psych::cohen.kappa(data.abs.scr)
```

```
## Call: cohen.kappa1(x = x, w = w, n.obs = n.obs, alpha = alpha, levels = levels)
##
## Cohen Kappa and Weighted Kappa correlation coefficients and confidence boundaries
##                  lower estimate upper
## unweighted kappa  0.11     0.25   0.4
## weighted kappa    0.11     0.25   0.4
##
##  Number of subjects = 627
```

```
# irr package
# kappa2(ratings = data.abs.scr) # cohens kappa yields
#contraceptive values, thus other methods
#such as. Matthews correlation coefficient
#or Gwet´s AC1 migt be used for further analysis.

# Matthews correlation coefficient (dodat zdůvodnění proč zrovna toto)
# mltools::mcc(data.abs.scr$PM, data.abs.scr$JH) %>% round(digits = 2)

# Gwet´s AC1
gwen=irrCAC::gwet.ac1.raw(ratings = data.abs.scr)
gwen
```

```
## $est
##   coeff.name        pa         pe coeff.val coeff.se      conf.int p.value
## 1        AC1 0.9330144 0.08822549   0.92653  0.01169 (0.904,0.949)       0
##       w.name
## 1 unweighted
##
## $weights
##      [,1] [,2]
## [1,]    1    0
## [2,]    0    1
##
## $categories
## [1] 0 1
```

```r
# percent ageement
agree(data.qual.scr, tolerance=0) # 96%
```

```
##  Percentage agreement (Tolerance=0)
##
##  Subjects = 143
##    Raters = 2
##   %-agree = 95.8
```

```r
# cohens kappa
#..............
# psych package
psych::cohen.kappa(data.qual.scr) # 0.9
```

```
## Call: cohen.kappa1(x = x, w = w, n.obs = n.obs, alpha = alpha, levels = levels)
##
## Cohen Kappa and Weighted Kappa correlation coefficients and confidence boundaries
##                  lower estimate upper
## unweighted kappa  0.82      0.9  0.98
## weighted kappa    0.82      0.9  0.98
##
##  Number of subjects = 143
```

```r
# irr package
kappa2(ratings = data.qual.scr) # 0.9
```

```
##  Cohen's Kappa for 2 Raters (Weights: unweighted)
##
##  Subjects = 143
```

```
##    Raters = 2
##     Kappa = 0.9
##
##         z = 10.8
##   p-value = 0
```

```
# Gwet´s AC1
gwen=irrCAC::gwet.ac1.raw(ratings = data.qual.scr) # 0.93
gwen
```

```
## $est
##   coeff.name       pa         pe coeff.val coeff.se      conf.int p.value
## 1        AC1 0.958042 0.4205585   0.92759  0.02962 (0.869,0.986)       0
##       w.name
## 1 unweighted
##
## $weights
##      [,1] [,2]
## [1,]    1    0
## [2,]    0    1
##
## $categories
## [1] 0 1
```

References

Gwet, K. L. (2008). Computing inter-rater reliability and its variance in the presence of high agreement. *British Journal of Mathematical and Statistical Psychology*, *61*(1), 29–48. https://doi.org/10.1348/000711006X126600