latents.model <- 'MasteryGoals =~ Q02 + Q01 + Q03 + Q04 + Q05

PerfAppGoals =~ Q09 + Q06 + Q07 + Q08 + Q10

PerfAvGoals =~ Q14 + Q11 + Q12 + Q13

SelfEfficacy =~ Q16 + Q15 + Q17 + Q18 + Q19'

lavaan 0.6-7 ended normally after 43 iterations

Estimator ML

Optimization method NLMINB

Number of free parameters 44

Number of observations 543

Model Test User Model:

Standard Robust

Test Statistic 497.940 399.828

Degrees of freedom 146 146

P-value (Chi-square) 0.000 0.000

Scaling correction factor 1.245

Satorra-Bentler correction

Model Test Baseline Model:

Test statistic 4674.193 3992.249

Degrees of freedom 171 171

P-value 0.000 0.000

Scaling correction factor 1.171

User Model versus Baseline Model:

Comparative Fit Index (CFI) 0.922 0.934

Tucker-Lewis Index (TLI) 0.908 0.922

Robust Comparative Fit Index (CFI) 0.929

Robust Tucker-Lewis Index (TLI) 0.917

Loglikelihood and Information Criteria:

Loglikelihood user model (H0) -14147.499 -14147.499

Loglikelihood unrestricted model (H1) -13898.529 -13898.529

Akaike (AIC) 28382.999 28382.999

Bayesian (BIC) 28572.072 28572.072

Sample-size adjusted Bayesian (BIC) 28432.399 28432.399

Root Mean Square Error of Approximation:

RMSEA 0.067 0.057

90 Percent confidence interval - lower 0.060 0.051

90 Percent confidence interval - upper 0.073 0.063

P-value RMSEA <= 0.05 0.000 0.034

Robust RMSEA 0.063

90 Percent confidence interval - lower 0.056

90 Percent confidence interval - upper 0.071

Standardized Root Mean Square Residual:

SRMR 0.046 0.046

Parameter Estimates:

Standard errors Robust.sem

Information Expected

Information saturated (h1) model Structured

Latent Variables:

Estimate Std.Err z-value P(>|z|)

MasteryGoals =~

Q02 1.000

Q01 0.965 0.084 11.554 0.000

Q03 0.979 0.083 11.763 0.000

Q04 0.615 0.075 8.214 0.000

Q05 0.762 0.080 9.534 0.000

PerfAppGoals =~

Q09 1.000

Q06 0.842 0.035 23.847 0.000

Q07 0.859 0.036 24.075 0.000

Q08 0.841 0.037 22.495 0.000

Q10 0.958 0.029 32.492 0.000

PerfAvGoals =~

Q14 1.000

Q11 0.923 0.052 17.694 0.000

Q12 0.870 0.057 15.372 0.000

Q13 0.948 0.055 17.167 0.000

SelfEfficacy =~

Q16 1.000

Q15 0.936 0.072 13.027 0.000

Q17 0.959 0.076 12.706 0.000

Q18 0.878 0.076 11.515 0.000

Q19 0.962 0.079 12.230 0.000

Covariances:

Estimate Std.Err z-value P(>|z|)

MasteryGoals ~~

PerfAppGoals 0.078 0.044 1.768 0.077

PerfAvGoals 0.070 0.041 1.697 0.090

SelfEfficacy 0.355 0.043 8.269 0.000

PerfAppGoals ~~

PerfAvGoals 1.037 0.075 13.805 0.000

SelfEfficacy 0.070 0.047 1.476 0.140

PerfAvGoals ~~

SelfEfficacy 0.082 0.042 1.940 0.052

Variances:

Estimate Std.Err z-value P(>|z|)

.Q02 0.577 0.057 10.151 0.000

.Q01 0.598 0.055 10.917 0.000

.Q03 0.720 0.053 13.477 0.000

.Q04 0.467 0.049 9.430 0.000

.Q05 0.569 0.047 12.077 0.000

.Q09 0.448 0.045 10.029 0.000

.Q06 0.902 0.068 13.242 0.000

.Q07 0.944 0.079 12.010 0.000

.Q08 0.794 0.077 10.263 0.000

.Q10 0.612 0.067 9.195 0.000

.Q14 1.032 0.085 12.104 0.000

.Q11 0.734 0.063 11.634 0.000

.Q12 1.188 0.093 12.828 0.000

.Q13 0.978 0.084 11.638 0.000

.Q16 0.785 0.060 13.093 0.000

.Q15 0.554 0.044 12.484 0.000

.Q17 0.372 0.040 9.421 0.000

.Q18 0.372 0.038 9.893 0.000

.Q19 0.425 0.041 10.485 0.000

MasteryGoals 0.521 0.077 6.724 0.000

PerfAppGoals 1.504 0.099 15.271 0.000

PerfAvGoals 1.188 0.103 11.516 0.000

SelfEfficacy 0.544 0.070 7.725 0.000

$FIT

npar fmin

44.000 0.459

chisq df

497.940 146.000

pvalue chisq.scaled

0.000 399.828

df.scaled pvalue.scaled

146.000 0.000

chisq.scaling.factor baseline.chisq

1.245 4674.193

baseline.df baseline.pvalue

171.000 0.000

baseline.chisq.scaled baseline.df.scaled

3992.249 171.000

baseline.pvalue.scaled baseline.chisq.scaling.factor

0.000 1.171

cfi tli

0.922 0.908

cfi.scaled tli.scaled

0.934 0.922

cfi.robust tli.robust

0.929 0.917

logl unrestricted.logl

-14147.499 -13898.529

aic bic

28382.999 28572.072

ntotal bic2

543.000 28432.399

rmsea rmsea.ci.lower

0.067 0.060

rmsea.ci.upper rmsea.pvalue

0.073 0.000

rmsea.scaled rmsea.ci.lower.scaled

0.057 0.051

rmsea.ci.upper.scaled rmsea.pvalue.scaled

0.063 0.034

rmsea.robust rmsea.ci.lower.robust

0.063 0.056

rmsea.ci.upper.robust rmsea.pvalue.robust

0.071 NA

srmr

0.046

$PE

lhs op rhs exo est se

1 MasteryGoals =~ Q02 0 1.00000000 0.00000000

2 MasteryGoals =~ Q01 0 0.96484571 0.08350969

3 MasteryGoals =~ Q03 0 0.97949379 0.08326692

4 MasteryGoals =~ Q04 0 0.61502643 0.07487253

5 MasteryGoals =~ Q05 0 0.76245880 0.07997425

6 PerfAppGoals =~ Q09 0 1.00000000 0.00000000

7 PerfAppGoals =~ Q06 0 0.84192028 0.03530538

8 PerfAppGoals =~ Q07 0 0.85884022 0.03567293

9 PerfAppGoals =~ Q08 0 0.84094337 0.03738340

10 PerfAppGoals =~ Q10 0 0.95807308 0.02948658

11 PerfAvGoals =~ Q14 0 1.00000000 0.00000000

12 PerfAvGoals =~ Q11 0 0.92333457 0.05218353

13 PerfAvGoals =~ Q12 0 0.87002128 0.05659682

14 PerfAvGoals =~ Q13 0 0.94811724 0.05522846

15 SelfEfficacy =~ Q16 0 1.00000000 0.00000000

16 SelfEfficacy =~ Q15 0 0.93572305 0.07183083

17 SelfEfficacy =~ Q17 0 0.95938509 0.07550436

18 SelfEfficacy =~ Q18 0 0.87778470 0.07622710

19 SelfEfficacy =~ Q19 0 0.96199956 0.07865920

20 Q02 ~~ Q02 0 0.57701561 0.05684225

21 Q01 ~~ Q01 0 0.59775336 0.05475590

22 Q03 ~~ Q03 0 0.72039566 0.05345430

23 Q04 ~~ Q04 0 0.46675866 0.04949913

24 Q05 ~~ Q05 0 0.56943390 0.04714859

25 Q09 ~~ Q09 0 0.44792850 0.04466333

26 Q06 ~~ Q06 0 0.90169413 0.06809180

27 Q07 ~~ Q07 0 0.94382689 0.07858403

28 Q08 ~~ Q08 0 0.79437515 0.07740117

29 Q10 ~~ Q10 0 0.61205800 0.06656651

30 Q14 ~~ Q14 0 1.03175020 0.08523819

31 Q11 ~~ Q11 0 0.73435544 0.06311902

32 Q12 ~~ Q12 0 1.18837060 0.09264104

33 Q13 ~~ Q13 0 0.97831275 0.08406186

34 Q16 ~~ Q16 0 0.78474250 0.05993616

35 Q15 ~~ Q15 0 0.55389704 0.04436823

36 Q17 ~~ Q17 0 0.37234419 0.03952251

37 Q18 ~~ Q18 0 0.37219746 0.03762099

38 Q19 ~~ Q19 0 0.42499430 0.04053310

39 MasteryGoals ~~ MasteryGoals 0 0.52098329 0.07747852

40 PerfAppGoals ~~ PerfAppGoals 0 1.50422916 0.09850024

41 PerfAvGoals ~~ PerfAvGoals 0 1.18829255 0.10318427

42 SelfEfficacy ~~ SelfEfficacy 0 0.54442520 0.07047457

43 MasteryGoals ~~ PerfAppGoals 0 0.07817630 0.04422198

44 MasteryGoals ~~ PerfAvGoals 0 0.07020908 0.04136945

45 MasteryGoals ~~ SelfEfficacy 0 0.35478389 0.04290319

46 PerfAppGoals ~~ PerfAvGoals 0 1.03700266 0.07512043

47 PerfAppGoals ~~ SelfEfficacy 0 0.06953106 0.04710663

48 PerfAvGoals ~~ SelfEfficacy 0 0.08184796 0.04218984

z pvalue

1 NA NA

2 11.553698 0.0000000000000000000000

3 11.763301 0.0000000000000000000000

4 8.214313 0.0000000000000002220446

5 9.533804 0.0000000000000000000000

6 NA NA

7 23.846797 0.0000000000000000000000

8 24.075402 0.0000000000000000000000

9 22.495098 0.0000000000000000000000

10 32.491838 0.0000000000000000000000

11 NA NA

12 17.693983 0.0000000000000000000000

13 15.372265 0.0000000000000000000000

14 17.167185 0.0000000000000000000000

15 NA NA

16 13.026761 0.0000000000000000000000

17 12.706353 0.0000000000000000000000

18 11.515390 0.0000000000000000000000

19 12.229968 0.0000000000000000000000

20 10.151175 0.0000000000000000000000

21 10.916693 0.0000000000000000000000

22 13.476852 0.0000000000000000000000

23 9.429634 0.0000000000000000000000

24 12.077433 0.0000000000000000000000

25 10.028998 0.0000000000000000000000

26 13.242331 0.0000000000000000000000

27 12.010417 0.0000000000000000000000

28 10.263089 0.0000000000000000000000

29 9.194684 0.0000000000000000000000

30 12.104319 0.0000000000000000000000

31 11.634455 0.0000000000000000000000

32 12.827690 0.0000000000000000000000

33 11.638010 0.0000000000000000000000

34 13.092973 0.0000000000000000000000

35 12.484091 0.0000000000000000000000

36 9.421067 0.0000000000000000000000

37 9.893345 0.0000000000000000000000

38 10.485116 0.0000000000000000000000

39 6.724229 0.0000000000176525460915

40 15.271325 0.0000000000000000000000

41 11.516218 0.0000000000000000000000

42 7.725130 0.0000000000000111022302

43 1.767815 0.0770917641497737005096

44 1.697124 0.0896732415715506547826

45 8.269406 0.0000000000000002220446

46 13.804536 0.0000000000000000000000

47 1.476036 0.1399343485509199069838

48 1.939992 0.0523806095488994483134