Self-compassion, post-traumatic growth, and PTSD

Corrado Caudek

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Motivation

Self-compassion (SC) has been proposed as a protective factor against PTSD and a factor promoting PTG.

One limit of these studies, however, is that they have often been performed in student populations, that is, in samples in which, supposedly, PTSD and PTG are only present in mild forms, if ever.

Moreover, in recent years, the role of SC has been questioned. For example, Muris, Otgaar and Pfattheicher (2019) maintain that SC is strongly associated with (reversed) Negative Affect and that, once the negative component of SC is removed, the added value of positive SC is marginal.

Furthermore, Geiger, Pfattheicher, Hartung, Weiss, Schindler, and Wilhelm (2018) have questioned the fact that SC is a construct that does not overlap with Neuroticism. Once Neuroticism is controlled, there is no evidence of a specific contribution of SC.

The purpose of the present study is to evaluate the hypotheses of Muris et al. (2019) and of Geiger et al. (2018) in a sample of rescue workers.

Prelims

```
knitr::opts_chunk$set(
  echo = TRUE,
  message = FALSE,
  strip.white = TRUE
)

library("here")
```

```
## here() starts at /Users/corrado/Dropbox/papers/self_compassion
```

```
suppressPackageStartupMessages(library("lavaan"))
suppressPackageStartupMessages(library("brms"))
suppressPackageStartupMessages(library("tidyverse"))
library("ggthemes")
suppressPackageStartupMessages(library("viridis"))
library("tidyr")
suppressPackageStartupMessages(library("mice"))
```

```
suppressPackageStartupMessages(library("corrplot"))
suppressPackageStartupMessages(library("bayesplot"))
suppressPackageStartupMessages(library("semPlot"))
suppressPackageStartupMessages(library("rio"))
suppressPackageStartupMessages(library("outForest"))
suppressPackageStartupMessages(library("semTools"))
suppressPackageStartupMessages(library("semoutput"))
suppressPackageStartupMessages(library("isotree"))

options(max.print = 99999999)

source(here("libraries", "self_compassion_fnc.R"))
```

```
temp <- readRDS(here("data", "processed", "rescue_workers_cleaned_data.rds"))
clean_dat <- temp %>%
  dplyr::filter(age_imp > 20)
```

Save subjects ids.

```
subjects <- data.frame(id = clean_dat$id)
saveRDS(subjects, here("data", "processed", "participants.Rds"))
```

```
psych::describe(clean_dat)
```

```
##                              vars   n   mean     sd median trimmed    mad
## life_appreciation               1 731   6.36   4.28   7.00    6.27   4.45
## new_possibilities               2 731   8.24   6.37   8.00    7.79   7.41
## personal_strength               3 731   9.74   5.46  10.00    9.90   5.93
## spirituality_changes            4 731   3.50   6.15   0.00    2.04   0.00
## interpersonal_relationships     5 731  13.46   9.30  13.00   13.20  11.86
## avoiding                        6 731   6.05   5.34   5.00    5.41   5.93
## intrusivity                     7 731   8.01   7.04   6.00    7.19   7.41
## iperarousal                     8 731   3.06   4.24   1.00    2.17   1.48
## social_support                  9 731  29.78   7.02  30.00   29.72   7.41
## avoiding_strategies            10 731  21.93   4.41  21.00   21.44   4.45
## positive_attitude              11 731  33.79   4.80  34.00   33.86   4.45
## problem_orientation            12 731  33.76   5.51  34.00   33.86   5.93
## transcendent_orientation       13 731  19.20   4.07  19.00   19.03   2.97
## family                         14 731  18.53   5.24  20.00   19.23   5.93
## friends                        15 731  18.20   4.96  19.00   18.75   4.45
## significant_other              16 731  19.48   4.93  20.00   20.27   5.93
## self_judgment                  17 731  15.23   4.61  15.00   15.29   5.93
## isolation                      18 731  13.79   4.33  14.00   13.98   4.45
## over_identification            19 731  14.63   3.86  15.00   14.88   4.45
## self_kindness                  20 731  13.69   4.28  14.00   13.63   4.45
## common_humanity                21 731  11.48   3.33  12.00   11.43   2.97
## mindfulness                    22 731  13.25   3.18  13.00   13.30   2.97
## negative_affect                23 731   9.03   3.90   9.00    9.01   4.45
## self_reproach                  24 731   9.55   5.56   9.00    9.25   5.93
```

```
##                                  25 731   1.25   0.43   1.00    1.18   0.00
## where*
## age_imp                          26 731  40.76  13.27  40.00   40.28  17.79
## rescue_worker_qualification*     27 731   2.00   0.00   2.00    2.00   0.00
## rate_of_activity*                28 731   3.58   1.06   4.00    3.70   1.48
## id*                              29 731 412.58 232.72 415.00  413.14 295.04
## gender*                          30 731   1.54   0.50   2.00    1.56   0.00
## edu                              31 731   2.54   0.95   2.00    2.48   0.00
## training_time                    32 731   3.92   1.81   5.00    4.03   1.48
## activity_rate                    33 731   3.62   0.99   4.00    3.70   1.48
## employment*                      34 731   2.35   1.10   2.00    2.24   0.00
## red_cross_commeetee_location*    35 731  33.38  24.53  28.00   31.65  29.65
## years_experience                 36 731   9.05   8.02   6.00    7.80   5.93
## last_training*                   37 731   3.08   1.81   2.00    2.97   1.48
## job_qualification*               38 731   2.15   0.75   2.00    2.19   1.48
## is_job_qualification_invariant*  39 731   1.51   0.50   2.00    1.52   0.00
## is_team_invariant*               40 731   1.42   0.49   1.00    1.40   0.00
## anomaly_score                    41 731   0.43   0.02   0.42    0.43   0.02
## outlier*                         42 731   1.00   0.00   1.00    1.00   0.00
##                                   min   max  range  skew kurtosis   se
## life_appreciation                0.00  15.0  15.00  0.06    -1.04 0.16
## new_possibilities                0.00  25.0  25.00  0.44    -0.73 0.24
## personal_strength                0.00  20.0  20.00 -0.26    -0.93 0.20
## spirituality_changes             0.00  30.0  30.00  1.95     3.28 0.23
## interpersonal_relationships      0.00  35.0  35.00  0.15    -1.07 0.34
## avoiding                         0.00  24.0  24.00  0.95     0.40 0.20
## intrusivity                      0.00  32.0  32.00  0.89     0.01 0.26
## iperarousal                      0.00  22.0  22.00  1.75     2.70 0.16
## social_support                  12.00  48.0  36.00  0.08    -0.26 0.26
## avoiding_strategies             16.00  46.0  30.00  1.23     2.23 0.16
## positive_attitude               18.00  47.0  29.00 -0.17     0.05 0.18
## problem_orientation             17.00  48.0  31.00 -0.18    -0.09 0.20
## transcendent_orientation         8.00  32.0  24.00  0.37     0.66 0.15
## family                           4.00  24.0  20.00 -0.89    -0.10 0.19
## friends                          4.00  24.0  20.00 -0.76    -0.08 0.18
## significant_other                4.00  24.0  20.00 -1.10     0.51 0.18
## self_judgment                    5.00  25.0  20.00 -0.11    -0.68 0.17
## isolation                        4.00  20.0  16.00 -0.31    -0.86 0.16
## over_identification              4.00  20.0  16.00 -0.52    -0.49 0.14
## self_kindness                    5.00  25.0  20.00  0.14    -0.35 0.16
## common_humanity                  4.00  20.0  16.00  0.12    -0.29 0.12
## mindfulness                      4.00  20.0  16.00 -0.19    -0.12 0.12
## negative_affect                  0.00  20.0  20.00  0.06    -0.31 0.14
## self_reproach                    0.00  27.0  27.00  0.47    -0.34 0.21
## where*                           1.00   2.0   1.00  1.18    -0.62 0.02
## age_imp                         21.00  71.0  50.00  0.20    -1.11 0.49
## rescue_worker_qualification*     2.00   2.0   0.00   NaN      NaN 0.00
## rate_of_activity*                1.00   5.0   4.00 -0.80     0.42 0.04
## id*                              1.00 823.0 822.00 -0.02    -1.17 8.61
```

```
## gender*                          1.00   2.0   1.00 -0.18    -1.97 0.02
## edu                              1.00   5.0   4.00  0.74    -0.42 0.04
## training_time                    1.00   6.0   5.00 -0.50    -1.20 0.07
## activity_rate                    1.00   5.0   4.00 -0.63     0.23 0.04
## employment*                      1.00   5.0   4.00  1.04     0.19 0.04
## red_cross_commeetee_location*    1.00  86.0  85.00  0.45    -0.94 0.91
## years_experience                 0.00  45.0  45.00  1.34     1.47 0.30
## last_training*                   1.00   6.0   5.00  0.50    -1.20 0.07
## job_qualification*               1.00   3.0   2.00 -0.25    -1.20 0.03
## is_job_qualification_invariant*  1.00   2.0   1.00 -0.06    -2.00 0.02
## is_team_invariant*               1.00   2.0   1.00  0.32    -1.90 0.02
## anomaly_score                    0.38   0.5   0.12  0.71     0.27 0.00
## outlier*                         1.00   1.0   0.00   NaN      NaN 0.00
```

Because of kurtosis for a sub-scale of PTG, robust estimation procedure with the Satorra-Bentler corrections were used.

Model 0

M0 considers two endogenous variables: post-traumatic growth (ptgr) and post-traumatic stress (ptss) and their relations with 4 exogenous variables: coping (cope), perceived social support (soc), self-compassion (sc), and neuroticis (neuro). In model M0, only the regression effects of cope and soc are considered. M0 is therefore a baseline model.

I have included the other exogenous variables, also without considering their effects on the endogenous variables, in order to be able to compare different nested models, to test several theoretical questions.

```
model0 <- "
  # measurement model

  # post-traumatic growth
  ptgr =~ life_appreciation + new_possibilities +
          personal_strength + spirituality_changes +
          interpersonal_relationships

  # ptsd
  ptss =~ avoiding + intrusivity + iperarousal

  # coping
  cope =~ social_support + avoiding_strategies +
          positive_attitude + problem_orientation +
          transcendent_orientation

  # perceived social support
  soc =~ family + friends + significant_other

  # self-compassion
  sc =~ self_judgment + isolation + over_identification +
        self_kindness + common_humanity + mindfulness
```

```
  # neuroticism
  neuro =~ negative_affect + self_reproach

  # regressions
  ptgr ~ cope + soc
  ptss ~ cope + soc

  self_judgment ~~ self_kindness
  "
```

Fit

```
fit0 <- lavaan::sem(
  model0,
  data = clean_dat,
  estimator = "MLM",
  std.lv = TRUE
)
```

```
summary(
  fit0,
  standardized = TRUE,
  fit.measures = TRUE,
  rsquare = TRUE
)
```

```
## lavaan 0.6-7 ended normally after 65 iterations
##
##   Estimator                                         ML
##   Optimization method                           NLMINB
##   Number of free parameters                         60
##
##   Number of observations                           731
##
## Model Test User Model:
##                                                   Standard      Robust
##   Test Statistic                                2484.795    2282.677
##   Degrees of freedom                                 240         240
##   P-value (Chi-square)                             0.000       0.000
##   Scaling correction factor                                    1.089
##         Satorra-Bentler correction
##
## Model Test Baseline Model:
##
##   Test statistic                                9518.691    8606.719
##   Degrees of freedom                                 276         276
##   P-value                                          0.000       0.000
```

```
##   Scaling correction factor                                  1.106
##
## User Model versus Baseline Model:
##
##   Comparative Fit Index (CFI)                    0.757       0.755
##   Tucker-Lewis Index (TLI)                       0.721       0.718
##
##   Robust Comparative Fit Index (CFI)                         0.759
##   Robust Tucker-Lewis Index (TLI)                            0.722
##
## Loglikelihood and Information Criteria:
##
##   Loglikelihood user model (H0)              -49377.004  -49377.004
##   Loglikelihood unrestricted model (H1)      -48134.607  -48134.607
##
##   Akaike (AIC)                                98874.008   98874.008
##   Bayesian (BIC)                              99149.673   99149.673
##   Sample-size adjusted Bayesian (BIC)         98959.153   98959.153
##
## Root Mean Square Error of Approximation:
##
##   RMSEA                                          0.113       0.108
##   90 Percent confidence interval - lower         0.109       0.104
##   90 Percent confidence interval - upper         0.117       0.112
##   P-value RMSEA <= 0.05                          0.000       0.000
##
##   Robust RMSEA                                               0.113
##   90 Percent confidence interval - lower                     0.108
##   90 Percent confidence interval - upper                     0.117
##
## Standardized Root Mean Square Residual:
##
##   SRMR                                           0.151       0.151
##
## Parameter Estimates:
##
##   Standard errors                             Robust.sem
##   Information                                   Expected
##   Information saturated (h1) model          Structured
##
## Latent Variables:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr =~
##     life_apprecitn    3.446    0.101   34.160    0.000    3.569    0.834
##     new_possibilts    5.816    0.145   40.030    0.000    6.023    0.946
##     persnl_strngth    4.325    0.136   31.697    0.000    4.479    0.821
##     spirtlty_chngs    3.151    0.235   13.385    0.000    3.263    0.531
##     intrprsnl_rltn    7.986    0.205   38.942    0.000    8.270    0.890
```

```
##   ptss =~
##     avoiding          4.171    0.190   21.971    0.000    4.181    0.783
##     intrusivity       6.122    0.231   26.548    0.000    6.136    0.872
##     iperarousal       3.690    0.187   19.701    0.000    3.698    0.873
##   cope =~
##     social_support    1.642    0.302    5.433    0.000    1.642    0.234
##     avoidng_strtgs   -0.386    0.189   -2.039    0.041   -0.386   -0.088
##     positive_atttd    2.966    0.235   12.634    0.000    2.966    0.619
##     problem_ornttn    4.476    0.289   15.492    0.000    4.476    0.813
##     trnscndnt_rntt   -0.110    0.179   -0.617    0.537   -0.110   -0.027
##   soc =~
##     family            3.714    0.189   19.692    0.000    3.714    0.709
##     friends           3.608    0.202   17.891    0.000    3.608    0.728
##     significnt_thr    3.555    0.218   16.274    0.000    3.555    0.722
##   sc =~
##     self_judgment     3.263    0.141   23.088    0.000    3.263    0.708
##     isolation         3.867    0.104   37.145    0.000    3.867    0.894
##     over_identfctn    3.467    0.102   33.853    0.000    3.467    0.899
##     self_kindness     1.191    0.171    6.966    0.000    1.191    0.278
##     common_humanty   -0.068    0.146   -0.466    0.641   -0.068   -0.020
##     mindfulness       1.099    0.131    8.388    0.000    1.099    0.346
##   neuro =~
##     negative_affct    2.643    0.135   19.554    0.000    2.643    0.678
##     self_reproach     4.960    0.176   28.240    0.000    4.960    0.894
##
## Regressions:
##                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr ~
##     cope              0.191    0.050    3.804    0.000    0.184    0.184
##     soc               0.143    0.046    3.090    0.002    0.138    0.138
##   ptss ~
##     cope              0.043    0.049    0.873    0.382    0.043    0.043
##     soc              -0.068    0.050   -1.346    0.178   -0.068   -0.068
##
## Covariances:
##                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##  .self_judgment ~~
##    .self_kindness     1.649    0.572    2.884    0.004    1.649    0.123
##   cope ~~
##     soc               0.285    0.048    5.992    0.000    0.285    0.285
##     sc                0.120    0.046    2.629    0.009    0.120    0.120
##     neuro            -0.328    0.046   -7.110    0.000   -0.328   -0.328
##   soc ~~
##     sc                0.202    0.043    4.677    0.000    0.202    0.202
##     neuro            -0.241    0.046   -5.210    0.000   -0.241   -0.241
##   sc ~~
##     neuro            -0.835    0.024  -35.402    0.000   -0.835   -0.835
##  .ptgr ~~
```

```
##    .ptss              0.346    0.038    8.989    0.000    0.346    0.346
##
## Variances:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##    .life_apprecitn    5.592    0.406   13.776    0.000    5.592    0.305
##    .new_possibilts    4.287    0.539    7.960    0.000    4.287    0.106
##    .persnl_strngth    9.707    0.677   14.339    0.000    9.707    0.326
##    .spirtlty_chngs   27.129    2.081   13.035    0.000   27.129    0.718
##    .intrprsnl_rltn   17.904    1.708   10.481    0.000   17.904    0.207
##    .avoiding         11.032    0.878   12.572    0.000   11.032    0.387
##    .intrusivity      11.856    1.495    7.931    0.000   11.856    0.239
##    .iperarousal       4.285    0.460    9.321    0.000    4.285    0.239
##    .social_support   46.532    2.393   19.443    0.000   46.532    0.945
##    .avoidng_strtgs   19.231    1.462   13.153    0.000   19.231    0.992
##    .positive_atttd   14.187    1.229   11.539    0.000   14.187    0.617
##    .problem_ornttn   10.251    2.266    4.524    0.000   10.251    0.338
##    .trnscndnt_rntt   16.554    1.002   16.515    0.000   16.554    0.999
##    .family           13.669    1.301   10.504    0.000   13.669    0.498
##    .friends          11.563    1.372    8.429    0.000   11.563    0.470
##    .significnt_thr   11.625    1.145   10.153    0.000   11.625    0.479
##    .self_judgment    10.617    0.684   15.524    0.000   10.617    0.499
##    .isolation         3.746    0.373   10.051    0.000    3.746    0.200
##    .over_identfctn    2.837    0.305    9.307    0.000    2.837    0.191
##    .self_kindness    16.914    0.825   20.500    0.000   16.914    0.923
##    .common_humanty   11.060    0.536   20.616    0.000   11.060    1.000
##    .mindfulness       8.864    0.506   17.508    0.000    8.864    0.880
##    .negative_affct    8.212    0.488   16.827    0.000    8.212    0.540
##    .self_reproach     6.215    1.132    5.489    0.000    6.215    0.202
##    .ptgr              1.000                              0.933    0.933
##    .ptss              1.000                              0.995    0.995
##     cope              1.000                              1.000    1.000
##     soc               1.000                              1.000    1.000
##     sc                1.000                              1.000    1.000
##     neuro             1.000                              1.000    1.000
##
## R-Square:
##                    Estimate
##     life_apprecitn    0.695
##     new_possibilts    0.894
##     persnl_strngth    0.674
##     spirtlty_chngs    0.282
##     intrprsnl_rltn    0.793
##     avoiding          0.613
##     intrusivity       0.761
##     iperarousal       0.761
##     social_support    0.055
##     avoidng_strtgs    0.008
##     positive_atttd    0.383
```

```
##     problem_ornttn    0.662
##     trnscndnt_rntt    0.001
##     family            0.502
##     friends           0.530
##     significnt_thr    0.521
##     self_judgment     0.501
##     isolation         0.800
##     over_identfctn    0.809
##     self_kindness     0.077
##     common_humanty    0.000
##     mindfulness       0.120
##     negative_affct    0.460
##     self_reproach     0.798
##     ptgr              0.067
##     ptss              0.005
```

Model 1

M1 considers, beyond the regression effects of M0, also an effect of self-compassion, but without distinguishing the two components of self-compassion. Modification indices suggest to add a residual correlation between self_judgment and self_kindness.

```
model1 <- "
  # measurement model

  # post-traumatic growth
  ptgr =~ life_appreciation + new_possibilities +
          personal_strength + spirituality_changes +
          interpersonal_relationships

  # ptsd
  ptss =~ avoiding + intrusivity + iperarousal

  # coping
  cope =~ social_support + avoiding_strategies +
          positive_attitude + problem_orientation +
          transcendent_orientation

  # perceived social support
  soc =~ family + friends + significant_other

  # self-compassion
  sc =~ self_judgment + isolation + over_identification +
        self_kindness + common_humanity + mindfulness

  # neuroticism
  neuro =~ negative_affect + self_reproach
```

```
  # regressions
  ptgr ~ cope + soc + sc
  ptss ~ cope + soc + sc

  self_judgment ~~ self_kindness
  "
```

Fit

```
fit1 <- lavaan::sem(
  model1,
  data = clean_dat,
  estimator = "MLM",
  std.lv = TRUE
)
```

```
anova(fit1, fit0)
```

```
## Scaled Chi-Squared Difference Test (method = "satorra.bentler.2001")
##
## lavaan NOTE:
##     The "Chisq" column contains standard test statistics, not the
##     robust test that should be reported per model. A robust difference
##     test is a function of two standard (not robust) statistics.
##
##       Df   AIC   BIC  Chisq Chisq diff Df diff Pr(>Chisq)
## fit1 238 98695 98980 2302.1
## fit0 240 98874 99150 2484.8        123       2  < 2.2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Model M1 improves the fit respect model M0. But the fit of M1 is still inadequate.

```
summary(
  fit1,
  standardized = TRUE,
  fit.measures = TRUE,
  rsquare = TRUE
)
```

```
## lavaan 0.6-7 ended normally after 69 iterations
##
##   Estimator                                         ML
##   Optimization method                           NLMINB
##   Number of free parameters                         62
##
##   Number of observations                           731
##
## Model Test User Model:
```

```
##                                                   Standard      Robust
##   Test Statistic                                2302.079    2121.323
##   Degrees of freedom                                 238         238
##   P-value (Chi-square)                             0.000       0.000
##   Scaling correction factor                                    1.085
##        Satorra-Bentler correction
##
## Model Test Baseline Model:
##
##   Test statistic                                9518.691    8606.719
##   Degrees of freedom                                 276         276
##   P-value                                          0.000       0.000
##   Scaling correction factor                                    1.106
##
## User Model versus Baseline Model:
##
##   Comparative Fit Index (CFI)                      0.777       0.774
##   Tucker-Lewis Index (TLI)                         0.741       0.738
##
##   Robust Comparative Fit Index (CFI)                           0.778
##   Robust Tucker-Lewis Index (TLI)                              0.743
##
## Loglikelihood and Information Criteria:
##
##   Loglikelihood user model (H0)             -49285.646  -49285.646
##   Loglikelihood unrestricted model (H1)     -48134.607  -48134.607
##
##   Akaike (AIC)                               98695.292   98695.292
##   Bayesian (BIC)                             98980.146   98980.146
##   Sample-size adjusted Bayesian (BIC)        98783.276   98783.276
##
## Root Mean Square Error of Approximation:
##
##   RMSEA                                            0.109       0.104
##   90 Percent confidence interval - lower           0.105       0.100
##   90 Percent confidence interval - upper           0.113       0.108
##   P-value RMSEA <= 0.05                            0.000       0.000
##
##   Robust RMSEA                                                 0.108
##   90 Percent confidence interval - lower                       0.104
##   90 Percent confidence interval - upper                       0.113
##
## Standardized Root Mean Square Residual:
##
##   SRMR                                             0.129       0.129
##
## Parameter Estimates:
##
```

```
##   Standard errors                           Robust.sem
##   Information                                 Expected
##   Information saturated (h1) model          Structured
##
## Latent Variables:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr =~
##     life_apprecitn    3.408    0.101   33.780    0.000    3.569    0.834
##     new_possibilts    5.752    0.148   38.976    0.000    6.023    0.946
##     persnl_strngth    4.277    0.136   31.434    0.000    4.479    0.821
##     spirtlty_chngs    3.116    0.234   13.337    0.000    3.263    0.531
##     intrprsnl_rltn    7.897    0.204   38.733    0.000    8.269    0.890
##   ptss =~
##     avoiding          3.551    0.167   21.270    0.000    4.188    0.784
##     intrusivity       5.248    0.215   24.398    0.000    6.188    0.880
##     iperarousal       3.105    0.163   19.010    0.000    3.661    0.864
##   cope =~
##     social_support    1.596    0.300    5.314    0.000    1.596    0.227
##     avoidng_strtgs   -0.413    0.188   -2.193    0.028   -0.413   -0.094
##     positive_atttd    2.907    0.230   12.616    0.000    2.907    0.606
##     problem_ornttn    4.561    0.290   15.722    0.000    4.561    0.829
##     trnscndnt_rntt   -0.110    0.177   -0.621    0.535   -0.110   -0.027
##   soc =~
##     family            3.693    0.189   19.559    0.000    3.693    0.705
##     friends           3.620    0.201   17.988    0.000    3.620    0.730
##     significnt_thr    3.573    0.218   16.385    0.000    3.573    0.725
##   sc =~
##     self_judgment     3.264    0.140   23.244    0.000    3.264    0.708
##     isolation         3.826    0.104   36.668    0.000    3.826    0.885
##     over_identfctn    3.501    0.101   34.508    0.000    3.501    0.908
##     self_kindness     1.170    0.172    6.817    0.000    1.170    0.273
##     common_humanty   -0.079    0.146   -0.541    0.589   -0.079   -0.024
##     mindfulness       1.111    0.131    8.471    0.000    1.111    0.350
##   neuro =~
##     negative_affct    2.654    0.135   19.664    0.000    2.654    0.681
##     self_reproach     4.940    0.175   28.189    0.000    4.940    0.890
##
## Regressions:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr ~
##     cope              0.203    0.050    4.038    0.000    0.194    0.194
##     soc               0.177    0.047    3.752    0.000    0.169    0.169
##     sc               -0.146    0.041   -3.520    0.000   -0.139   -0.139
##   ptss ~
##     cope              0.114    0.053    2.165    0.030    0.096    0.096
##     soc               0.057    0.054    1.074    0.283    0.049    0.049
##     sc               -0.635    0.055  -11.558    0.000   -0.538   -0.538
##
```

```
## Covariances:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##  .self_judgment ~~
##    .self_kindness     1.717    0.571    3.004    0.003    1.717    0.128
##   cope ~~
##     soc               0.279    0.047    5.898    0.000    0.279    0.279
##     sc                0.130    0.045    2.871    0.004    0.130    0.130
##     neuro            -0.339    0.046   -7.367    0.000   -0.339   -0.339
##   soc ~~
##     sc                0.186    0.043    4.296    0.000    0.186    0.186
##     neuro            -0.232    0.046   -4.981    0.000   -0.232   -0.232
##   sc ~~
##     neuro            -0.836    0.023  -35.929    0.000   -0.836   -0.836
##  .ptgr ~~
##    .ptss              0.316    0.041    7.645    0.000    0.316    0.316
##
## Variances:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##    .life_apprecitn    5.593    0.406   13.782    0.000    5.593    0.305
##    .new_possibilts    4.278    0.539    7.943    0.000    4.278    0.105
##    .persnl_strngth    9.708    0.677   14.340    0.000    9.708    0.326
##    .spirtlty_chngs   27.130    2.082   13.031    0.000   27.130    0.718
##    .intrprsnl_rltn   17.922    1.711   10.475    0.000   17.922    0.208
##    .avoiding         10.979    0.838   13.109    0.000   10.979    0.385
##    .intrusivity      11.212    1.452    7.724    0.000   11.212    0.226
##    .iperarousal       4.559    0.451   10.104    0.000    4.559    0.254
##    .social_support   46.680    2.390   19.528    0.000   46.680    0.948
##    .avoidng_strtgs   19.209    1.461   13.149    0.000   19.209    0.991
##    .positive_atttd   14.535    1.201   12.107    0.000   14.535    0.632
##    .problem_ornttn    9.483    2.315    4.096    0.000    9.483    0.313
##    .trnscndnt_rntt   16.554    1.002   16.518    0.000   16.554    0.999
##    .family           13.829    1.308   10.573    0.000   13.829    0.504
##    .friends          11.476    1.379    8.323    0.000   11.476    0.467
##    .significnt_thr   11.495    1.147   10.021    0.000   11.495    0.474
##    .self_judgment    10.613    0.678   15.656    0.000   10.613    0.499
##    .isolation         4.060    0.379   10.705    0.000    4.060    0.217
##    .over_identfctn    2.604    0.293    8.893    0.000    2.604    0.175
##    .self_kindness    16.963    0.826   20.544    0.000   16.963    0.925
##    .common_humanty   11.059    0.537   20.612    0.000   11.059    0.999
##    .mindfulness       8.837    0.505   17.486    0.000    8.837    0.877
##    .negative_affct    8.154    0.486   16.774    0.000    8.154    0.536
##    .self_reproach     6.418    1.121    5.724    0.000    6.418    0.208
##    .ptgr              1.000                              0.912    0.912
##    .ptss              1.000                              0.719    0.719
##     cope              1.000                              1.000    1.000
##     soc               1.000                              1.000    1.000
##     sc                1.000                              1.000    1.000
##     neuro             1.000                              1.000    1.000
```

```
##
## R-Square:
##                    Estimate
##     life_apprecitn    0.695
##     new_possibilts    0.895
##     persnl_strngth    0.674
##     spirtlty_chngs    0.282
##     intrprsnl_rltn    0.792
##     avoiding          0.615
##     intrusivity       0.774
##     iperarousal       0.746
##     social_support    0.052
##     avoidng_strtgs    0.009
##     positive_atttd    0.368
##     problem_ornttn    0.687
##     trnscndnt_rntt    0.001
##     family            0.496
##     friends           0.533
##     significnt_thr    0.526
##     self_judgment     0.501
##     isolation         0.783
##     over_identfctn    0.825
##     self_kindness     0.075
##     common_humanty    0.001
##     mindfulness       0.123
##     negative_affct    0.464
##     self_reproach     0.792
##     ptgr              0.088
##     ptss              0.281
```

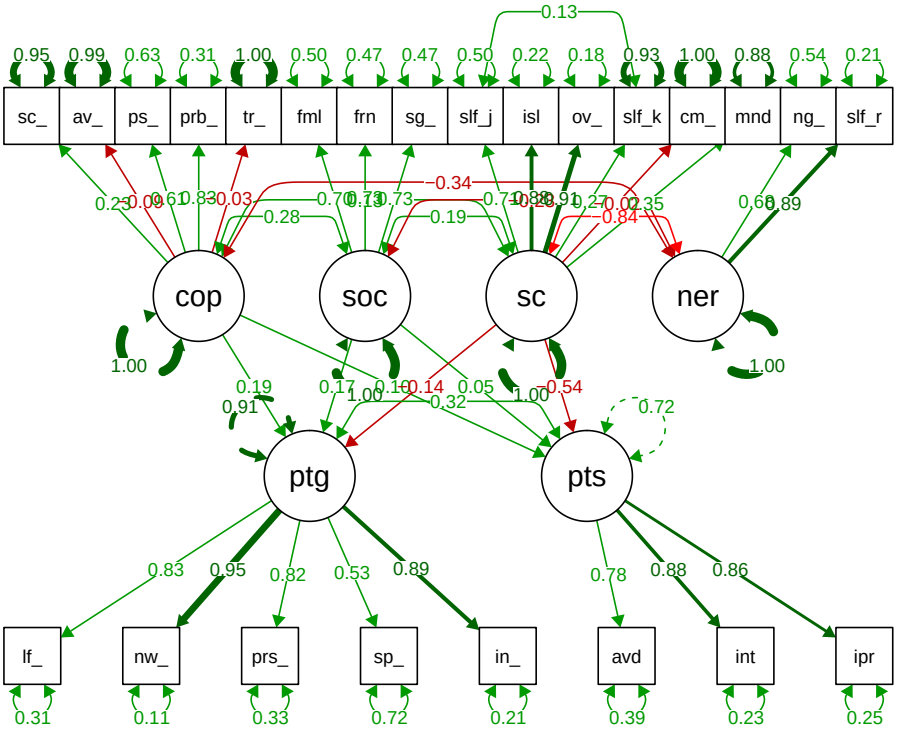
```
fitMeasures(fit1)
```

```
##                          npar                          fmin
##                        62.000                         1.575
##                         chisq                           df
##                      2302.079                       238.000
##                        pvalue                  chisq.scaled
##                         0.000                      2121.323
##                     df.scaled                 pvalue.scaled
##                       238.000                         0.000
##          chisq.scaling.factor                baseline.chisq
##                         1.085                      9518.691
##                   baseline.df                baseline.pvalue
##                       276.000                         0.000
##         baseline.chisq.scaled            baseline.df.scaled
##                      8606.719                       276.000
##        baseline.pvalue.scaled baseline.chisq.scaling.factor
##                         0.000                         1.106
```

```
##                         cfi                         tli
##                       0.777                       0.741
##                        nnfi                         rfi
##                       0.741                       0.720
##                         nfi                        pnfi
##                       0.758                       0.654
##                         ifi                         rni
##                       0.778                       0.777
##                  cfi.scaled                 tli.scaled
##                       0.774                       0.738
##                  cfi.robust                 tli.robust
##                       0.778                       0.743
##                 nnfi.scaled                nnfi.robust
##                       0.738                       0.743
##                  rfi.scaled                 nfi.scaled
##                       0.714                       0.754
##                  ifi.scaled                 rni.scaled
##                       0.775                       0.774
##                  rni.robust                        logl
##                       0.778                  -49285.646
##             unrestricted.logl                         aic
##                  -48134.607                   98695.292
##                         bic                      ntotal
##                   98980.146                   731.000
##                        bic2                       rmsea
##                   98783.276                       0.109
##               rmsea.ci.lower             rmsea.ci.upper
##                       0.105                       0.113
##                 rmsea.pvalue               rmsea.scaled
##                       0.000                       0.104
##         rmsea.ci.lower.scaled       rmsea.ci.upper.scaled
##                       0.100                       0.108
##           rmsea.pvalue.scaled               rmsea.robust
##                       0.000                       0.108
##         rmsea.ci.lower.robust       rmsea.ci.upper.robust
##                       0.104                       0.113
##           rmsea.pvalue.robust                         rmr
##                         NA                       3.420
##                  rmr_nomean                        srmr
##                       3.420                       0.129
##                srmr_bentler         srmr_bentler_nomean
##                       0.129                       0.129
##                        crmr                crmr_nomean
##                       0.134                       0.134
##                  srmr_mplus           srmr_mplus_nomean
##                       0.129                       0.129
##                       cn_05                       cn_01
##                      88.319                      93.618
```

```
##                          gfi                         agfi
##                        0.776                        0.718
##                         pgfi                          mfi
##                        0.616                        0.244
##                         ecvi
##                        3.319
```

```
semPaths(
  fit1,
  "std",
  edge.label.cex = 0.75,
  curvePivot = TRUE,
  title = TRUE,
  fade = FALSE
)
```



Model 1a

M1a is an attempt of improving the fit of M1 by considering only a subset of dimensions of coping, because Coping was poorly defined by such indicators.

```
model1a <- "

  # post-traumatic growth
  ptgr =~ life_appreciation + new_possibilities +
         personal_strength + spirituality_changes +
         interpersonal_relationships
```

```
  # ptsd
  ptss =~ avoiding + intrusivity + iperarousal

  # coping
  cope =~ positive_attitude + problem_orientation

  # perceived social support
  soc =~ family + friends + significant_other

  # self-compassion
  sc =~ self_judgment + isolation + over_identification +
        self_kindness + common_humanity + mindfulness

  # neuroticism
  neuro =~ negative_affect + self_reproach

  sc ~~ neuro
  soc ~~ cope
  soc ~~ sc
  soc ~~ neuro
  cope ~~ sc
  cope ~~ neuro

  # regressions
  ptgr ~ cope + soc + sc
  ptss ~ cope + soc + sc

  self_judgment ~~ self_kindness
"
```

```
fit1a <- lavaan::sem(
  model1a,
  data = clean_dat,
  estimator = "MLM",
  std.lv = TRUE
)
```

```
summary(
  fit1a,
  standardized = TRUE,
  fit.measures = TRUE,
  rsquare = TRUE
)
```

```
## lavaan 0.6-7 ended normally after 59 iterations
##
##   Estimator                                         ML
##   Optimization method                           NLMINB
```

```
##   Number of free parameters                        56
##
##   Number of observations                          731
##
## Model Test User Model:
##                                              Standard      Robust
##   Test Statistic                             1389.150    1275.303
##   Degrees of freedom                              175         175
##   P-value (Chi-square)                          0.000       0.000
##   Scaling correction factor                                 1.089
##        Satorra-Bentler correction
##
## Model Test Baseline Model:
##
##   Test statistic                             8572.432    7735.957
##   Degrees of freedom                              210         210
##   P-value                                       0.000       0.000
##   Scaling correction factor                                 1.108
##
## User Model versus Baseline Model:
##
##   Comparative Fit Index (CFI)                   0.855       0.854
##   Tucker-Lewis Index (TLI)                      0.826       0.825
##
##   Robust Comparative Fit Index (CFI)                        0.856
##   Robust Tucker-Lewis Index (TLI)                           0.828
##
## Loglikelihood and Information Criteria:
##
##   Loglikelihood user model (H0)            -42656.917  -42656.917
##   Loglikelihood unrestricted model (H1)    -41962.343  -41962.343
##
##   Akaike (AIC)                              85425.835   85425.835
##   Bayesian (BIC)                            85683.122   85683.122
##   Sample-size adjusted Bayesian (BIC)       85505.304   85505.304
##
## Root Mean Square Error of Approximation:
##
##   RMSEA                                         0.097       0.093
##   90 Percent confidence interval - lower        0.093       0.088
##   90 Percent confidence interval - upper        0.102       0.097
##   P-value RMSEA <= 0.05                         0.000       0.000
##
##   Robust RMSEA                                              0.097
##   90 Percent confidence interval - lower                    0.092
##   90 Percent confidence interval - upper                    0.102
##
## Standardized Root Mean Square Residual:
```

```
##
##   SRMR                                           0.100       0.100
##
## Parameter Estimates:
##
##   Standard errors                             Robust.sem
##   Information                                   Expected
##   Information saturated (h1) model          Structured
##
## Latent Variables:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr =~
##     life_apprecitn    3.426    0.101   34.021    0.000    3.568    0.833
##     new_possibilts    5.785    0.146   39.518    0.000    6.025    0.946
##     persnl_strngth    4.299    0.136   31.670    0.000    4.478    0.821
##     spirtlty_chngs    3.133    0.235   13.356    0.000    3.263    0.531
##     intrprsnl_rltn    7.937    0.204   38.951    0.000    8.267    0.890
##   ptss =~
##     avoiding          3.556    0.167   21.321    0.000    4.188    0.784
##     intrusivity       5.255    0.215   24.459    0.000    6.188    0.879
##     iperarousal       3.109    0.163   19.094    0.000    3.661    0.864
##   cope =~
##     positive_atttd    2.640    0.241   10.952    0.000    2.640    0.551
##     problem_ornttn    5.041    0.367   13.732    0.000    5.041    0.916
##   soc =~
##     family            3.703    0.189   19.620    0.000    3.703    0.707
##     friends           3.612    0.202   17.905    0.000    3.612    0.728
##     significnt_thr    3.571    0.219   16.344    0.000    3.571    0.725
##   sc =~
##     self_judgment     3.263    0.140   23.230    0.000    3.263    0.708
##     isolation         3.825    0.104   36.628    0.000    3.825    0.885
##     over_identfctn    3.501    0.101   34.508    0.000    3.501    0.908
##     self_kindness     1.175    0.172    6.850    0.000    1.175    0.274
##     common_humanty   -0.075    0.146   -0.512    0.609   -0.075   -0.022
##     mindfulness       1.115    0.131    8.502    0.000    1.115    0.351
##   neuro =~
##     negative_affct    2.657    0.135   19.679    0.000    2.657    0.681
##     self_reproach     4.935    0.175   28.242    0.000    4.935    0.889
##
## Regressions:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr ~
##     cope              0.170    0.047    3.628    0.000    0.163    0.163
##     soc               0.195    0.046    4.228    0.000    0.187    0.187
##     sc               -0.147    0.042   -3.514    0.000   -0.141   -0.141
##   ptss ~
##     cope              0.101    0.048    2.110    0.035    0.086    0.086
##     soc               0.066    0.052    1.278    0.201    0.056    0.056
```

```
##     sc                -0.636    0.055  -11.504    0.000   -0.540   -0.540
##
## Covariances:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   sc ~~
##     neuro            -0.837    0.023  -36.018    0.000   -0.837   -0.837
##   cope ~~
##     soc               0.223    0.046    4.847    0.000    0.223    0.223
##   soc ~~
##     sc                0.187    0.043    4.305    0.000    0.187    0.187
##     neuro            -0.232    0.047   -4.995    0.000   -0.232   -0.232
##   cope ~~
##     sc                0.148    0.042    3.505    0.000    0.148    0.148
##     neuro            -0.348    0.045   -7.665    0.000   -0.348   -0.348
##  .self_judgment ~~
##    .self_kindness     1.701    0.572    2.976    0.003    1.701    0.127
##  .ptgr ~~
##    .ptss              0.319    0.041    7.760    0.000    0.319    0.319
##
## Variances:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##    .life_apprecitn    5.596    0.406   13.795    0.000    5.596    0.305
##    .new_possibilts    4.257    0.538    7.915    0.000    4.257    0.105
##    .persnl_strngth    9.715    0.677   14.346    0.000    9.715    0.326
##    .spirtlty_chngs   27.128    2.082   13.028    0.000   27.128    0.718
##    .intrprsnl_rltn   17.955    1.712   10.485    0.000   17.955    0.208
##    .avoiding         10.979    0.837   13.111    0.000   10.979    0.385
##    .intrusivity      11.220    1.452    7.727    0.000   11.220    0.227
##    .iperarousal       4.556    0.451   10.096    0.000    4.556    0.254
##    .positive_atttd   16.012    1.212   13.215    0.000   16.012    0.697
##    .problem_ornttn    4.881    3.373    1.447    0.148    4.881    0.161
##    .family           13.750    1.307   10.522    0.000   13.750    0.501
##    .friends          11.537    1.379    8.364    0.000   11.537    0.469
##    .significnt_thr   11.506    1.151    9.995    0.000   11.506    0.474
##    .self_judgment    10.620    0.678   15.661    0.000   10.620    0.499
##    .isolation         4.068    0.380   10.700    0.000    4.068    0.218
##    .over_identfctn    2.600    0.293    8.871    0.000    2.600    0.175
##    .self_kindness    16.951    0.825   20.538    0.000   16.951    0.925
##    .common_humanty   11.059    0.537   20.613    0.000   11.059    0.999
##    .mindfulness       8.829    0.505   17.473    0.000    8.829    0.877
##    .negative_affct    8.141    0.484   16.805    0.000    8.141    0.536
##    .self_reproach     6.461    1.112    5.809    0.000    6.461    0.210
##    .ptgr              1.000                              0.922    0.922
##    .ptss              1.000                              0.721    0.721
##     cope              1.000                              1.000    1.000
##     soc               1.000                              1.000    1.000
##     sc                1.000                              1.000    1.000
##     neuro             1.000                              1.000    1.000
```

```
##
## R-Square:
##                    Estimate
##     life_apprecitn    0.695
##     new_possibilts    0.895
##     persnl_strngth    0.674
##     spirtlty_chngs    0.282
##     intrprsnl_rltn    0.792
##     avoiding          0.615
##     intrusivity       0.773
##     iperarousal       0.746
##     positive_atttd    0.303
##     problem_ornttn    0.839
##     family            0.499
##     friends           0.531
##     significnt_thr    0.526
##     self_judgment     0.501
##     isolation         0.782
##     over_identfctn    0.825
##     self_kindness     0.075
##     common_humanty    0.001
##     mindfulness       0.123
##     negative_affct    0.464
##     self_reproach     0.790
##     ptgr              0.078
##     ptss              0.279
```

```
fitMeasures(fit1a)
```

```
##                          npar                          fmin
##                        56.000                         0.950
##                         chisq                           df
##                      1389.150                       175.000
##                        pvalue                  chisq.scaled
##                         0.000                      1275.303
##                    df.scaled                  pvalue.scaled
##                       175.000                         0.000
##         chisq.scaling.factor                 baseline.chisq
##                         1.089                      8572.432
##                  baseline.df                baseline.pvalue
##                      210.000                         0.000
##        baseline.chisq.scaled            baseline.df.scaled
##                     7735.957                       210.000
##       baseline.pvalue.scaled baseline.chisq.scaling.factor
##                         0.000                         1.108
##                           cfi                           tli
##                         0.855                         0.826
##                          nnfi                           rfi
```

```
##                       0.826                       0.806
##                         nfi                        pnfi
##                       0.838                       0.698
##                         ifi                         rni
##                       0.855                       0.855
##                  cfi.scaled                  tli.scaled
##                       0.854                       0.825
##                  cfi.robust                  tli.robust
##                       0.856                       0.828
##                 nnfi.scaled                 nnfi.robust
##                       0.825                       0.828
##                  rfi.scaled                  nfi.scaled
##                       0.802                       0.835
##                  ifi.scaled                  rni.scaled
##                       0.854                       0.854
##                  rni.robust                        logl
##                       0.856                  -42656.917
##             unrestricted.logl                         aic
##                  -41962.343                   85425.835
##                         bic                      ntotal
##                   85683.122                   731.000
##                        bic2                       rmsea
##                   85505.304                       0.097
##               rmsea.ci.lower               rmsea.ci.upper
##                       0.093                       0.102
##                 rmsea.pvalue                rmsea.scaled
##                       0.000                       0.093
##         rmsea.ci.lower.scaled         rmsea.ci.upper.scaled
##                       0.088                       0.097
##           rmsea.pvalue.scaled                rmsea.robust
##                       0.000                       0.097
##         rmsea.ci.lower.robust         rmsea.ci.upper.robust
##                       0.092                       0.102
##           rmsea.pvalue.robust                         rmr
##                         NA                       2.011
##                  rmr_nomean                        srmr
##                       2.011                       0.100
##                 srmr_bentler           srmr_bentler_nomean
##                       0.100                       0.100
##                        crmr                  crmr_nomean
##                       0.105                       0.105
##                  srmr_mplus             srmr_mplus_nomean
##                       0.100                       0.100
##                       cn_05                       cn_01
##                     109.858                     117.526
##                        gfi                         agfi
##                       0.825                       0.769
##                        pgfi                         mfi
```

```
##                          0.625                          0.436
##                           ecvi
##                          2.054
```

```
anova(fit1, fit1a)
```

```
## Warning in lavTestLRT(object = new("lavaan", version = "0.6.7", call =
## lavaan::lavaan(model = model1, : lavaan WARNING: some models are based on a
## different set of observed variables
```

```
## Scaled Chi-Squared Difference Test (method = "satorra.bentler.2001")
##
## lavaan NOTE:
##     The "Chisq" column contains standard test statistics, not the
##     robust test that should be reported per model. A robust difference
##     test is a function of two standard (not robust) statistics.
##
##        Df   AIC   BIC  Chisq Chisq diff Df diff Pr(>Chisq)
## fit1a 175 85426 85683 1389.1
## fit1  238 98695 98980 2302.1     850.08      63  < 2.2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Model 2

M2 distinguishes between the two components of self-compassion.

```
model2 <- "

  # post-traumatic growth
  ptgr =~ life_appreciation + new_possibilities +
         personal_strength + spirituality_changes +
         interpersonal_relationships

  # ptsd
  ptss =~ avoiding + intrusivity + iperarousal

  # coping
  cope =~ positive_attitude + problem_orientation
   # + transcendent_orientation + avoiding_strategies + social_support

  # perceived social support
  soc =~ family + friends + significant_other

  # self-compassion
  nsc =~ self_judgment + isolation + over_identification
  psc =~ self_kindness + common_humanity + mindfulness

  # neuroticism
```

```
  neuro =~ negative_affect + self_reproach

  psc ~~ nsc
  psc ~~ neuro
  nsc ~~ neuro
  soc ~~ cope
  soc ~~ nsc
  soc ~~ psc
  soc ~~ neuro
  cope ~~ nsc
  cope ~~ psc
  cope ~~ neuro

  # regressions
  ptgr ~ cope + soc + nsc + psc
  ptss ~ cope + soc + nsc + psc

  self_judgment ~~ self_kindness
"
```

```
fit2 <- sem(
  model2,
  data = clean_dat,
  estimator = "MLM",
  std.lv = TRUE
)
```

```
summary(
  fit2,
  standardized = TRUE,
  fit.measures = TRUE,
  rsquare = TRUE
)
```

```
## lavaan 0.6-7 ended normally after 48 iterations
##
##   Estimator                                         ML
##   Optimization method                           NLMINB
##   Number of free parameters                         62
##
##   Number of observations                           731
##
## Model Test User Model:
##                                              Standard      Robust
##   Test Statistic                              618.934     570.828
##   Degrees of freedom                              169         169
##   P-value (Chi-square)                          0.000       0.000
##   Scaling correction factor                                 1.084
```

```
##        Satorra-Bentler correction
##
## Model Test Baseline Model:
##
##   Test statistic                                8572.432    7735.957
##   Degrees of freedom                             210         210
##   P-value                                       0.000       0.000
##   Scaling correction factor                                 1.108
##
## User Model versus Baseline Model:
##
##   Comparative Fit Index (CFI)                    0.946       0.947
##   Tucker-Lewis Index (TLI)                       0.933       0.934
##
##   Robust Comparative Fit Index (CFI)                         0.948
##   Robust Tucker-Lewis Index (TLI)                            0.935
##
## Loglikelihood and Information Criteria:
##
##   Loglikelihood user model (H0)             -42271.809  -42271.809
##   Loglikelihood unrestricted model (H1)     -41962.343  -41962.343
##
##   Akaike (AIC)                               84667.619   84667.619
##   Bayesian (BIC)                             84952.473   84952.473
##   Sample-size adjusted Bayesian (BIC)        84755.603   84755.603
##
## Root Mean Square Error of Approximation:
##
##   RMSEA                                          0.060       0.057
##   90 Percent confidence interval - lower         0.055       0.052
##   90 Percent confidence interval - upper         0.065       0.062
##   P-value RMSEA <= 0.05                          0.000       0.010
##
##   Robust RMSEA                                               0.059
##   90 Percent confidence interval - lower                     0.054
##   90 Percent confidence interval - upper                     0.065
##
## Standardized Root Mean Square Residual:
##
##   SRMR                                           0.059       0.059
##
## Parameter Estimates:
##
##   Standard errors                           Robust.sem
##   Information                                 Expected
##   Information saturated (h1) model          Structured
##
## Latent Variables:
```

```
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr =~
##     life_apprecitn    3.373    0.101   33.264    0.000    3.567    0.833
##     new_possibilts    5.693    0.147   38.710    0.000    6.021    0.945
##     persnl_strngth    4.237    0.135   31.460    0.000    4.481    0.821
##     spirtlty_chngs    3.088    0.229   13.478    0.000    3.266    0.531
##     intrprsnl_rltn    7.821    0.202   38.769    0.000    8.272    0.890
##   ptss =~
##     avoiding          3.557    0.166   21.371    0.000    4.186    0.784
##     intrusivity       5.255    0.213   24.659    0.000    6.186    0.879
##     iperarousal       3.113    0.162   19.171    0.000    3.664    0.864
##   cope =~
##     positive_atttd    3.591    0.206   17.410    0.000    3.591    0.749
##     problem_ornttn    3.706    0.233   15.877    0.000    3.706    0.673
##   soc =~
##     family            3.692    0.189   19.505    0.000    3.692    0.704
##     friends           3.637    0.201   18.123    0.000    3.637    0.734
##     significnt_thr    3.556    0.219   16.213    0.000    3.556    0.722
##   nsc =~
##     self_judgment     3.315    0.133   25.016    0.000    3.315    0.717
##     isolation         3.799    0.105   36.298    0.000    3.799    0.879
##     over_identfctn    3.533    0.100   35.249    0.000    3.533    0.917
##   psc =~
##     self_kindness     3.512    0.144   24.336    0.000    3.512    0.779
##     common_humanty    2.005    0.126   15.908    0.000    2.005    0.603
##     mindfulness       2.507    0.114   22.035    0.000    2.507    0.790
##   neuro =~
##     negative_affct    2.667    0.135   19.808    0.000    2.667    0.684
##     self_reproach     4.916    0.175   28.161    0.000    4.916    0.886
##
## Regressions:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr ~
##     cope              0.079    0.083    0.948    0.343    0.075    0.075
##     soc               0.175    0.049    3.573    0.000    0.166    0.166
##     nsc              -0.191    0.047   -4.029    0.000   -0.181   -0.181
##     psc               0.187    0.083    2.246    0.025    0.177    0.177
##   ptss ~
##     cope              0.086    0.087    0.993    0.321    0.073    0.073
##     soc               0.062    0.053    1.160    0.246    0.052    0.052
##     nsc              -0.621    0.055  -11.228    0.000   -0.528   -0.528
##     psc              -0.032    0.079   -0.406    0.685   -0.027   -0.027
##
## Covariances:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   nsc ~~
##     psc               0.269    0.047    5.773    0.000    0.269    0.269
##   psc ~~
```

```
##     neuro            -0.459    0.041  -11.098    0.000   -0.459   -0.459
##   nsc ~~
##     neuro            -0.824    0.024  -35.012    0.000   -0.824   -0.824
##   cope ~~
##     soc               0.261    0.050    5.254    0.000    0.261    0.261
##   soc ~~
##     nsc               0.170    0.043    3.929    0.000    0.170    0.170
##     psc               0.239    0.048    4.991    0.000    0.239    0.239
##     neuro            -0.233    0.047   -4.992    0.000   -0.233   -0.233
##   cope ~~
##     nsc               0.079    0.047    1.702    0.089    0.079    0.079
##     psc               0.675    0.038   17.841    0.000    0.675    0.675
##     neuro            -0.302    0.046   -6.548    0.000   -0.302   -0.302
##  .self_judgment ~~
##    .self_kindness     4.716    0.499    9.450    0.000    4.716    0.517
##  .ptgr ~~
##    .ptss              0.321    0.040    8.091    0.000    0.321    0.321
##
## Variances:
##                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##    .life_apprecitn    5.604    0.405   13.829    0.000    5.604    0.306
##    .new_possibilts    4.304    0.537    8.009    0.000    4.304    0.106
##    .persnl_strngth    9.687    0.676   14.340    0.000    9.687    0.325
##    .spirtlty_chngs   27.110    2.080   13.035    0.000   27.110    0.718
##    .intrprsnl_rltn   17.876    1.704   10.494    0.000   17.876    0.207
##    .avoiding         10.991    0.838   13.120    0.000   10.991    0.385
##    .intrusivity      11.247    1.453    7.742    0.000   11.247    0.227
##    .iperarousal       4.539    0.450   10.086    0.000    4.539    0.253
##    .positive_atttd   10.086    1.122    8.986    0.000   10.086    0.439
##    .problem_ornttn   16.555    1.483   11.161    0.000   16.555    0.547
##    .family           13.835    1.303   10.615    0.000   13.835    0.504
##    .friends          11.354    1.376    8.253    0.000   11.354    0.462
##    .significnt_thr   11.613    1.159   10.023    0.000   11.613    0.479
##    .self_judgment    10.387    0.668   15.562    0.000   10.387    0.486
##    .isolation         4.265    0.396   10.764    0.000    4.265    0.228
##    .over_identfctn    2.374    0.272    8.741    0.000    2.374    0.160
##    .self_kindness     8.011    0.681   11.771    0.000    8.011    0.394
##    .common_humanty    7.046    0.464   15.170    0.000    7.046    0.637
##    .mindfulness       3.786    0.346   10.933    0.000    3.786    0.376
##    .negative_affct    8.087    0.492   16.443    0.000    8.087    0.532
##    .self_reproach     6.648    1.097    6.058    0.000    6.648    0.216
##    .ptgr              1.000                              0.894    0.894
##    .ptss              1.000                              0.722    0.722
##     cope              1.000                              1.000    1.000
##     soc               1.000                              1.000    1.000
##     nsc               1.000                              1.000    1.000
##     psc               1.000                              1.000    1.000
##     neuro             1.000                              1.000    1.000
```

```
##
## R-Square:
##                    Estimate
##     life_apprecitn    0.694
##     new_possibilts    0.894
##     persnl_strngth    0.675
##     spirtlty_chngs    0.282
##     intrprsnl_rltn    0.793
##     avoiding          0.615
##     intrusivity       0.773
##     iperarousal       0.747
##     positive_atttd    0.561
##     problem_ornttn    0.453
##     family            0.496
##     friends           0.538
##     significnt_thr    0.521
##     self_judgment     0.514
##     isolation         0.772
##     over_identfctn    0.840
##     self_kindness     0.606
##     common_humanty    0.363
##     mindfulness       0.624
##     negative_affct    0.468
##     self_reproach     0.784
##     ptgr              0.106
##     ptss              0.278
```

The fit improves.

```
anova(fit1a, fit2)
```

```
## Scaled Chi-Squared Difference Test (method = "satorra.bentler.2001")
##
## lavaan NOTE:
##     The "Chisq" column contains standard test statistics, not the
##     robust test that should be reported per model. A robust difference
##     test is a function of two standard (not robust) statistics.
##
##        Df   AIC   BIC   Chisq Chisq diff Df diff Pr(>Chisq)
## fit2  169 84668 84952  618.93
## fit1a 175 85426 85683 1389.15      626.2       6  < 2.2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
compareFit(fit2, fit1a, nested = TRUE)
```

```
## ################### Nested Model Comparison #########################
## Scaled Chi-Squared Difference Test (method = "satorra.bentler.2001")
##
## lavaan NOTE:
```

```
##     The "Chisq" column contains standard test statistics, not the
##     robust test that should be reported per model. A robust difference
##     test is a function of two standard (not robust) statistics.
##
##        Df   AIC   BIC   Chisq Chisq diff Df diff Pr(>Chisq)
## fit2  169 84668 84952  618.93
## fit1a 175 85426 85683 1389.15      626.2       6  < 2.2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## ######################## Model Fit Indices ############################
##       chisq.scaled df.scaled pvalue.scaled cfi.robust tli.robust        aic
## fit2      570.828†       169          .000      .948†      .935† 84667.619†
## fit1a    1275.303        175          .000      .856       .828  85425.835
##              bic rmsea.robust  srmr
## fit2  84952.473†        .059† .059†
## fit1a 85683.122         .097  .100
##
## ################### Differences in Fit Indices ########################
##              df.scaled cfi.robust tli.robust     aic     bic rmsea.robust  srmr
## fit1a - fit2         6     -0.091     -0.108 758.216 730.649        0.037 0.042
```

Model 6

Model M6 adds the regression coefficient for Neuroticism.

```
# Without COPE
model6 <- "

  # post-traumatic growth
  ptgr =~ life_appreciation + new_possibilities +
         personal_strength + spirituality_changes +
         interpersonal_relationships

  # ptsd
  ptss =~ avoiding + intrusivity + iperarousal

  # perceived social support
  soc =~ family + friends + significant_other

  # self-compassion
  psc =~ self_kindness + common_humanity + mindfulness
  nsc =~ self_judgment + isolation + over_identification

  # neuroticism
  neuro =~ negative_affect + self_reproach

  # regressions
```

```
  ptss ~ soc + nsc + psc + neuro
  ptgr ~ soc + nsc + psc + neuro

  # covariances
  self_judgment ~~ self_kindness
"
```

```
model6 <- "

  # post-traumatic growth
  ptgr =~ life_appreciation + new_possibilities +
         personal_strength + spirituality_changes +
         interpersonal_relationships

  # ptsd
  ptss =~ avoiding + intrusivity + iperarousal

  # coping
  cope =~ positive_attitude + problem_orientation

  # perceived social support
  soc =~ family + friends + significant_other

  # self-compassion
  psc =~ self_kindness + common_humanity + mindfulness
  nsc =~ self_judgment + isolation + over_identification

  # neuroticism
  neuro =~ negative_affect + self_reproach

  # regressions
  ptss ~ cope + soc + nsc + psc + neuro
  ptgr ~ cope + soc + nsc + psc + neuro

  # covariances
  self_judgment ~~ self_kindness
"
```

```
fit6 <- sem(
  model6,
  data = clean_dat,
  estimator = "MLM",
  std.lv = TRUE
)
```

```
anova(fit2, fit6)
```

```
## Scaled Chi-Squared Difference Test (method = "satorra.bentler.2001")
##
```

```
## lavaan NOTE:
##     The "Chisq" column contains standard test statistics, not the
##     robust test that should be reported per model. A robust difference
##     test is a function of two standard (not robust) statistics.
##
##       Df   AIC   BIC  Chisq Chisq diff Df diff Pr(>Chisq)
## fit6 167 84671 84965 617.86
## fit2 169 84668 84952 618.93    0.94281       2     0.6241
```

The fit improves and is very good.

```
summary(
  fit6,
  standardized = TRUE,
  fit.measures = TRUE,
  rsquare = TRUE
)
```

```
## lavaan 0.6-7 ended normally after 55 iterations
##
##   Estimator                                         ML
##   Optimization method                           NLMINB
##   Number of free parameters                         64
##
##   Number of observations                           731
##
## Model Test User Model:
##                                                   Standard      Robust
##   Test Statistic                                  617.862     570.172
##   Degrees of freedom                                  167         167
##   P-value (Chi-square)                              0.000       0.000
##   Scaling correction factor                                     1.084
##        Satorra-Bentler correction
##
## Model Test Baseline Model:
##
##   Test statistic                                 8572.432    7735.957
##   Degrees of freedom                                  210         210
##   P-value                                           0.000       0.000
##   Scaling correction factor                                     1.108
##
## User Model versus Baseline Model:
##
##   Comparative Fit Index (CFI)                       0.946       0.946
##   Tucker-Lewis Index (TLI)                          0.932       0.933
##
##   Robust Comparative Fit Index (CFI)                            0.948
##   Robust Tucker-Lewis Index (TLI)                               0.934
##
```

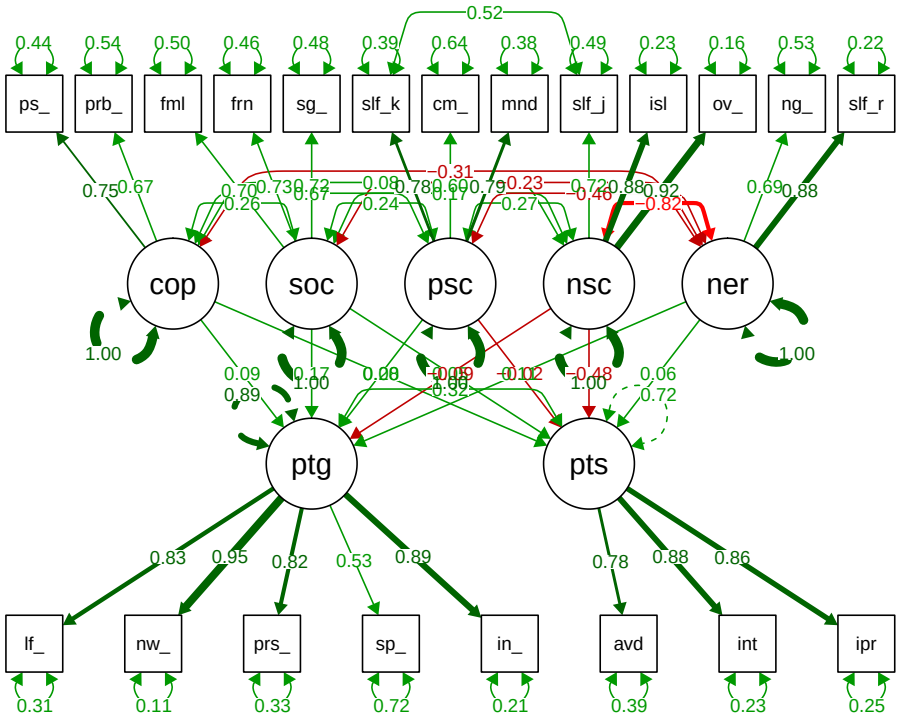
```
## Loglikelihood and Information Criteria:
##
##   Loglikelihood user model (H0)             -42271.273  -42271.273
##   Loglikelihood unrestricted model (H1)     -41962.343  -41962.343
##
##   Akaike (AIC)                               84670.547   84670.547
##   Bayesian (BIC)                             84964.589   84964.589
##   Sample-size adjusted Bayesian (BIC)        84761.369   84761.369
##
## Root Mean Square Error of Approximation:
##
##   RMSEA                                          0.061       0.057
##   90 Percent confidence interval - lower         0.056       0.053
##   90 Percent confidence interval - upper         0.066       0.062
##   P-value RMSEA <= 0.05                          0.000       0.007
##
##   Robust RMSEA                                               0.060
##   90 Percent confidence interval - lower                     0.054
##   90 Percent confidence interval - upper                     0.065
##
## Standardized Root Mean Square Residual:
##
##   SRMR                                           0.058       0.058
##
## Parameter Estimates:
##
##   Standard errors                           Robust.sem
##   Information                                 Expected
##   Information saturated (h1) model          Structured
##
## Latent Variables:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr =~
##     life_apprecitn    3.366    0.102   32.905    0.000    3.567    0.833
##     new_possibilts    5.681    0.150   37.973    0.000    6.019    0.945
##     persnl_strngth    4.229    0.135   31.261    0.000    4.481    0.821
##     spirtlty_chngs    3.083    0.228   13.532    0.000    3.267    0.532
##     intrprsnl_rltn    7.808    0.202   38.662    0.000    8.274    0.891
##   ptss =~
##     avoiding          3.560    0.166   21.391    0.000    4.186    0.784
##     intrusivity       5.259    0.213   24.698    0.000    6.185    0.879
##     iperarousal       3.115    0.163   19.162    0.000    3.664    0.865
##   cope =~
##     positive_atttd    3.582    0.206   17.401    0.000    3.582    0.747
##     problem_ornttn    3.714    0.233   15.929    0.000    3.714    0.675
##   soc =~
##     family            3.692    0.189   19.508    0.000    3.692    0.704
##     friends           3.637    0.201   18.124    0.000    3.637    0.734
```

```
##     significnt_thr    3.556    0.219   16.214    0.000    3.556    0.722
##   psc =~
##     self_kindness     3.516    0.144   24.376    0.000    3.516    0.780
##     common_humanty    2.006    0.126   15.925    0.000    2.006    0.603
##     mindfulness       2.502    0.114   21.974    0.000    2.502    0.788
##   nsc =~
##     self_judgment     3.315    0.133   25.008    0.000    3.315    0.717
##     isolation         3.799    0.105   36.308    0.000    3.799    0.879
##     over_identfctn    3.535    0.100   35.274    0.000    3.535    0.917
##   neuro =~
##     negative_affct    2.671    0.135   19.843    0.000    2.671    0.685
##     self_reproach     4.908    0.175   28.106    0.000    4.908    0.884
##
## Regressions:
##                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptss ~
##     cope             0.096    0.089    1.080    0.280    0.082    0.082
##     soc              0.063    0.053    1.185    0.236    0.054    0.054
##     nsc             -0.568    0.118   -4.818    0.000   -0.483   -0.483
##     psc             -0.021    0.083   -0.257    0.797   -0.018   -0.018
##     neuro            0.066    0.133    0.492    0.623    0.056    0.056
##   ptgr ~
##     cope             0.097    0.086    1.133    0.257    0.092    0.092
##     soc              0.178    0.050    3.598    0.000    0.168    0.168
##     nsc             -0.098    0.104   -0.939    0.348   -0.092   -0.092
##     psc              0.207    0.087    2.388    0.017    0.196    0.196
##     neuro            0.117    0.119    0.983    0.326    0.111    0.111
##
## Covariances:
##                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##  .self_kindness ~~
##    .self_judgment    4.713    0.499    9.447    0.000    4.713    0.518
##   cope ~~
##     soc              0.261    0.050    5.255    0.000    0.261    0.261
##     psc              0.674    0.038   17.831    0.000    0.674    0.674
##     nsc              0.080    0.047    1.717    0.086    0.080    0.080
##     neuro           -0.305    0.046   -6.603    0.000   -0.305   -0.305
##   soc ~~
##     psc              0.239    0.048    4.998    0.000    0.239    0.239
##     nsc              0.170    0.043    3.924    0.000    0.170    0.170
##     neuro           -0.234    0.047   -5.021    0.000   -0.234   -0.234
##   psc ~~
##     nsc              0.268    0.047    5.761    0.000    0.268    0.268
##     neuro           -0.460    0.041  -11.091    0.000   -0.460   -0.460
##   nsc ~~
##     neuro           -0.824    0.024  -34.609    0.000   -0.824   -0.824
##  .ptgr ~~
##    .ptss             0.322    0.040    8.085    0.000    0.322    0.322
```

```
##
## Variances:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##    .life_apprecitn    5.604    0.405   13.831    0.000    5.604    0.306
##    .new_possibilts    4.324    0.538    8.031    0.000    4.324    0.107
##    .persnl_strngth    9.685    0.676   14.336    0.000    9.685    0.325
##    .spirtlty_chngs   27.102    2.079   13.036    0.000   27.102    0.717
##    .intrprsnl_rltn   17.832    1.701   10.485    0.000   17.832    0.207
##    .avoiding         10.989    0.838   13.117    0.000   10.989    0.385
##    .intrusivity      11.253    1.453    7.742    0.000   11.253    0.227
##    .iperarousal       4.538    0.450   10.076    0.000    4.538    0.253
##    .positive_atttd   10.154    1.117    9.094    0.000   10.154    0.442
##    .problem_ornttn   16.497    1.482   11.132    0.000   16.497    0.545
##    .family           13.835    1.303   10.617    0.000   13.835    0.504
##    .friends          11.356    1.376    8.255    0.000   11.356    0.462
##    .significnt_thr   11.614    1.158   10.027    0.000   11.614    0.479
##    .self_kindness     7.978    0.680   11.730    0.000    7.978    0.392
##    .common_humanty    7.042    0.464   15.166    0.000    7.042    0.636
##    .mindfulness       3.810    0.347   10.985    0.000    3.810    0.378
##    .self_judgment    10.383    0.667   15.557    0.000   10.383    0.486
##    .isolation         4.264    0.396   10.778    0.000    4.264    0.228
##    .over_identfctn    2.363    0.273    8.664    0.000    2.363    0.159
##    .negative_affct    8.063    0.492   16.401    0.000    8.063    0.531
##    .self_reproach     6.728    1.092    6.161    0.000    6.728    0.218
##    .ptgr              1.000                              0.891    0.891
##    .ptss              1.000                              0.723    0.723
##     cope              1.000                              1.000    1.000
##     soc               1.000                              1.000    1.000
##     psc               1.000                              1.000    1.000
##     nsc               1.000                              1.000    1.000
##     neuro             1.000                              1.000    1.000
##
## R-Square:
##                    Estimate
##     life_apprecitn    0.694
##     new_possibilts    0.893
##     persnl_strngth    0.675
##     spirtlty_chngs    0.283
##     intrprsnl_rltn    0.793
##     avoiding          0.615
##     intrusivity       0.773
##     iperarousal       0.747
##     positive_atttd    0.558
##     problem_ornttn    0.455
##     family            0.496
##     friends           0.538
##     significnt_thr    0.521
##     self_kindness     0.608
```

```
##      common_humanty    0.364
##      mindfulness       0.622
##      self_judgment     0.514
##      isolation         0.772
##      over_identfctn    0.841
##      negative_affct    0.469
##      self_reproach     0.782
##      ptgr              0.109
##      ptss              0.277
```

```
semPaths(
  fit6,
  "std",
  edge.label.cex = 0.75,
  curvePivot = TRUE,
  title = TRUE,
  fade = FALSE
)
```




```
lavaan::standardizedSolution(fit6) %>%
  dplyr::filter(!is.na(pvalue)) %>%
  arrange(desc(pvalue)) %>%
  mutate_if("is.numeric","round",3) %>%
  select(-ci.lower,-ci.upper,-z)
```

```
##                          lhs op                       rhs est.std    se
## 1                       ptss  ~                       psc  -0.018 0.071
## 2                       ptss  ~                    neuro   0.056 0.113
```

```
## 3                          ptgr  ~                          nsc  -0.092 0.099
## 4                          ptgr  ~                       neuro   0.111 0.112
## 5                          ptss  ~                        cope   0.082 0.076
## 6                          ptgr  ~                        cope   0.092 0.081
## 7                          ptss  ~                         soc   0.054 0.045
## 8                          cope ~~                         nsc   0.080 0.047
## 9                          ptgr  ~                         psc   0.196 0.081
## 10                         ptgr  ~                         soc   0.168 0.046
## 11                          soc ~~                         nsc   0.170 0.043
## 12                          soc ~~                         psc   0.239 0.048
## 13                          soc ~~                       neuro  -0.234 0.047
## 14                         ptss  ~                         nsc  -0.483 0.096
## 15                         cope ~~                         soc   0.261 0.050
## 16                          psc ~~                         nsc   0.268 0.047
## 17               self_reproach ~~               self_reproach   0.218 0.036
## 18                         cope ~~                       neuro  -0.305 0.046
## 19                 intrusivity ~~                 intrusivity   0.227 0.030
## 20           new_possibilities ~~           new_possibilities   0.107 0.013
## 21                         ptgr ~~                        ptss   0.322 0.040
## 22                         ptgr =~           life_appreciation   0.833 0.014
## 23                         ptgr =~           new_possibilities   0.945 0.007
## 24                         ptgr =~           personal_strength   0.821 0.015
## 25                         ptgr =~        spirituality_changes   0.532 0.024
## 26                         ptgr =~ interpersonal_relationships   0.891 0.012
## 27                         ptss =~                    avoiding   0.784 0.020
## 28                         ptss =~                  intrusivity   0.879 0.017
## 29                         ptss =~                  iperarousal   0.865 0.015
## 30                         cope =~           positive_attitude   0.747 0.033
## 31                         cope =~         problem_orientation   0.675 0.035
## 32                          soc =~                       family   0.704 0.030
## 33                          soc =~                      friends   0.734 0.035
## 34                          soc =~           significant_other   0.722 0.033
## 35                          psc =~               self_kindness   0.780 0.022
## 36                          psc =~             common_humanity   0.603 0.031
## 37                          psc =~                 mindfulness   0.788 0.023
## 38                          nsc =~               self_judgment   0.717 0.021
## 39                          nsc =~                   isolation   0.879 0.012
## 40                          nsc =~         over_identification   0.917 0.010
## 41                       neuro =~             negative_affect   0.685 0.024
## 42                       neuro =~               self_reproach   0.884 0.020
## 43               self_kindness ~~               self_judgment   0.518 0.039
## 44           life_appreciation ~~           life_appreciation   0.306 0.023
## 45           personal_strength ~~           personal_strength   0.325 0.024
## 46        spirituality_changes ~~        spirituality_changes   0.717 0.025
## 47 interpersonal_relationships ~~ interpersonal_relationships   0.207 0.021
## 48                     avoiding ~~                    avoiding   0.385 0.031
## 49                   iperarousal ~~                  iperarousal   0.253 0.027
## 50           positive_attitude ~~           positive_attitude   0.442 0.049
```

```
## 51         problem_orientation ~~         problem_orientation   0.545 0.047
## 52                      family ~~                      family   0.504 0.042
## 53                     friends ~~                     friends   0.462 0.052
## 54           significant_other ~~           significant_other   0.479 0.048
## 55               self_kindness ~~               self_kindness   0.392 0.035
## 56             common_humanity ~~             common_humanity   0.636 0.038
## 57                 mindfulness ~~                 mindfulness   0.378 0.037
## 58               self_judgment ~~               self_judgment   0.486 0.030
## 59                   isolation ~~                   isolation   0.228 0.022
## 60         over_identification ~~         over_identification   0.159 0.019
## 61             negative_affect ~~             negative_affect   0.531 0.033
## 62                        ptgr ~~                        ptgr   0.891 0.026
## 63                        ptss ~~                        ptss   0.723 0.035
## 64                        cope ~~                         psc   0.674 0.038
## 65                         psc ~~                      neuro  -0.460 0.041
## 66                         nsc ~~                      neuro  -0.824 0.024
##    pvalue
## 1   0.797
## 2   0.623
## 3   0.348
## 4   0.324
## 5   0.279
## 6   0.257
## 7   0.236
## 8   0.086
## 9   0.015
## 10  0.000
## 11  0.000
## 12  0.000
## 13  0.000
## 14  0.000
## 15  0.000
## 16  0.000
## 17  0.000
## 18  0.000
## 19  0.000
## 20  0.000
## 21  0.000
## 22  0.000
## 23  0.000
## 24  0.000
## 25  0.000
## 26  0.000
## 27  0.000
## 28  0.000
## 29  0.000
## 30  0.000
## 31  0.000
```

```
## 32  0.000
## 33  0.000
## 34  0.000
## 35  0.000
## 36  0.000
## 37  0.000
## 38  0.000
## 39  0.000
## 40  0.000
## 41  0.000
## 42  0.000
## 43  0.000
## 44  0.000
## 45  0.000
## 46  0.000
## 47  0.000
## 48  0.000
## 49  0.000
## 50  0.000
## 51  0.000
## 52  0.000
## 53  0.000
## 54  0.000
## 55  0.000
## 56  0.000
## 57  0.000
## 58  0.000
## 59  0.000
## 60  0.000
## 61  0.000
## 62  0.000
## 63  0.000
## 64  0.000
## 65  0.000
## 66  0.000
```

```
pvalue_cutoff <- 0.05

obj <- semPlot:::semPlotModel(fit6)

# save a copy of the original, so we can compare it later and
#  be sure we removed only what we intended to remove
original_Pars <- obj@Pars

check_Pars <- obj@Pars %>%
  dplyr::filter(!(edge %in% c("int","<->") | lhs == rhs))
# this is the list of paramater to sift thru
```

```r
keep_Pars <- obj@Pars %>%
  dplyr::filter(edge %in% c("int","<->") | lhs == rhs)
# this is the list of paramater to keep asis

test_against <- lavaan::standardizedSolution(fit6) %>%
  dplyr::filter(
    pvalue < pvalue_cutoff, rhs != lhs)

test_against_rev <- test_against %>%
  rename(rhs2 = lhs,
         lhs = rhs) %>%
  rename(rhs = rhs2)
# for some reason, the rhs and lhs are reversed in the
# standardizedSolution() output, for some of the values

checked_Pars <-
    check_Pars %>%
  semi_join(test_against, by = c("lhs", "rhs")) %>%
  bind_rows(
        check_Pars %>%
          semi_join(test_against_rev, by = c("lhs", "rhs"))
    )

# I'll have to reverse it myself, and test against both orders
obj@Pars <- keep_Pars %>%
  bind_rows(checked_Pars)

#let's verify by looking at the list of the edges we removed from the object
anti_join(original_Pars, obj@Pars)
```

```
##   label   lhs edge  rhs         est         std group fixed par
## 1        cope   ~> ptss  0.09620023  0.08179732       FALSE  22
## 2         soc   ~> ptss  0.06292427  0.05350337       FALSE  23
## 3         psc   ~> ptss -0.02135513 -0.01815788       FALSE  25
## 4       neuro   ~> ptss  0.06554947  0.05573553       FALSE  26
## 5        cope   ~> ptgr  0.09711596  0.09164761       FALSE  27
## 6         nsc   ~> ptgr -0.09800560 -0.09248716       FALSE  29
## 7       neuro   ~> ptgr  0.11713362  0.11053813       FALSE  31
```

```r
semPaths(
  obj,
  "col",
  "std",
  rotation = 1,
  groups = "latents",
  pastel = TRUE,
  residuals = FALSE,
  structural = TRUE,
```

```
  curvature = 5,
  edge.width = 2,
edge.label.cex = 1.3,
  mar = c(4, 1, 14, 1)
)
```

```
## Warning in if (w <= 0) w <- 1e-07: la condizione la lunghezza > 1 e solo il
## promo elemento verrà utilizzato

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```

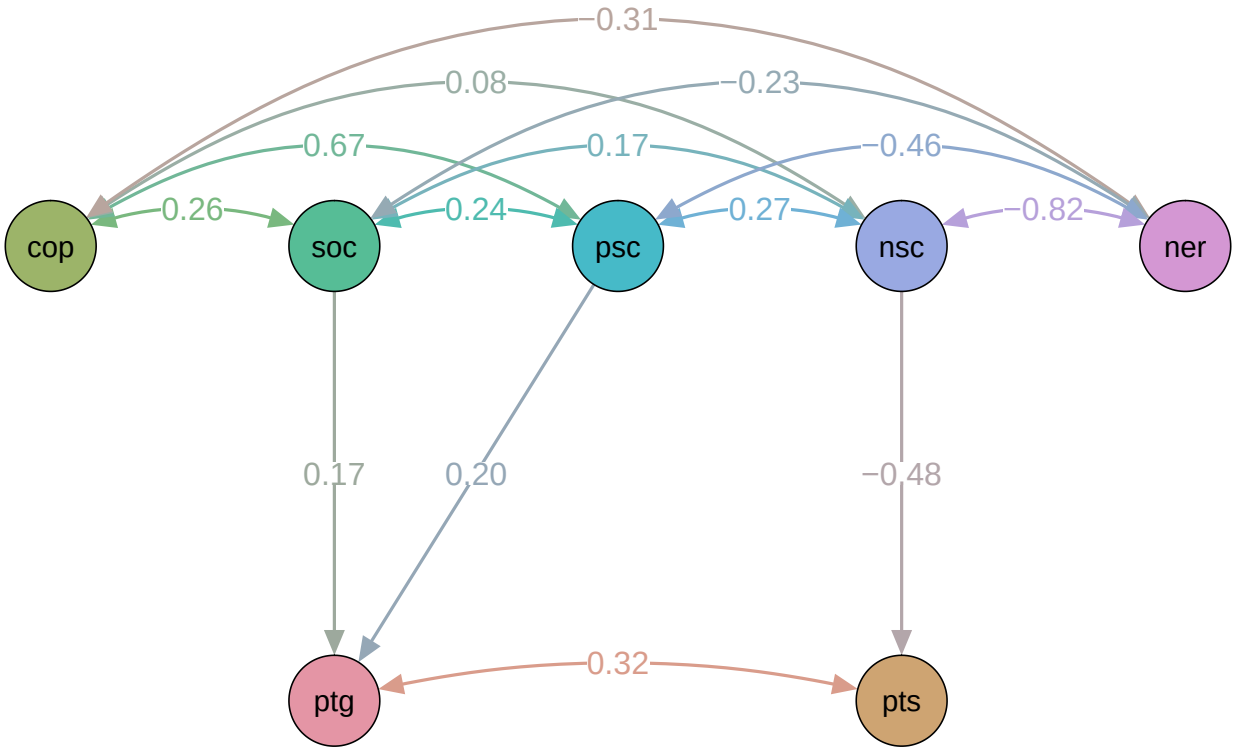


```
semPaths(
  fit6,
  "col",
  "std",
  rotation = 1,
  groups = "latents",
  pastel = TRUE,
  residuals = FALSE,
  structural = TRUE,
  curvature = 5,
  edge.width = 2,
  mar = c(3, 1, 12, 1)
)
```

```
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```

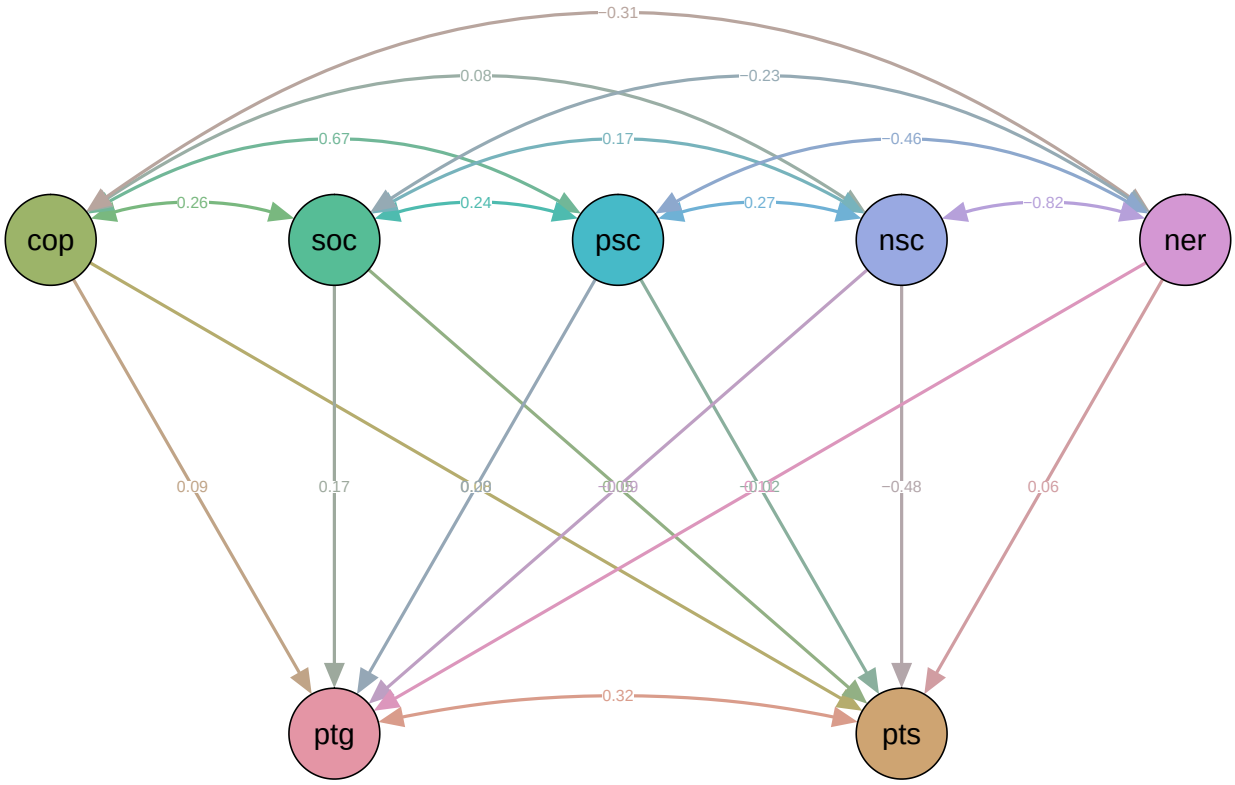


```
standardizedSolution(fit6) %>%
  dplyr::filter(op == "~" & (lhs == "ptss" | lhs == "ptgr")) %>%
  select(lhs, rhs, est.std, pvalue)
```

```
##     lhs   rhs est.std pvalue
## 1  ptss  cope   0.082  0.279
## 2  ptss   soc   0.054  0.236
## 3  ptss   nsc  -0.483  0.000
## 4  ptss   psc  -0.018  0.797
## 5  ptss neuro   0.056  0.623
## 6  ptgr  cope   0.092  0.257
## 7  ptgr   soc   0.168  0.000
## 8  ptgr   nsc  -0.092  0.348
## 9  ptgr   psc   0.196  0.015
## 10 ptgr neuro   0.111  0.324
```

```
# vlabs <- c(" x1 " = " Vis 1" , " x2 " = " Vis 2" , x3 = " Vis 3" , x4 = " Txt
# 1" , x5 = " Txt 2" , x6 = " Txt 3" , x7 = " Speed 1" , x8 = " Speed 2" ,
# x9 = " Speed 3")
#
# fit1.t3 <- semTable (
#   fit6,
#   columns = c(" est " , " se " , "p") ,
#   paramSets = c(" loadings ") ,
#   fits = c(" chisq " , " rmsea ") ,
#   file = file.path ( tempdir , " fit1.t3 ") ,
```

```
#   varLabels = vlabs ,
#   longtable = FALSE ,
#   table.float = TRUE ,
#   caption = " Table Floated ( not a longtable )" ,
#   label = "tab : fit1.t3 ")
```

Model 7

Model 7 remove the two self-compassion regression effects from M6.

```
model7 <- "

  # post-traumatic growth
  ptgr =~ life_appreciation + new_possibilities +
         personal_strength + spirituality_changes +
         interpersonal_relationships

  # ptss
  ptss =~ avoiding + intrusivity + iperarousal

  # coping
  cope =~ positive_attitude + problem_orientation

  # perceived social support
  soc =~ family + friends + significant_other

  # neuroticism
  neuro =~ negative_affect + self_reproach

  # self-compassion
  nsc =~ self_judgment + isolation + over_identification
  psc =~ self_kindness + common_humanity + mindfulness

  # regressions
  ptgr ~ cope + soc + neuro
  ptss ~ cope + soc + neuro

# covariances
  self_judgment ~~ self_kindness
"
```

```
fit7 <- sem(
  model7,
  data = clean_dat,
  estimator = "MLM",
  std.lv = TRUE
)
```

```
anova(fit6, fit7)
```

```
## Scaled Chi-Squared Difference Test (method = "satorra.bentler.2001")
##
## lavaan NOTE:
##     The "Chisq" column contains standard test statistics, not the
##     robust test that should be reported per model. A robust difference
##     test is a function of two standard (not robust) statistics.
##
##       Df   AIC   BIC  Chisq Chisq diff Df diff Pr(>Chisq)
## fit6 167 84671 84965 617.86
## fit7 171 84690 84965 644.98     24.859       4   5.37e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

M6 provides a better fit.

```
summary(
  fit7,
  standardized = TRUE,
  fit.measures = TRUE,
  rsquare = TRUE
)
```

```
## lavaan 0.6-7 ended normally after 45 iterations
##
##   Estimator                                         ML
##   Optimization method                           NLMINB
##   Number of free parameters                         60
##
##   Number of observations                           731
##
## Model Test User Model:
##                                                   Standard      Robust
##   Test Statistic                                  644.985     595.106
##   Degrees of freedom                                  171         171
##   P-value (Chi-square)                              0.000       0.000
##   Scaling correction factor                                     1.084
##        Satorra-Bentler correction
##
## Model Test Baseline Model:
##
##   Test statistic                                 8572.432    7735.957
##   Degrees of freedom                                 210         210
##   P-value                                           0.000       0.000
##   Scaling correction factor                                     1.108
##
## User Model versus Baseline Model:
##
```

```
##   Comparative Fit Index (CFI)                    0.943       0.944
##   Tucker-Lewis Index (TLI)                       0.930       0.931
##
##   Robust Comparative Fit Index (CFI)                         0.945
##   Robust Tucker-Lewis Index (TLI)                            0.932
##
## Loglikelihood and Information Criteria:
##
##   Loglikelihood user model (H0)             -42284.835  -42284.835
##   Loglikelihood unrestricted model (H1)     -41962.343  -41962.343
##
##   Akaike (AIC)                               84689.670   84689.670
##   Bayesian (BIC)                             84965.335   84965.335
##   Sample-size adjusted Bayesian (BIC)        84774.815   84774.815
##
## Root Mean Square Error of Approximation:
##
##   RMSEA                                          0.062       0.058
##   90 Percent confidence interval - lower         0.057       0.053
##   90 Percent confidence interval - upper         0.067       0.063
##   P-value RMSEA <= 0.05                          0.000       0.003
##
##   Robust RMSEA                                               0.061
##   90 Percent confidence interval - lower                     0.055
##   90 Percent confidence interval - upper                     0.066
##
## Standardized Root Mean Square Residual:
##
##   SRMR                                           0.060       0.060
##
## Parameter Estimates:
##
##   Standard errors                             Robust.sem
##   Information                                   Expected
##   Information saturated (h1) model          Structured
##
## Latent Variables:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr =~
##     life_apprecitn    3.369    0.102   33.028    0.000    3.568    0.834
##     new_possibilts    5.684    0.151   37.756    0.000    6.021    0.945
##     persnl_strngth    4.230    0.136   31.142    0.000    4.481    0.821
##     spirtlty_chngs    3.082    0.229   13.438    0.000    3.264    0.531
##     intrprsnl_rltn    7.809    0.203   38.392    0.000    8.271    0.890
##   ptss =~
##     avoiding          3.531    0.172   20.576    0.000    4.190    0.785
##     intrusivity       5.202    0.225   23.145    0.000    6.172    0.877
##     iperarousal       3.094    0.165   18.743    0.000    3.670    0.866
```

```
##   cope =~
##     positive_atttd    3.477    0.198   17.587    0.000    3.477    0.725
##     problem_ornttn    3.741    0.227   16.460    0.000    3.741    0.680
##   soc =~
##     family            3.692    0.189   19.508    0.000    3.692    0.704
##     friends           3.639    0.200   18.157    0.000    3.639    0.734
##     significnt_thr    3.554    0.219   16.197    0.000    3.554    0.721
##   neuro =~
##     negative_affct    2.660    0.134   19.844    0.000    2.660    0.682
##     self_reproach     4.711    0.173   27.185    0.000    4.711    0.849
##   nsc =~
##     self_judgment     3.312    0.133   24.892    0.000    3.312    0.717
##     isolation         3.814    0.104   36.503    0.000    3.814    0.882
##     over_identfctn    3.524    0.101   35.011    0.000    3.524    0.914
##   psc =~
##     self_kindness     3.468    0.145   23.992    0.000    3.468    0.769
##     common_humanty    1.992    0.127   15.728    0.000    1.992    0.599
##     mindfulness       2.539    0.113   22.412    0.000    2.539    0.800
##
## Regressions:
##                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr ~
##     cope              0.290    0.053    5.425    0.000    0.273    0.273
##     soc               0.175    0.049    3.592    0.000    0.165    0.165
##     neuro             0.172    0.048    3.596    0.000    0.163    0.163
##   ptss ~
##     cope              0.273    0.060    4.554    0.000    0.230    0.230
##     soc               0.064    0.059    1.076    0.282    0.054    0.054
##     neuro             0.685    0.064   10.707    0.000    0.578    0.578
##
## Covariances:
##                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##  .self_judgment ~~
##    .self_kindness     4.695    0.503    9.342    0.000    4.695    0.505
##   cope ~~
##     soc               0.264    0.050    5.257    0.000    0.264    0.264
##     neuro            -0.343    0.048   -7.226    0.000   -0.343   -0.343
##     nsc               0.080    0.047    1.688    0.091    0.080    0.080
##     psc               0.693    0.037   18.878    0.000    0.693    0.693
##   soc ~~
##     neuro            -0.243    0.048   -5.059    0.000   -0.243   -0.243
##     nsc               0.171    0.043    3.941    0.000    0.171    0.171
##     psc               0.238    0.048    4.974    0.000    0.238    0.238
##   neuro ~~
##     nsc              -0.859    0.021  -40.390    0.000   -0.859   -0.859
##     psc              -0.484    0.042  -11.486    0.000   -0.484   -0.484
##   nsc ~~
##     psc               0.273    0.047    5.866    0.000    0.273    0.273
```

```
##  .ptgr ~~
##    .ptss              0.306    0.042    7.334    0.000    0.306    0.306
##
## Variances:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##    .life_apprecitn    5.594    0.406   13.781    0.000    5.594    0.305
##    .new_possibilts    4.311    0.539    8.001    0.000    4.311    0.106
##    .persnl_strngth    9.687    0.676   14.337    0.000    9.687    0.325
##    .spirtlty_chngs   27.122    2.080   13.038    0.000   27.122    0.718
##    .intrprsnl_rltn   17.880    1.708   10.469    0.000   17.880    0.207
##    .avoiding         10.961    0.842   13.020    0.000   10.961    0.384
##    .intrusivity      11.414    1.470    7.765    0.000   11.414    0.231
##    .iperarousal       4.490    0.456    9.845    0.000    4.490    0.250
##    .positive_atttd   10.897    1.037   10.514    0.000   10.897    0.474
##    .problem_ornttn   16.297    1.427   11.421    0.000   16.297    0.538
##    .family           13.833    1.304   10.612    0.000   13.833    0.504
##    .friends          11.342    1.373    8.263    0.000   11.342    0.461
##    .significnt_thr   11.632    1.159   10.034    0.000   11.632    0.479
##    .negative_affct    8.120    0.487   16.681    0.000    8.120    0.534
##    .self_reproach     8.626    0.970    8.888    0.000    8.626    0.280
##    .self_judgment    10.385    0.670   15.496    0.000   10.385    0.486
##    .isolation         4.153    0.390   10.636    0.000    4.153    0.222
##    .over_identfctn    2.444    0.277    8.813    0.000    2.444    0.164
##    .self_kindness     8.305    0.687   12.095    0.000    8.305    0.408
##    .common_humanty    7.098    0.467   15.208    0.000    7.098    0.641
##    .mindfulness       3.624    0.344   10.521    0.000    3.624    0.360
##    .ptgr              1.000                              0.891    0.891
##    .ptss              1.000                              0.710    0.710
##     cope              1.000                              1.000    1.000
##     soc               1.000                              1.000    1.000
##     neuro             1.000                              1.000    1.000
##     nsc               1.000                              1.000    1.000
##     psc               1.000                              1.000    1.000
##
## R-Square:
##                    Estimate
##     life_apprecitn    0.695
##     new_possibilts    0.894
##     persnl_strngth    0.675
##     spirtlty_chngs    0.282
##     intrprsnl_rltn    0.793
##     avoiding          0.616
##     intrusivity       0.769
##     iperarousal       0.750
##     positive_atttd    0.526
##     problem_ornttn    0.462
##     family            0.496
##     friends           0.539
```

```
##     significnt_thr    0.521
##     negative_affct    0.466
##     self_reproach     0.720
##     self_judgment     0.514
##     isolation         0.778
##     over_identfctn    0.836
##     self_kindness     0.592
##     common_humanty    0.359
##     mindfulness       0.640
##     ptgr              0.109
##     ptss              0.290
```

Model 8

M8 remove only the regression effect of the negative component of self-compassion from M6.

```
model8 <- "

  # post-traumatic growth
  ptgr =~ life_appreciation + new_possibilities +
         personal_strength + spirituality_changes +
         interpersonal_relationships

  # ptsd
  ptss =~ avoiding + intrusivity + iperarousal

  # coping
  cope =~ positive_attitude + problem_orientation

  # perceived social support
  soc =~ family + friends + significant_other

  # self-compassion
  nsc =~ self_judgment + isolation + over_identification
  psc =~ self_kindness + common_humanity + mindfulness

  # neuroticism
  neuro =~ negative_affect + self_reproach

  # regressions
  ptgr ~ cope + soc + psc + neuro
  ptss ~ cope + soc + psc + neuro

  # covariances
  self_judgment ~~ self_kindness
"
```

```
fit8 <- sem(
  model8,
  data = clean_dat,
  estimator = "MLM",
  std.lv = TRUE
)
```

The goodness of fit decreases.

```
anova(fit6, fit8)
```

```
## Scaled Chi-Squared Difference Test (method = "satorra.bentler.2001")
##
## lavaan NOTE:
##     The "Chisq" column contains standard test statistics, not the
##     robust test that should be reported per model. A robust difference
##     test is a function of two standard (not robust) statistics.
##
##       Df   AIC   BIC  Chisq Chisq diff Df diff Pr(>Chisq)
## fit6 167 84671 84965 617.86
## fit8 169 84686 84971 637.59     19.693       2  5.292e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
summary(
  fit8,
  standardized = TRUE,
  fit.measures = TRUE,
  rsquare = TRUE
)
```

```
## lavaan 0.6-7 ended normally after 49 iterations
##
##   Estimator                                         ML
##   Optimization method                           NLMINB
##   Number of free parameters                         62
##
##   Number of observations                           731
##
## Model Test User Model:
##                                                   Standard      Robust
##   Test Statistic                                  637.592     588.906
##   Degrees of freedom                                  169         169
##   P-value (Chi-square)                              0.000       0.000
##   Scaling correction factor                                     1.083
##         Satorra-Bentler correction
##
## Model Test Baseline Model:
##
```

```
##   Test statistic                                8572.432    7735.957
##   Degrees of freedom                                210         210
##   P-value                                         0.000       0.000
##   Scaling correction factor                                   1.108
##
## User Model versus Baseline Model:
##
##   Comparative Fit Index (CFI)                     0.944       0.944
##   Tucker-Lewis Index (TLI)                        0.930       0.931
##
##   Robust Comparative Fit Index (CFI)                          0.945
##   Robust Tucker-Lewis Index (TLI)                             0.932
##
## Loglikelihood and Information Criteria:
##
##   Loglikelihood user model (H0)             -42281.139  -42281.139
##   Loglikelihood unrestricted model (H1)     -41962.343  -41962.343
##
##   Akaike (AIC)                               84686.277   84686.277
##   Bayesian (BIC)                             84971.131   84971.131
##   Sample-size adjusted Bayesian (BIC)        84774.261   84774.261
##
## Root Mean Square Error of Approximation:
##
##   RMSEA                                           0.062       0.058
##   90 Percent confidence interval - lower          0.057       0.053
##   90 Percent confidence interval - upper          0.067       0.063
##   P-value RMSEA <= 0.05                           0.000       0.003
##
##   Robust RMSEA                                                0.061
##   90 Percent confidence interval - lower                      0.055
##   90 Percent confidence interval - upper                      0.066
##
## Standardized Root Mean Square Residual:
##
##   SRMR                                            0.059       0.059
##
## Parameter Estimates:
##
##   Standard errors                             Robust.sem
##   Information                                   Expected
##   Information saturated (h1) model          Structured
##
## Latent Variables:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr =~
##     life_apprecitn    3.358    0.103   32.707    0.000    3.567    0.833
##     new_possibilts    5.668    0.151   37.657    0.000    6.021    0.945
```

```
##     persnl_strngth    4.218    0.136   31.076    0.000    4.481    0.821
##     spirtlty_chngs    3.075    0.228   13.509    0.000    3.266    0.531
##     intrprsnl_rltn    7.788    0.203   38.376    0.000    8.273    0.891
##   ptss =~
##     avoiding          3.532    0.172   20.563    0.000    4.188    0.784
##     intrusivity       5.205    0.225   23.183    0.000    6.173    0.877
##     iperarousal       3.096    0.165   18.761    0.000    3.671    0.866
##   cope =~
##     positive_atttd    3.502    0.201   17.384    0.000    3.502    0.730
##     problem_ornttn    3.768    0.231   16.292    0.000    3.768    0.685
##   soc =~
##     family            3.692    0.189   19.515    0.000    3.692    0.704
##     friends           3.637    0.201   18.130    0.000    3.637    0.734
##     significnt_thr    3.556    0.219   16.216    0.000    3.556    0.722
##   nsc =~
##     self_judgment     3.312    0.133   24.930    0.000    3.312    0.717
##     isolation         3.813    0.104   36.497    0.000    3.813    0.882
##     over_identfctn    3.524    0.101   35.015    0.000    3.524    0.914
##   psc =~
##     self_kindness     3.518    0.144   24.385    0.000    3.518    0.780
##     common_humanty    2.007    0.126   15.920    0.000    2.007    0.603
##     mindfulness       2.499    0.114   21.896    0.000    2.499    0.787
##   neuro =~
##     negative_affct    2.661    0.134   19.834    0.000    2.661    0.683
##     self_reproach     4.711    0.173   27.168    0.000    4.711    0.849
##
## Regressions:
##                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##   ptgr ~
##     cope              0.128    0.082    1.551    0.121    0.120    0.120
##     soc               0.179    0.050    3.565    0.000    0.169    0.169
##     psc               0.217    0.089    2.444    0.015    0.204    0.204
##     neuro             0.228    0.056    4.091    0.000    0.214    0.214
##   ptss ~
##     cope              0.254    0.093    2.738    0.006    0.214    0.214
##     soc               0.064    0.060    1.080    0.280    0.054    0.054
##     psc               0.026    0.091    0.283    0.777    0.022    0.022
##     neuro             0.691    0.068   10.180    0.000    0.582    0.582
##
## Covariances:
##                   Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##  .self_judgment ~~
##    .self_kindness     4.697    0.498    9.424    0.000    4.697    0.517
##   cope ~~
##     soc               0.264    0.050    5.289    0.000    0.264    0.264
##     nsc               0.080    0.047    1.699    0.089    0.080    0.080
##     psc               0.677    0.038   17.830    0.000    0.677    0.677
##     neuro            -0.341    0.048   -7.175    0.000   -0.341   -0.341
```

```
##   soc ~~
##     nsc               0.171    0.043    3.948    0.000    0.171    0.171
##     psc               0.240    0.048    5.011    0.000    0.240    0.240
##     neuro            -0.243    0.048   -5.062    0.000   -0.243   -0.243
##   nsc ~~
##     psc               0.268    0.047    5.760    0.000    0.268    0.268
##     neuro            -0.859    0.021  -40.438    0.000   -0.859   -0.859
##   psc ~~
##     neuro            -0.480    0.042  -11.339    0.000   -0.480   -0.480
##  .ptgr ~~
##    .ptss              0.310    0.041    7.600    0.000    0.310    0.310
##
## Variances:
##                    Estimate  Std.Err  z-value  P(>|z|)   Std.lv  Std.all
##    .life_apprecitn    5.604    0.405   13.830    0.000    5.604    0.306
##    .new_possibilts    4.311    0.537    8.021    0.000    4.311    0.106
##    .persnl_strngth    9.687    0.675   14.341    0.000    9.687    0.325
##    .spirtlty_chngs   27.107    2.079   13.037    0.000   27.107    0.718
##    .intrprsnl_rltn   17.859    1.702   10.495    0.000   17.859    0.207
##    .avoiding         10.973    0.842   13.031    0.000   10.973    0.385
##    .intrusivity      11.407    1.470    7.762    0.000   11.407    0.230
##    .iperarousal       4.486    0.456    9.844    0.000    4.486    0.250
##    .positive_atttd   10.721    1.069   10.032    0.000   10.721    0.466
##    .problem_ornttn   16.094    1.471   10.943    0.000   16.094    0.531
##    .family           13.833    1.303   10.615    0.000   13.833    0.504
##    .friends          11.355    1.375    8.260    0.000   11.355    0.462
##    .significnt_thr   11.616    1.158   10.031    0.000   11.616    0.479
##    .self_judgment    10.384    0.670   15.499    0.000   10.384    0.486
##    .isolation         4.156    0.390   10.655    0.000    4.156    0.222
##    .over_identfctn    2.443    0.278    8.800    0.000    2.443    0.164
##    .self_kindness     7.956    0.681   11.690    0.000    7.956    0.391
##    .common_humanty    7.039    0.465   15.148    0.000    7.039    0.636
##    .mindfulness       3.828    0.349   10.985    0.000    3.828    0.380
##    .negative_affct    8.115    0.487   16.678    0.000    8.115    0.534
##    .self_reproach     8.629    0.969    8.906    0.000    8.629    0.280
##    .ptgr              1.000                              0.886    0.886
##    .ptss              1.000                              0.711    0.711
##     cope              1.000                              1.000    1.000
##     soc               1.000                              1.000    1.000
##     nsc               1.000                              1.000    1.000
##     psc               1.000                              1.000    1.000
##     neuro             1.000                              1.000    1.000
##
## R-Square:
##                    Estimate
##     life_apprecitn    0.694
##     new_possibilts    0.894
##     persnl_strngth    0.675
```

```
##     spirtlty_chngs    0.282
##     intrprsnl_rltn    0.793
##     avoiding          0.615
##     intrusivity       0.770
##     iperarousal       0.750
##     positive_atttd    0.534
##     problem_ornttn    0.469
##     family            0.496
##     friends           0.538
##     significnt_thr    0.521
##     self_judgment     0.514
##     isolation         0.778
##     over_identfctn    0.836
##     self_kindness     0.609
##     common_humanty    0.364
##     mindfulness       0.620
##     negative_affct    0.466
##     self_reproach     0.720
##     ptgr              0.114
##     ptss              0.289
```

Model 9

M9 removes only the positive component of self-compassion from M6.

```
model9 <- "
  # post-traumatic growth
  ptgr =~ life_appreciation + new_possibilities +
         personal_strength + spirituality_changes +
         interpersonal_relationships

  # ptsd
  ptss =~ avoiding + intrusivity + iperarousal

  # coping
  cope =~ positive_attitude + problem_orientation

  # perceived social support
  soc =~ family + friends + significant_other

  # self-compassion
  nsc =~ self_judgment + isolation + over_identification
  psc =~ self_kindness + common_humanity + mindfulness

  # neuroticism
  neuro =~ negative_affect + self_reproach

  # regressions
```

```
  ptgr ~ cope + soc + nsc + neuro
  ptss ~ cope + soc + nsc + neuro

  # covariances
  self_judgment ~~ self_kindness
"
```

```
fit9 <- sem(
  model9,
  data = clean_dat,
  estimator = "MLM",
  std.lv = TRUE
)
```

The goodness of fit decreases.

```
anova(fit6, fit9)
```

```
## Scaled Chi-Squared Difference Test (method = "satorra.bentler.2001")
##
## lavaan NOTE:
##     The "Chisq" column contains standard test statistics, not the
##     robust test that should be reported per model. A robust difference
##     test is a function of two standard (not robust) statistics.
##
##       Df   AIC   BIC  Chisq Chisq diff Df diff Pr(>Chisq)
## fit6 167 84671 84965 617.86
## fit9 169 84674 84959 625.68     7.0747       2    0.02909 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```