Supplemental Material for “Perceived Age Discrimination across Age in Europe – From an Ageing Society to a Society for All Ages”

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Sample

The sample assessed in the European Social Survey (ESS), Round 4, included 56751 respondents between 15 and 105 years. Data were collected in 29 countries and the figure below shows kernel density plots of age for each of the 29 countries. Although age densities varied across countries, many countries had comparable age distributions. Turkey (TR) differed notably from the remaining countries, with a predominantly young sample.
Measurements and Descriptive Statistics

The Three Age Discrimination Items

Perceived age discrimination was assessed with three items, Table A1 shows descriptive statistics for the items. The items were strongly skewed, indicating that they should be treated as categorical. There was little missingness in the data (about 1.5% for each item). The table also shows a comparison of indicated experiences of age discrimination in narrowly defined age groups. Proportions who reported age discrimination (at any level) against themselves were substantially higher in the youngest age group (from 15 to 29 years) than in any other age group. Middle aged had the lowest scores for perceived age discrimination, older age groups moderately higher.

Table A1. Descriptive statistics for the three age discrimination items

| Percent (excluding missing) | Prejudice | Lack of respect | Treated badly |
|-----------------------------|-----------|-----------------|---------------|
| 0 - Never                   | 66.5      | 63.5            | 72.1          |
| 1                           | 16.3      | 18.6            | 16.2          |
| 2                           | 09.8      | 10.2            | 07.2          |
| 3                           | 05.4      | 05.9            | 03.5          |
| 4 - Very often              | 01.9      | 01.8            | 01.0          |

Percent missing data 01.6 01.6 01.5

Percent > 0 in each age group

| Age Group | Prejudice | Lack of respect | Treated badly |
|-----------|-----------|-----------------|---------------|
| 15 to 19  | 53.5      | 55.4            | 42.6          |
| 20 to 24  | 49.0      | 53.1            | 40.4          |
| 25 to 29  | 40.7      | 46.2            | 33.8          |
| 30 to 34  | 30.6      | 36.2            | 26.0          |
| 35 to 39  | 26.5      | 31.3            | 22.9          |
| 40 to 44  | 26.2      | 27.8            | 21.3          |
| 45 to 49  | 27.5      | 29.4            | 22.2          |
| 50 to 54  | 30.4      | 31.6            | 24.0          |
| 55 to 59  | 32.5      | 32.9            | 25.9          |
| 60 to 64  | 31.9      | 34.0            | 27.7          |
| 65 to 69  | 31.5      | 35.4            | 27.0          |
| 70 to 74  | 32.1      | 36.0            | 29.0          |
| 75 to 79  | 31.4      | 34.3            | 27.3          |
| 80 to 84  | 32.8      | 36.0            | 28.2          |
| 85 to 89  | 30.0      | 32.0            | 28.1          |
Analyses used recoded 3-point scales due to few responses in the two highest categories. We note that the few responses indicating particularly frequent age discrimination were found primarily among the youngest age groups (close to 1% for prejudice because of age and lack of respect, lower for treated badly because of age) than in the oldest age groups (approximately 0.4 or lower for prejudice because of age and lack of respect, even lower for treated badly because of age).

Validity Test of the three Age Discrimination Items

We used structural equation models to conduct a simple test of the convergent and discriminant validity of the three age discrimination items. It was theoretically possible that responses could indicate a general tendency to claim being discriminated against (not just based on age). For instance, emotional problems might increase the tendency to blame conflicts in social interactions on discrimination (Major, Kaiser, & McCoy, 2003)

We compared fit for models with a factor representing perceived discrimination and regressed this factor on age and squared age (to reflect non-linear association between age and perceived discrimination). The first model estimated a factor with the three age discrimination items and two similar items in the ESS assessing prejudice because of gender (predsex) and prejudice because of ethnicity (predetn), all indicators were recoded to 3-point ordinal variables. The second and third model used four items (adding either prejudice because of gender or because of ethnicity), the fourth model used only the three age discrimination items to estimate the latent factor of perceived age discrimination.

Adding items on perceived discrimination because of gender and because of ethnicity, providing five indicators for the factor, resulted in a model with acceptable values for the comparative fit index (CFI) and the standardized root mean square residual (SRMR), but the root mean square error of approximation (RMSEA) was clearly too high for a fitting model; RMSEA = 0.10 even when running separate analyses of men and women. Dropping the item discrimination because of ethnicity did not improve model fit (RMSEA = 0.10). Dropping the item for perceived discrimination because of gender and keeping the ethnicity item in addition to the three age discrimination items improved fit (RMSEA = 0.06), since most respondents (84 %) did not experience discrimination because of ethnicity. However, a model using only the three age discrimination items as indicators of the factor (and keeping the two predictors as part of the model) gave a notably improved fit (RMSEA = .02; CFI = 1.00, SRMR = .001). These tests with several items on perceived discrimination (age, gender, ethnicity) were indicative of the discriminant and convergent validity of the three items for perceived age discrimination.

Analytical Strategy

We used three newly developed statistical methods to investigate measurement invariance: an alignment analysis to test for approximate measurement invariance across countries and
age groups, and two methods to test for measurement invariance across age as a continuous variable — local structural equation modeling (LSEM) and moderated non-linear factor analysis (MNLFA).

**Approximate Measurement Invariance**

Studies of measurement invariance typically investigate three types of invariance using confirmatory factor analysis: configural, metric, and scalar invariance. Configural invariance simply means that the factor structure (a factor and its indicators) will be the same across groups. More interesting to us was metric invariance, which assumes invariant factor loadings across groups. A higher level of invariance is scalar invariance, adding invariant intercepts for factor indicators to the invariant factor loadings already tested in metric invariance.

If both intercepts and factor loadings for perceived age discrimination can be fixed to be invariant across groups (countries or age groups), then the latent factor means are on the same scale and it would be possible to compare levels of perceived age discrimination across countries or age groups. That is, the relationship between the estimated factor and the observed variables would not depend on which country or age group an individual belongs to. Thus, scalar invariance would allow for comparisons of factor means, making it possible to draw conclusions about different degrees of perceived discrimination across groups (see Vandenberg & Lance, 2000). In practice, strong measurement invariance (identical factor loadings and identical indicator intercepts) across groups is unlikely when many groups are involved, as in comparisons of countries in the ESS (Asparouhov & Muthén, 2014).

One alternative might be to use partial measurement invariance with an exploratory adaption of the measurement model (Byrne, Shavelson, & Muthén, 1989; Steenkamp & Baumgartner, 1998), but this approach is unlikely to be very helpful when many groups are analysed (see Asparouhov & Muthén, 2014). A better solution can be to use the recently developed approach of approximate measurement invariance (Asparouhov & Muthén, 2014), which estimates approximately equal factor loadings and approximately equal indicator intercepts/thresholds across groups.

Approximate measurement invariance is “approximate” in the sense that it allows for statistically non-significant differences in factor loadings and intercepts across groups. By allowing for some wiggle room for parameters, approximate measurement invariance is more realistic than conventional scalar invariance and achieving approximate measurement invariance would allow for comparisons of the level of perceived age discrimination across countries and across age groups.

Asparouhov and Muthén (2014) refer to the computation of approximate measurement invariance in Mplus as an alignment method. The alignment is done automatically by the statistical software rather than depending on exploratory adaption of the model by the researcher. The alignment uses the configural model as a starting point (no factor loadings or intercepts are fixed to be equal across groups) and then adds restrictions to the model, making factor loadings and intercepts approximately equal, provided these restrictions are supported by the data. Invariance is tested for all indicators.
The algorithm for the alignment method defines a measurement parameter as approximately invariant if it is not statistically significantly different from the default model for all groups. For each measurement parameter the algorithm searches for the largest set of invariant groups. The algorithm develops a solution “where for each group in the invariant set of groups the measurement parameter in that group is not statistically significant[ly different] from the average value for that parameter across all groups in the invariant set” (Asparouhov & Muthén, 2014, p. 5). Moreover, “the algorithm is based on multiple pairwise comparison; that is, multiple testing is done and to avoid false non-invariance discovery we use smaller p-values than the nominal .05” (Asparouhov & Muthén, 2014, p. 5).

The final model will fit the data as well as the original configural model. The combination of approximate measurement invariance and good fit with the data should allow for computation of group-specific factor means (Asparouhov & Muthén, 2014). The moderate differences across groups in factor loadings and intercepts should have little effect on the estimated factor mean. An important byproduct of the alignment analysis is that it will identify which groups cannot have their factor loadings or intercepts/thresholds fixed at approximately the same value as the other groups.

The alignment method in Mplus can estimate approximate measurement invariance freely or apply a fixed alignment, the latter requiring the user to fix the factor mean for a baseline group to zero, potentially easing the alignment analysis (Asparouhov & Muthén, 2014). We refer to Asparouhov and Muthén (2014) for details on approximate measurement invariance based on an alignment analysis.

**Local Structural Equation Modeling**

In LSEM (see Hildebrandt, Wilhelm, & Robitzsch, 2009; Hildebrandt et al., 2016), the full sample is analysed repeatedly, but in each run individuals in the sample are weighted differently, dependent on their value along the moderator (age in our case). Respondents with an age equal to the focal point received a weight of 1.

Following Hildebrandt et al., we developed a bandwidth for the weighting procedure using a Gaussian kernel function. The density function given by the weighting procedure implied no upper or lower limit, meaning that the whole sample was included in each model, but respondents much older (younger) than the focal point had a very low weight.

As Hildebrandt et al. point out, observations near the focal point are also informative for the value of the focal point, though less than those occupying the focal point on the scale, but still more than distal observations. Thus, weighting has to be defined in a manner where weights are lower the further away (the older/younger) individuals are from the focal point. When using this approach, ages nearby the focal point will give information for the calculation and ages far distant from the focal point will have negligible influence on the estimation. Repeating this procedure across the scale of the moderator (age), moving the focal point slightly from model to model, we estimated in total 401 models for an analysis with LSEM.
We tested each factor loading for measurement invariance, the latent factor was identified by fixing its variance to 1. Age was centered, so that 0 for age was the average age of 47.5 years. Following Hildebrandt et al., we used focal points in the LSEM models varying from two standard deviations above to two standard deviations below 0 of centered age, giving focal points that represented ages from 10.5 to 84.5 years. The use of two SDs below and above the average implied that the first of the models estimated gave the largest weight to 15 years olds, since these were the youngest respondents. Respondents older than 84 were represented by their relatively high weights in models of respondents close to 2 SDs above the average.

As described by Hildebrandt et al (2016), the bandwidth \((bw)\) around each focal point is defined by the following equation:

\[
bw = 2 \times N^{(-1/5)} \times SD_M
\]

The bandwidth is thus computed by using a density function that reflects the sample size \((N)\) and the standard deviation of moderator \(SD_M\), where \(M\) in our case refers to the moderator age.

The difference \(z\) for an respondent \(i\) and the target value of \(M\) is scaled according to the bandwidth:

\[
z_i = (M_i - targetM)/bw
\]

Weights \((K)\) for each respondent are then calculated based on the distance \(z_i\). These weights are then rescaled to weights \((W)\) that vary between 0 and 1:

\[
K = (1/\sqrt{2\pi}) \times exp(-z_i^2/2)
\]

\[
W = K/.399
\]

**Moderated Non-Linear Factor Analysis**

We used MNFLA (Bauer, 2016) as a second method to analyze measurement invariance across age. Bauer refers to moderation of an item’s factor loading or threshold as differential item functioning (DIF). Following Bauer, we tested for DIF by comparing (a) models with DIF for a particular item and (b) a model with no DIF. These models were nested and we used the scaled nested Chi-square test (Satorra & Bentler, 2001) for model comparisons. We then kept DIF for the item resulting in the largest improvement in fit and added DIF for a second item, testing whether this improved fit. Finally, we used the model with the best fit to estimate factor scores for each respondent, accounting for measurement non-invariance.

We refer to Bauer (2016) for technical details of the MNLFA approach. The MNLFA code later in this supplemental material shows how we modeled DIF for items.
We first tested for measurement invariance across countries. The code `usevariables = predj_r lkrsp_r trtbd_r country` in the code chunk below refers to variables used in this part of the analysis. `predj_r` is the recoded 3-point version of the original ESS variable “predage” (prejudice because of age), `lkrsp_r` is the recoded 3-point version of the original variable “lkrspag” (lack of respect because of age), `trtbd_r` is the the recoded 3-point version of the original variable “trtbdag” (treated badly because of age). We first estimated traditional measurement invariance across all countries. The estimation was done with Mplus, using MplusAutomation (Hallquist & Wiley, 2016) in R to define the model and to call Mplus:

```r
# Mplus model for traditional invariance across countries
library(MplusAutomation)
setwd("~/Dropbox/Analyses/e01_Discrim_MI/Results/Countries")

# Develop and run Mplus model
# predj_r, lkrsp_r, trtbd_r refer to recoded 3-point ordinal indicators
mymodel <- mplusObject(
  TITLE = "Traditional measurement invariance, all countries;",
  VARIABLE = "
    usevariables = predj_r lkrsp_r trtbd_r country;
    categorical = predj_r lkrsp_r trtbd_r;
    classes=c(29);
    knownclass=c(country);
 ",
  ANALYSIS = "
    model = configural metric scalar;
    estimator = mlf;
    algorithm = integration;
    type = mixture;",
  MODEL = "
    %overall%
    discrim BY predj_r lkrsp_r trtbd_r;",
  OUTPUT = "
    tech1 tech8 cinterval;",
  rdata = ESSdata)

# Run mymodel
myresults<-mplusModeler(mymodel, modelout="CountriesMetricGroupAll.inp", run=1L)
```

Given the negative findings for metric invariance (p < .001), we tested for approximate measurement invariance across countries. The analysis of the full sample indicated substantial
non-invariance across countries and we exploratory developed two groups of countries based on tests with approximate measurement invariance, resulting in the following grouping:

# Defining Country Groups

```r
ESSdata$country_group <-
  ifelse(ESSdata$cntry == "BE", 2, # Belgium (1)
  ifelse(ESSdata$cntry == "DE", 2, # Germany (6)
  ifelse(ESSdata$cntry == "DK", 2, # Denmark (7)
  ifelse(ESSdata$cntry == "EE", 2, # Estonia (8)
  ifelse(ESSdata$cntry == "FI", 2, # Finland (10)
  ifelse(ESSdata$cntry == "GR", 2, # Greece (13)
  ifelse(ESSdata$cntry == "NL", 2, # Netherlands (19)
  ifelse(ESSdata$cntry == "SE", 2, # Sweden (25)
  ifelse(ESSdata$cntry == "SK", 2, # Slovakia (27)
  ifelse(ESSdata$cntry == "UA", 2, 1)))))))) # Ukraine (29)
```

# Thus, these countries are defined as belonging to Country Group 1:
# Bulgaria, Switzerland, Cyprus, Czech Republic, Spain, France,
# United Kingdom, Croatia, Hungary, Ireland, Israel, Latvia, Norway,
# Poland, Portugal, Romania, Russia, Slovenia, Turkey.

Concluding the analysis of measurement invariance across countries, we estimated approximate measurement invariance for respondents in each country group separately, first with respondents in Country Group 1 (using Mplus, and R/MplusAutomation to call Mplus):

# Approximate measurement invariance across countries (alignment analysis)
# Country Group 1

```r
setwd("~/Dropbox/Analyses/e01_Discrim_MI/Results/Countries")

# Select countries dependent on which group in country_group
selectedgroup <- ESSdata[ which(ESSdata$country_group == 1),]

# Develop and run Mplus model
mymodel <- mplusObject(
  TITLE = "Approximate measurement invariance, Country Group 1;",
  VARIABLE = "
    usevariables = predj_r lkrsp_r trtbd_r country;
    categorical = predj_r lkrsp_r trtbd_r;
    classes=c(19);
    knownclass=c(country);",
  ANALYSIS = "
    type=mixture;
    estimator=mlf;
    algorithm=integration;
    estimator = mlf;
  
```

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The estimation of approximate measurement invariance in Country Group 2 used the same code, only substituting

```r
selectedgroup <- ESSdata[ which(ESSdata$country_group == 1),]
```

with

```r
selectedgroup <- ESSdata[ which(ESSdata$country_group == 2),]
```

The output from the two alignment analyses across countries is reproduced towards the end of this supplemental material.

**Perceveived Age Discrimination across Age**

Tests of measurement invariance across age used three different approaches, the first two able to estimate measurement invariance across a continuous variable: LSEM and MNLFA.

**Local Structural Equation Modeling**

LSEM used an Mplus input template and MplusAutomation to generate 401 different input files, each with a different focal point in the LSEM analysis. The code below was used as a template to generate the 401 Mplus input files used for LSEM:

```r
![Template file for LSEM analysis, Country Group 1, using MplusAutomation in R]
```

```r
TITLE: LSEM [[mod]] of perceived age discrimination;
```
DATA:
File = "LSEM_ModelsGroup1.dat";

VARIABLE:
names = predj_r lkrsp_r trtbd_r c_age country pspwght;
missing = .;
usevariables = predj_r lkrsp_r trtbd_r country w;
useobservations = c_age NE -9999;
categorical = predj_r lkrsp_r trtbd_r;
weight = w;
cluster = country;

DEFINE:
! Rescale the standardized moderator to have -2 to +2 SD equal 100 to 500.
! Add a positive constant larger than the smallest negative value of std. variable.
! Multiply by 100 so that each iteration will increment .01 of the original scale.
age100 = (c_age + 33) * 100;

! Specify the LSEM weighting approach
! bandwidth = 2*N^(-1/5)*SDmod
bw = 2*37064^(-1/5)*100;

! Scaled distance = (moderator - target level of moderator)/bandwidth
! Note the inclusion of [[mod]] specifies this will vary from 10 to 50.
zx = (age100 - [[mod]])/bw;

! kernel weights = (1/(2pi)^.5)*exp(-scaled distance^2/2)
k = (1/(6.283185^.5))*exp((-(zx^2))/2);

! weight = k / .399.
w = k/.399;

ANALYSIS:
model=nocovariances;
type=complex;

MODEL:
discrim by predj_r* (b1);
discrim by lkrsp_r (b2);
discrim by trtbd_r (b3);
discrim@1;
[discrim@0];

[predj_r$1*] (i1_1);
[predj_r$2*] (i1_2);
MODEL CONSTRAINT:
NEW(pred lkrs trtb h2 c2 e2 pre_tr1 pre_tr2 lkr_tr1 lkr_tr2 trt_tr1 trt_tr2);

pred = b1;
lkrs = b2;
trtb = b3;

h2 = b1^2;
c2 = b2^2;
e2 = b3^2;

pre_tr1 = i1_1;
pre_tr2 = i1_2;

lkr_tr1 = i2_1;
lkr_tr2 = i2_2;

trt_tr1 = i3_1;
trt_tr2 = i3_2;

OUTPUT: sampstat;

Using the template above, the LSEM analysis of respondents in Country Group 1 was conducted with the following code:

```r
# MplusAutomation for LSEM, Country Group 1
library(MplusAutomation)
library(reshape)

# Select countries from Country Group 1
selectedgroup <- ESSdata[which(ESSdata$country_group == 1),]

# Prepare data file, then delete inpute file generated
library(foreign)
# setwd("~/Dropbox/Analyses/e01_Discrim_MI/Results/LSEM/ModelsGroup1")
prepareMplusData(selectedgroup,
```
filename = 
"~/Dropbox/Analyses/e01_Discrim_MI/Results/LSEM/ModelsGroup1/LSEM_ModelsGroup1.dat",
keepCols = c("predj_r", "lkrsp_r", "trtbd_r", "c_age", "country", "pspwght")

table(ESSdata$country_group)

inp_templ<="~/Dropbox/Analyses/e01_Discrim_MI/e01_LSEMtemplate_group1.inp"
dir_models<="~/Dropbox/Analyses/e01_Discrim_MI/Results/LSEM/ModelsGroup1"

# Create and run input files for each level of the moderator
createModels(inp_templ)
runModels(dir_models)

# Extract model parameters with do.call() and rbind().
age1<-do.call("rbind",extractModelParameters(dir_models, dropDimensions=T))

# Reduce to desired parameters (e.g., the model constraint section).
r.age1<-age1[age1$paramHeader=="New.Additional.Parameters",]
print(r.age1)
names(r.age1)
summary(r.age1)

# Label the parameters with moderator levels,
# rep() replicates the values in x
r.age1$mod<-rep(seq(-2,2,.01), each=12)
print(r.age1$mod)

# Create long format file.
l.age1<- melt(r.age1, id.vars = c("mod","param"),measure.vars = c("est","se","est_se","pval"))

# Create wide format file.
wideResults<-cast(l.age1,mod~param+variable)

# Pull out model fit statistics. Can be used to plot trends.
fitage1<- extractModelSummaries(dir_models)
print(fitage1)

We then used ggplot2 in R to plot results from the LSEM analysis:

# Plotting results from LSEM, Group 1

library(ggplot2)
library(reshape)
# Plot for factor loadings

LSEM_CountryGroup1_fl.pdf <- ggplot(wideResults, aes(mod)) +
  geom_line(aes(y = PRED_est, color="green")) +
  geom_line(aes(y = LKRS_est, color="red")) +
  geom_line(aes(y = TRTB_est, color="blue")) +
  theme_bw() +
  theme(text = element_text(size=8), legend.position = "none") +
  ggtitle("Factor loadings") +
  labs(y=NULL, x="Age (centered)") +
  ylim(0.6,1.02) +
  ggsave("LSEM_CountryGroup1_fl_bw.pdf", device = "pdf",
          path = "~/Dropbox/Analyses/e01_Discrim_MI/Results/Plots/",
          scale = .2, dpi = 300, limitsize = TRUE)

# Thresholds Prejudice because of age

LSEM_CountryGroup1_predj.pdf <- ggplot(wideResults, aes(mod)) +
  geom_line(aes(y = PRE_TR1_est, colour="Threshold 1")) +
  geom_line(aes(y = PRE_TR2_est, colour="Threshold 2")) +
  theme_bw() +
  theme(text = element_text(size=8), legend.position = "none") +
  ggtitle("Thresholds for prejudice") +
  labs(y=NULL, x="Age (centered)") +
  ylim(-0.6,1.1) +
  ggsave("LSEM_CountryGroup1_predj.pdf", device = "pdf",
          path = "~/Dropbox/Analyses/e01_Discrim_MI/Results/Plots/",
          scale = .2, dpi = 300, limitsize = TRUE)

# Thresholds Lack of respect because of age

LSEM_CountryGroup1_lkrsp.pdf <- ggplot(wideResults, aes(mod)) +
  geom_line(aes(y = LKR_TR1_est, colour="Threshold 1")) +
  geom_line(aes(y = LKR_TR2_est, colour="Threshold 2")) +
  theme_bw() +
  theme(text = element_text(size=8), legend.position = "none") +
  ggtitle("Thresholds for lack of respect") +
  labs(y=NULL, x="Age (centered)") +
  ylim(-0.6,1.1) +
  ggsave("LSEM_CountryGroup1_lkrsp.pdf", device = "pdf",
          path = "~/Dropbox/Analyses/e01_Discrim_MI/Results/Plots/",
          scale = .2, dpi = 300, limitsize = TRUE)

# Thresholds Treated badly because of age

LSEM_CountryGroup1_trtbd.pdf <- ggplot(wideResults, aes(mod)) +
  geom_line(aes(y = TRT_TR1_est, colour="Threshold 1")) +
  geom_line(aes(y = TRT_TR2_est, colour="Threshold 2")) +
  theme_bw() +
  theme(text = element_text(size=8), legend.position = "none") +
The resulting plot of the LSEM analysis is reproduced in the article, along with a similar plot for the analysis of data from Country Group 2 (see Figure 1 in the article).

Moderated Non-Linear Factor Analysis

Code for running MNLFA (for Country Group 1) is shown below, first with no DIF (full measurement invariance across age). The `MODEL CONSTRAINT` command in Mplus specified parameter constraints using labels defined for parameters in the `MODEL` command, labels defined for parameters not in the `MODEL` command are introduced using the NEW option of the `MODEL CONSTRAINT` command, and names of observed variables that are identified using the CONSTRAINT option of the VARIABLE command.

```r
# MNLFA with Mplus, no DIF (full MI) for all three items
library(MplusAutomation)
setwd("/Users/Christopher/Dropbox/Analyses/e01_Discrim_MI/Results/MNLFA")

# Select countries dependent on which group in country_group
selectedgroup <- ESSdata[ which(ESSdata$country_group == 1),]
```
mymodel <- mplusObject(
    TITLE = "e01 MNFLA, no DIF (full MI);",
    VARIABLE = "
        usevariables = predj_r2 lkrsp_r2 trtbd_r2 country c_age c_agesq pspwght;
        categorical = predj_r2 lkrsp_r2 trtbd_r2;
        constraint = c_age c_agesq;
        weight = pspwght;
        cluster = country;",
    ANALYSIS = "
        type = complex;
        estimator = mlr;
        link = logit;",
    MODEL = "
        discrim BY predj_r2*2.53025;
        discrim BY lkrsp_r2*6.52504;
        discrim BY trtbd_r2*4.80997;

        discrim ON c_age*-0.05025;
        discrim ON c_agesq*0.04353;

        [ discrim@0 ];

        [ predj_r2$1*1.33603 ];
        [ lkrsp_r2$1*2.48037 ];
        [ trtbd_r2$1*3.12506 ];

        discrim*999 (v_disc);

        model constraint:
            new(v_disc1*0.01080);
            new(v_disc2*-0.00116);
            v_disc = exp(v_disc1*c_age + v_disc2*c_agesq);",
    OUTPUT = "
        svalues;",
    SAVEDATA = "
        SAVE=fscores;
        file=mnlfa0.dat;",
    rdata = selectedgroup)

# Run mymodel (run = 0L if input only, = 1L if run model)
resultsNoDIF <- mplusModeler(mymodel,
    modelout = "MNLFA_no_DIF_Group1.inp", run = 1L)

We then estimated models with DIF for a single item (shown with DIF for the item “prejudice
because of age):

```r
# MNLFA with Mplus, no DIF (full MI) for all three items
library(MplusAutomation)

setwd("/Users/Christopher/Dropbox/Analyses/e01_Discrim_MI/Results/MNLFA")

# Select countries dependent on which group in country_group
selectedgroup <- ESSdata[ which(ESSdata$country_group == 1), ]

mymodel <- mplusObject(
  TITLE = "e01 MNFLA DIF prejudice;",
  VARIABLE = 
    usevariables = predj_r2 lkrsp_r2 trtbd_r2 country c_age c_agesq pspwght;
categorical = predj_r2 lkrsp_r2 trtbd_r2;
  constraint = c_age c_agesq;
  weight = pspwght;
  cluster = country;",
  ANALYSIS = 
    type = complex;
estimator = mlr;
    link = logit;",
  MODEL = 
    discrim BY predj_r2*2.94342;
discrim BY lkrsp_r2*6.90506;
discrim BY trtbd_r2*5.30191;

discrim ON c_age*-0.04570;
discrim ON c_agesq*0.04126;

    [ discrim@0 ];

    [ predj_r2$1*1.69574 ];
[ lkrsp_r2$1*2.69708 ];
[ trtbd_r2$1*3.32651 ];

    discrim*999 (v_disc);

discrim BY predj_r2 (L);
predj_r2 ON c_age c_agesq ;

model constraint:  
NEW(v_disc1*0.01429);
NEW(v_disc2*-0.00602);
NEW (L0*2 L1*0 L2*0 );
```

Approximate Measurement Invariance

Supplementing MNLFA, we estimated approximate measurement invariance across age groups, first for respondents in Country Group 1, thereafter for respondents in Country Group 2.

# Approximate measurement invariance in Country Group 1

library(MplusAutomation)

setwd("~/Dropbox/Analyses/e01_Discrim_MI/Results/AgeGroups")

# Select countries dependent on which group in country_group
selectedgroup <- ESSdata[ which(ESSdata$country_group == 1),]

mymodel <- mplusObject(
  TITLE = "e01 Countries, traditional measurement invariance;",
  VARIABLE = "
    usevariables = predj_r lkrsp_r trtbd_r age_group ;
    categorical = predj_r lkrsp_r trtbd_r;
    classes=c(15);
    knownclass=c(age_group);",
  ANALYSIS = "
    type=mixture;
    estimator=mlf;
    algorithm=integration;
    alignment = fixed(1);",
  MODEL = "
    %overall%
    discrim BY predj_r lkrsp_r trtbd_r;",
  OUTPUT = "
    svalues;",
  SAVEDATA = "
    SAVE=fscores;
    file=mnlfa_predjDIF.dat;",
  rdata = selectedgroup)

# Run mymodel
resultsPrejDIF <- mplusModeler(mymodel, 
  modelout = "MNLFA_predj_DIF_Group1.inp", run = 1L)
We used factor scores estimated by Mplus with approximate measurement invariance to plot the distribution of perceived age discrimination across age.

**Perceived Age Discrimination across Age in Single Countries**

The final analysis estimated factor scores across age for each country separately, using MNLFA models with DIF for prejudice because of age and for treated badly because of age:

```r
# Plot of factor scores from MNLFA of single countries
library(MplusAutomation)

# for (i in 1:length(country)) {
for (i in 1:29) {
    # The loop (originally set go from 1 to 29 had to be adjusted.
    # For six countries miterations had to be increased to 1000,
    # using the following loop:
    # for (i in c(2,13,14,15,23,28)) {
    # The model did not converge for Hungary,
    # but converged for the remaining 28 countries.

    # Select countries from Country Group 1, filename for data out
    selectedgroup <- ESSdata[ which(ESSdata$country == i),]
    myinputfile <- paste(i,"_country.inp",sep="")
    mydirout <- paste("~/Dropbox/Analyses/e01_Discrim_MI/Results/MNLFA_Countries/Country",i,sep="")

dir.create(file.path(mydirout))
setwd(file.path(mydirout))

mymodel <- mplusObject(
    TITLE = "MNFLA 2DIF country;",
    VARIABLE =",
    usevariables = predj_r2 lkrsp_r2 trtbd_r2 c_age c_agesq;
    categorical = predj_r2 lkrsp_r2 trtbd_r2;
    constraint = c_age c_agesq;",
    ANALYSIS = "
```
estimator = mlr;
miterations = 500;
    link = logit;",
MODEL = "
discrim BY predj_r2*2.94342;
discrim BY lkrsp_r2*6.90506;
discrim BY trtbd_r2*5.30191;

discrim ON c_age*-0.04570;
discrim ON c_agesq*0.04126;

[ discrim@0 ];

[ predj_r2$1*1.69574 ];
[ lkrsp_r2$1*2.69708 ];
[ trtbd_r2$1*3.32651 ];

discrim*999 (v_disc);

discrim BY predj_r2 (L_a);
predj_r2 ON c_age c_agesq;
discrim BY trtbd_r2 (L_b);
trtbd_r2 ON c_age c_agesq;

model constraint:
NEW(v_disc1*0.01429);
NEW(v_disc2*-0.00602);
    new(L_a0*2.519 L_a1*-0.099 L_a2*0.072);
    new(L_b0*2 L_b1*0 L_b2*0);
    v_disc = exp(v_disc1*c_age + v_disc2*c_agesq);
    L_a = L_a0 + L_a1*c_age + L_a2*c_agesq;
    L_b = L_b0 + L_b1*c_age + L_b2*c_agesq;",
OUTPUT = "
    svalues;",
SAVEDATA = "
SAVE = fscores;
file = VECTOR_1 ;",
rdata = selectedgroup)

# Run mymodel
countrymodel <-
    mplusModeler(mymodel, modelout = myinputfile, run = 1L)
}
Output from Mplus Analyses

This section includes output of selected analyses conducted with Mplus. We note that the output from Mplus first prints the input. We have omitted parts of the lengthy outputs, and have reduced outputs of analyses that resemble previous outputs (e.g., approximate measurement invariance across countries in Country Group 2 after the a similar output for approximate measurement invariance across countries in Country Group 1). We include outputs from the following analyses:

1. Approximate measurement invariance across countries, Country Group 1. Most of the output is included. The output shows the estimated approximate measurement invariance across countries and which parameters were not approximately invariant. The output also shows the rank order of countries, and statistically significant differences between pairs of countries.

2. Approximate measurement invariance across countries, Country Group 2. The most important parts of the output are included.

3. MNLFA, Country Group 1. Most of the output is included.

4. MNLFA, Country Group 2. Most of the output is included.

5. Approximate measurement invariance across age groups, Country Group 1. The most important parts of the output are included.

6. Approximate measurement invariance across age groups, Country Group 2. The most important parts of the output are included.

Approximate Measurement Invariance Across Countries

Country Group 1

Country Group 1 included 19 countries, Mplus requires groups (countries) to be numbered, numbering is shown in parentheses. Country Group 1 included the following countries:

Bulgaria (2), Switzerland (3), Cyprus (4), Czech Republic (5), Spain (9), France (11), United Kingdom (12) Croatia (14), Hungary (15), Ireland (16), Israel (17), Latvia (18), Norway (20), Poland (21), Portugal (22), Romania (23), Russia (24), Slovenia (26), Turkey (28).

The code usevariables = predj_r lkrsp_r trtbd_r country in the input instructions refers to variables used. predj_r is the recoded 3-point version of the original ESS variable “predage” (prejudice because of age), lkrsp_r is the recoded 3-point version of the original variable “lkrspag (lack of respect because of age), trtbd_r is the the recoded 3-point version of the origina variable”trtbdag” (treated badly because of age).

Mplus VERSION 7.4 (Mac)
MUTHEN & MUTHEN
01/27/2017 12:52 PM
Approximate measurement invariance, Country Group 1;

SUMMARY OF ANALYSIS

| Description                           | Value  |
|--------------------------------------|--------|
| Number of groups                     | 1      |
| Number of observations               | 37064  |
| Number of dependent variables        | 3      |
| Number of independent variables      | 0      |
| Number of continuous latent variables| 1      |
Number of categorical latent variables 1

Observed dependent variables

  Binary and ordered categorical (ordinal)
  PREDJ_R  LKRSP_R  TRTBD_R

Continuous latent variables
  DISCRIM

Categorical latent variables
  C

Knownclass C

Estimator MLF
Information matrix OBSERVED
Optimization Specifications for the Quasi-Newton Algorithm for Continuous Outcomes
  Maximum number of iterations 100
  Convergence criterion 0.100D-05

Optimization Specifications for the EM Algorithm
  Maximum number of iterations 500
  Convergence criteria
    Loglikelihood change 0.100D-02
    Relative loglikelihood change 0.100D-05
    Derivative 0.100D-02

Optimization Specifications for the M step of the EM Algorithm for Categorical Latent variables
  Number of M step iterations 1
  M step convergence criterion 0.100D-02
  Basis for M step termination ITERATION

Optimization Specifications for the M step of the EM Algorithm for Censored, Binary or Ordered Categorical (Ordinal), Unordered Categorical (Nominal) and Count Outcomes
  Number of M step iterations 1
  M step convergence criterion 0.100D-02
  Basis for M step termination ITERATION
  Maximum value for logit thresholds 15
  Minimum value for logit thresholds -15
  Minimum expected cell size for chi-square 0.100D-01
  Maximum number of iterations for H1 2000
  Convergence criterion for H1 0.100D-03
  Optimization algorithm EMA
Integration Specifications

Type: STANDARD
Number of integration points: 15
Dimensions of numerical integration: 1
Adaptive quadrature: ON
Link: LOGIT

Specifications for Alignment Analysis

Factor mean for reference group: FIXED
Simplicity function: SQRT
Factor variance metric: Reference group
Reference group: 5
Tolerance value: 0.100D-01
Number of random starts: 30
Maximum number of iterations: 5000
Convergence criterion: 0.100D-02
Cholesky: OFF

Input data file(s)
- CountriesAlignmentGroup1.dat
Input data format: FREE

SUMMARY OF DATA

Number of missing data patterns: 7
Number of \( y \) missing data patterns: 0
Number of \( u \) missing data patterns: 7

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value: 0.100

PROPORTION OF DATA PRESENT FOR \( u \)

| Covariance Coverage | PREDJ_R | LKRSP_R | TRTBD_R |
|---------------------|---------|---------|---------|
| PREDJ_R             | 0.991   | -------- | -------- |
| LKRSP_R             | 0.984   | 0.992   | -------- |
| TRTBD_R             | 0.985   | 0.988   | 0.993   |
UNIVARIATE PROPORTIONS AND COUNTS FOR CATEGORICAL VARIABLES

PREDJ_R
Category 1  0.685  25164.000
Category 2  0.147  5406.000
Category 3  0.168  6169.000

LKRSP_R
Category 1  0.638  23459.000
Category 2  0.178  6534.000
Category 3  0.184  6765.000

TRTBD_R
Category 1  0.714  26299.000
Category 2  0.160  5897.000
Category 3  0.126  4623.000

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 189
Loglikelihood
HO Value -177655.768
Information Criteria
Akaike (AIC) 355689.536
Bayesian (BIC) 357299.891
Sample-Size Adjusted BIC 356699.249
(n* = (n + 2) / 24)

Chi-Square Test of Model Fit for the Binary and Ordered Categorical (Ordinal) Outcomes

Pearson Chi-Square
Value 6287.304
Degrees of Freedom 322
P-Value 0.0000

25
Likelihood Ratio Chi-Square

Value 4025.835
Degrees of Freedom 322
P-Value 0.0000

Chi-Square Test for MCAR under the Unrestricted Latent Class Indicator Model

Pearson Chi-Square

Value 1058.214
Degrees of Freedom 552
P-Value 0.0000

Likelihood Ratio Chi-Square

Value 671.244
Degrees of Freedom 552
P-Value 0.0004

FINAL CLASS COUNTS AND PROPORTIONS FOR THE LATENT CLASSES BASED ON THE ESTIMATED MODEL

Latent Classes

|   | Count | Proportion |
|---|-------|------------|
| 1 | 2415.00000 | 0.06516 |
| 2 | 2490.00000 | 0.06718 |
| 3 | 2065.00000 | 0.05571 |
| 4 | 2354.00000 | 0.06351 |
| 5 | 2320.00000 | 0.06259 |
| 6 | 1819.00000 | 0.04908 |
| 7 | 2016.00000 | 0.05439 |
| 8 | 2567.00000 | 0.06926 |
| 9 | 1447.00000 | 0.03904 |
| 10 | 1542.00000 | 0.04160 |
| 11 | 1752.00000 | 0.04727 |
| 12 | 1545.00000 | 0.04168 |
| 13 | 1610.00000 | 0.04344 |
| 14 | 2360.00000 | 0.06367 |
| 15 | 2074.00000 | 0.05596 |
| 16 | 2219.00000 | 0.05987 |
| 17 | 1215.00000 | 0.03278 |
MODEL RESULTS

| Latent Class 1 (17) | Estimate | S.E. | Est./S.E. | P-Value |
|--------------------|----------|------|-----------|---------|
| DISCRIM BY         |          |      |           |         |
| PREDJ_R            | 2.742    | 0.158| 17.304    | 0.000   |
| LKRSP_R            | 37.660   | 42.504| 0.886     | 0.376   |
| TRTBD_R            | 3.469    | 0.265| 13.067    | 0.000   |
| Means              |          |      |           |         |
| DISCRIM            | -0.677   | 0.108| -6.242    | 0.000   |
| Thresholds         |          |      |           |         |
| PREDJ_R$1          | 0.090    | 0.175| 0.514     | 0.607   |
| PREDJ_R$2          | 1.405    | 0.160| 8.775     | 0.000   |
| LKRSP_R$1          | -2.179   | 0.656| -3.321    | 0.001   |
| LKRSP_R$2          | 18.133   | 22.669| 0.800     | 0.424   |
| TRTBD_R$1          | 0.461    | 0.245| 1.880     | 0.060   |
| TRTBD_R$2          | 2.470    | 0.237| 10.404    | 0.000   |
| Variances          |          |      |           |         |
| DISCRIM            | 2.407    | 0.333| 7.218     | 0.000   |

Latent Class 2 (24)

| DISCRIM BY         | Estimate | S.E. | Est./S.E. | P-Value |
|--------------------|----------|------|-----------|---------|
| PREDJ_R            | 2.776    | 0.130| 21.330    | 0.000   |
| LKRSP_R            | 8.325    | 1.356| 6.142     | 0.000   |
| TRTBD_R            | 3.886    | 0.267| 14.540    | 0.000   |
| Means              |          |      |           |         |
| DISCRIM            | -0.228   | 0.053| -4.269    | 0.000   |
| Thresholds         |          |      |           |         |
| PREDJ_R$1          | -0.182   | 0.137| -1.329    | 0.184   |
| PREDJ_R$2          | 1.644    | 0.140| 11.743    | 0.000   |
| LKRSP_R$1          | -1.204   | 0.446| -2.700    | 0.007   |
| LKRSP_R$2          | 3.704    | 0.631| 5.869     | 0.000   |
| Variable | Mean | Standard Error | z-Value | p-Value |
|----------|------|----------------|---------|---------|
| TRTBD_R$1 | 0.279 | 0.193 | 1.447 | 0.148 |
| TRTBD_R$2 | 2.872 | 0.219 | 13.104 | 0.000 |

### Variances

| Variable | Variance | Standard Error | z-Value | p-Value |
|----------|----------|----------------|---------|---------|
| DISCRIM | 0.992 | 0.120 | 8.239 | 0.000 |

### Latent Class 3 (11)

#### DISCRIM

| Variable | Mean | Standard Error | z-Value | p-Value |
|----------|------|----------------|---------|---------|
| PREDJ_R | 2.503 | 0.117 | 21.357 | 0.000 |
| LKRSP_R | 4.934 | 0.569 | 8.677 | 0.000 |
| TRTBD_R | 7.183 | 1.199 | 5.992 | 0.000 |

### Means

| Variable | Mean | Standard Error | z-Value | p-Value |
|----------|------|----------------|---------|---------|
| DISCRIM | -0.548 | 0.067 | -8.241 | 0.000 |

### Thresholds

| Variable | Mean | Standard Error | z-Value | p-Value |
|----------|------|----------------|---------|---------|
| PREDJ_R$1 | -0.360 | 0.149 | -2.413 | 0.016 |
| PREDJ_R$2 | 0.823 | 0.153 | 5.367 | 0.000 |
| LKRSP_R$1 | -1.327 | 0.264 | -5.022 | 0.000 |
| LKRSP_R$2 | 0.507 | 0.277 | 1.829 | 0.067 |
| TRTBD_R$1 | 0.683 | 0.361 | 1.892 | 0.058 |
| TRTBD_R$2 | 3.182 | 0.245 | 13.004 | 0.000 |

### Variances

| Variable | Variance | Standard Error | z-Value | p-Value |
|----------|----------|----------------|---------|---------|
| DISCRIM | 0.569 | 0.084 | 6.777 | 0.000 |

### Latent Class 4 (28)

#### DISCRIM

| Variable | Mean | Standard Error | z-Value | p-Value |
|----------|------|----------------|---------|---------|
| PREDJ_R | 1.125 | 0.372 | 3.024 | 0.002 |
| LKRSP_R | 39.741 | 31.196 | 1.274 | 0.203 |
| TRTBD_R | 3.929 | 1.253 | 3.136 | 0.002 |

### Means

| Variable | Mean | Standard Error | z-Value | p-Value |
|----------|------|----------------|---------|---------|
| DISCRIM | -1.084 | 0.225 | -4.812 | 0.000 |

### Thresholds

| Variable | Mean | Standard Error | z-Value | p-Value |
|----------|------|----------------|---------|---------|
| PREDJ_R$1 | 0.774 | 0.142 | 5.468 | 0.000 |
| PREDJ_R$2 | 1.944 | 0.130 | 15.000 | 0.000 |
| LKRSP_R$1 | -3.614 | 2.021 | -1.788 | 0.074 |
| LKRSP_R$2 | 23.759 | 29.291 | 0.811 | 0.417 |
| TRTBD_R$1 | -0.092 | 0.547 | -0.168 | 0.867 |
| TRTBD_R$2 | 3.202 | 0.526 | 6.083 | 0.000 |
### Latent Class 5 (12)

|        |        |        |        |
|--------|--------|--------|--------|
| DISCRIM | 5.053  | 2.993  | 1.688  |
|         | 0.091  |        |        |

### DISCRIM BY

| Variable | 2.743  | 0.128  | 21.400 | 0.000 |
|----------|--------|--------|--------|-------|
| PREDJ_R  |        |        |        |       |
| LKRSP_R  | 4.478  | 0.479  | 9.355  | 0.000 |
| TRTBD_R  | 4.417  | 0.397  | 11.138 | 0.000 |

### Means

| DISCRIM | -0.625 | 0.067 | -9.320 | 0.000 |
|---------|--------|-------|--------|-------|

### Thresholds

| Variable | 0.080  | 0.135  | 0.590  | 0.555 |
|----------|--------|--------|--------|-------|
| PREDJ_R$1|        |        |        |       |
| PREDJ_R$2| 1.460  | 0.139  | 10.523 | 0.000 |
| LKRSP_R$1| -1.575 | 0.252  | -6.259 | 0.000 |
| LKRSP_R$2| 0.520  | 0.230  | 2.257  | 0.024 |
| TRTBD_R$1| 0.673  | 0.217  | 3.105  | 0.002 |
| TRTBD_R$2| 2.690  | 0.250  | 10.750 | 0.000 |

### Latent Class 6 (3)

|        |        |        |        |
|--------|--------|--------|--------|
| DISCRIM | 0.852  | 0.107  | 7.948  |
|         | 0.000  |        |        |

### DISCRIM BY

| Variable | 2.676  | 0.131  | 20.472 | 0.000 |
|----------|--------|--------|--------|-------|
| PREDJ_R  |        |        |        |       |
| LKRSP_R  | 4.957  | 0.634  | 7.824  | 0.000 |
| TRTBD_R  | 4.744  | 0.418  | 11.355 | 0.000 |

### Means

| DISCRIM | -0.615 | 0.069 | -8.957 | 0.000 |
|---------|--------|-------|--------|-------|

### Thresholds

| Variable | -0.051 | 0.141  | -0.365 | 0.715 |
|----------|--------|--------|--------|-------|
| PREDJ_R$1|        |        |        |       |
| PREDJ_R$2| 1.463  | 0.147  | 9.924  | 0.000 |
| LKRSP_R$1| -1.032 | 0.282  | -3.666 | 0.000 |
| LKRSP_R$2| 1.531  | 0.279  | 5.491  | 0.000 |
| TRTBD_R$1| 0.224  | 0.243  | 0.923  | 0.356 |
| TRTBD_R$2| 3.111  | 0.267  | 11.661 | 0.000 |

### Variances

| DISCRIM | 0.593  | 0.080  | 7.405  |
|---------|--------|--------|--------|
|         | 0.000  |        |        |
Latent Class 7 (5)

| Discrimination | Mean  | Std. Dev | Lower Bound | Upper Bound |
|----------------|-------|----------|-------------|-------------|
| PREDJ_R        | 2.706 | 0.128    | 21.130      | 0.000       |
| LKRSP_R        | 6.112 | 0.576    | 10.617      | 0.000       |
| TRTBD_R        | 4.510 | 0.299    | 15.067      | 0.000       |

Means

| Discrimination | Mean  | Std. Dev | Lower Bound | Upper Bound |
|----------------|-------|----------|-------------|-------------|
| DISCRIM        | 0.000 | 0.000    | 999.000     | 999.000     |

Thresholds

| Discrimination | Mean  | Std. Dev | Lower Bound | Upper Bound |
|----------------|-------|----------|-------------|-------------|
| PREDJ_R$1     | -0.265| 0.089    | -2.967      | 0.003       |
| PREDJ_R$2     | 1.674 | 0.101    | 16.498      | 0.000       |
| LKRSP_R$1     | -1.770| 0.226    | -7.820      | 0.000       |
| LKRSP_R$2     | 3.029 | 0.302    | 10.024      | 0.000       |
| TRTBD_R$1     | -0.137| 0.134    | -1.017      | 0.309       |
| TRTBD_R$2     | 3.642 | 0.242    | 15.058      | 0.000       |

Variances

| Discrimination | Variance  | Std. Dev | Lower Bound | Upper Bound |
|----------------|-----------|----------|-------------|-------------|
| DISCRIM        | 1.000     | 0.000    | 999.000     | 999.000     |

Latent Class 8 (9)

| Discrimination | Mean  | Std. Dev | Lower Bound | Upper Bound |
|----------------|-------|----------|-------------|-------------|
| PREDJ_R        | 2.816 | 0.129    | 21.881      | 0.000       |
| LKRSP_R        | 7.684 | 1.231    | 6.240       | 0.000       |
| TRTBD_R        | 3.722 | 0.265    | 14.056      | 0.000       |

Means

| Discrimination | Mean  | Std. Dev | Lower Bound | Upper Bound |
|----------------|-------|----------|-------------|-------------|
| DISCRIM        | -0.985| 0.081    | -12.148     | 0.000       |

Thresholds

| Discrimination | Mean  | Std. Dev | Lower Bound | Upper Bound |
|----------------|-------|----------|-------------|-------------|
| PREDJ_R$1     | -0.352| 0.157    | -2.247      | 0.025       |
| PREDJ_R$2     | 1.719 | 0.151    | 11.400      | 0.000       |
| LKRSP_R$1     | -1.367| 0.473    | -2.891      | 0.004       |
| LKRSP_R$2     | 3.693 | 0.596    | 6.197       | 0.000       |
| TRTBD_R$1     | 0.158 | 0.204    | 0.772       | 0.440       |
| TRTBD_R$2     | 3.144 | 0.221    | 14.245      | 0.000       |

Variances

| Discrimination | Variance  | Std. Dev | Lower Bound | Upper Bound |
|----------------|-----------|----------|-------------|-------------|
| DISCRIM        | 1.668     | 0.216    | 7.735       | 0.000       |

Latent Class 9 (14)

| Discrimination | Mean  | Std. Dev | Lower Bound | Upper Bound |
|----------------|-------|----------|-------------|-------------|
| DISCRIM        | 0.000 | 0.000    | 999.000     | 999.000     |

DISCRIM BY
| Variable  | Mean  | S.D.  | t-value | p-value |
|-----------|-------|-------|---------|---------|
| PREDJ_R   | 2.520 | 0.145 | 17.430  | 0.000   |
| LKRSP_R   | 12.462| 5.190 | 2.401   | 0.016   |
| TRTBD_R   | 4.878 | 0.379 | 12.882  | 0.000   |

Means

**DISCRIM**

-0.854 0.086 -9.975 0.000

Thresholds

| Variable  | Mean  | S.D.  | t-value | p-value |
|-----------|-------|-------|---------|---------|
| PREDJ_R$1 | 0.253 | 0.129 | 1.962   | 0.050   |
| PREDJ_R$2 | 1.592 | 0.135 | 11.770  | 0.000   |
| LKRSP_R$1 | -1.763| 0.878 | -2.007  | 0.045   |
| LKRSP_R$2 | 4.728 | 1.865 | 2.535   | 0.011   |
| TRTBD_R$1 | -0.186| 0.230 | -0.808  | 0.419   |
| TRTBD_R$2 | 2.882 | 0.264 | 10.912  | 0.000   |

Variances

**DISCRIM**

1.281 0.186 6.876 0.000

Latent Class 10 (15)

**DISCRIM BY**

| Variable  | Mean  | S.D.  | t-value | p-value |
|-----------|-------|-------|---------|---------|
| PREDJ_R   | 2.555 | 0.116 | 22.003  | 0.000   |
| LKRSP_R   | 4.656 | 0.555 | 8.385   | 0.000   |
| TRTBD_R   | 5.816 | 0.916 | 6.352   | 0.000   |

Means

**DISCRIM**

-0.582 0.071 -8.240 0.000

Thresholds

| Variable  | Mean  | S.D.  | t-value | p-value |
|-----------|-------|-------|---------|---------|
| PREDJ_R$1 | 0.260 | 0.133 | 1.959   | 0.050   |
| PREDJ_R$2 | 1.452 | 0.141 | 10.328  | 0.000   |
| LKRSP_R$1 | -1.310| 0.254 | -5.158  | 0.000   |
| LKRSP_R$2 | 1.096 | 0.240 | 4.567   | 0.000   |
| TRTBD_R$1 | 0.005 | 0.282 | 0.018   | 0.986   |
| TRTBD_R$2 | 3.076 | 0.301 | 10.233  | 0.000   |

Variances

**DISCRIM**

0.644 0.108 5.938 0.000

Latent Class 11 (16)

**DISCRIM BY**

| Variable  | Mean  | S.D.  | t-value | p-value |
|-----------|-------|-------|---------|---------|
| PREDJ_R   | 2.596 | 0.123 | 21.058  | 0.000   |
| LKRSP_R   | 5.484 | 0.793 | 6.915   | 0.000   |
| TRTBD_R   | 5.057 | 0.485 | 10.417  | 0.000   |
### Latent Class 12 (20)

| Means          | DISCRIM | -1.074 | 0.100 | -10.715 | 0.000 |
|---------------|---------|--------|-------|---------|-------|
| Thresholds    | PREDJ\_R$1 | -0.277 | 0.146 | -1.899 | 0.058 |
|               | PREDJ\_R$2 | 1.290  | 0.155 | 8.324  | 0.000 |
|               | LKRSP\_R$1 | -1.375 | 0.339 | -4.053 | 0.000 |
|               | LKRSP\_R$2 | 2.014  | 0.374 | 5.391  | 0.000 |
|               | TRTBD\_R$1 | 0.335  | 0.259 | 1.296  | 0.195 |
|               | TRTBD\_R$2 | 3.480  | 0.301 | 11.557 | 0.000 |
| Variances     | DISCRIM  | 2.017  | 0.278 | 7.255  | 0.000 |

#### Latent Class 13 (21)

| Means          | DISCRIM | -0.821 | 0.092 | -8.963 | 0.000 |
|---------------|---------|--------|-------|---------|-------|
| Thresholds    | PREDJ\_R$1 | -0.477 | 0.168 | -2.843 | 0.004 |
|               | PREDJ\_R$2 | 1.353  | 0.173 | 7.801  | 0.000 |
|               | LKRSP\_R$1 | -1.413 | 0.286 | -4.943 | 0.000 |
|               | LKRSP\_R$2 | 1.330  | 0.288 | 4.624  | 0.000 |
|               | TRTBD\_R$1 | 0.708  | 0.281 | 2.518  | 0.012 |
|               | TRTBD\_R$2 | 3.448  | 0.269 | 12.822 | 0.000 |
| Variances     | DISCRIM  | 0.846  | 0.123 | 6.889  | 0.000 |
## Thresholds

| Variable | Threshold 1 | Threshold 2 | Threshold 3 | Threshold 4 |
|----------|-------------|-------------|-------------|-------------|
| PREDJ_R | 0.035 | 1.622 | -0.932 | 0.162 |
| LKRSP_R | -0.932 | 2.719 | 2.719 | 2.727 |
| TRTBD_R | 0.162 | 2.727 | 2.719 | 2.727 |

## Variances

| Variable | Variance 1 | Variance 2 | Variance 3 | Variance 4 |
|----------|------------|------------|------------|------------|
| DISCRIM | 1.284 | 1.284 | 1.284 | 1.284 |

## Latent Class 14 (22)

**DISCRIM BY**

| Variable | Coefficient 1 | Coefficient 2 | Coefficient 3 | Coefficient 4 |
|----------|---------------|---------------|---------------|---------------|
| PREDJ_R | 2.676 | 0.122 | 21.884 | 0.000 |
| LKRSP_R | 7.478 | 1.264 | 5.916 | 0.000 |
| TRTBD_R | 4.527 | 0.333 | 13.607 | 0.000 |

## Means

| Variable | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|----------|--------|--------|--------|--------|
| DISCRIM | -1.548 | 0.116 | -13.294 | 0.000 |

## Thresholds

| Variable | Threshold 1 | Threshold 2 | Threshold 3 | Threshold 4 |
|----------|-------------|-------------|-------------|-------------|
| PREDJ_R | -0.217 | 1.730 | -1.636 | -0.148 |
| LKRSP_R | -1.636 | 3.321 | 3.321 | 3.232 |
| TRTBD_R | 0.162 | 2.727 | 2.719 | 2.727 |

## Variances

| Variable | Variance 1 | Variance 2 | Variance 3 | Variance 4 |
|----------|------------|------------|------------|------------|
| DISCRIM | 2.100 | 2.100 | 2.100 | 2.100 |

## Latent Class 15 (23)

**DISCRIM BY**

| Variable | Coefficient 1 | Coefficient 2 | Coefficient 3 | Coefficient 4 |
|----------|---------------|---------------|---------------|---------------|
| PREDJ_R | 2.431 | 0.157 | 15.443 | 0.000 |
| LKRSP_R | 11.753 | 3.206 | 3.666 | 0.000 |
| TRTBD_R | 5.045 | 0.351 | 14.361 | 0.000 |

## Means

| Variable | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|----------|--------|--------|--------|--------|
| DISCRIM | -0.394 | 0.058 | -6.751 | 0.000 |

## Thresholds

| Variable | Threshold 1 | Threshold 2 | Threshold 3 | Threshold 4 |
|----------|-------------|-------------|-------------|-------------|
| PREDJ_R | 0.107 | 0.117 | 0.914 | 0.360 |
| Variable  | 1.830  | 0.120  | 15.219 | 0.000 |
|-----------|--------|--------|--------|-------|
|          | -1.744 | 0.674  | -2.588 | 0.010 |
|          | 4.980  | 1.355  | 3.676  | 0.000 |
|          | -0.336 | 0.228  | -1.476 | 0.140 |
|          | 2.824  | 0.257  | 10.991 | 0.000 |

Variances

| DISCRIM | 1.263  | 0.169  | 7.489  | 0.000 |

Latent Class 16 (2)

DISCRIM BY

| Variable  | 2.849  | 0.143  | 19.863 | 0.000 |
|-----------|--------|--------|--------|-------|
|          | 4.588  | 0.489  | 9.387  | 0.000 |
|          | 3.861  | 0.322  | 11.972 | 0.000 |

Means

| DISCRIM | -0.945 | 0.086  | -10.956 | 0.000 |

Thresholds

| Variable  | -0.090 | 0.154  | -0.584 | 0.559 |
|-----------|--------|--------|--------|-------|
|          | 1.902  | 0.167  | 11.424 | 0.000 |
|          | -2.061 | 0.307  | -6.722 | 0.000 |
|          | 1.815  | 0.285  | 6.360  | 0.000 |
|          | -0.620 | 0.226  | -2.737 | 0.006 |
|          | 3.099  | 0.253  | 12.236 | 0.000 |

Variances

| DISCRIM | 1.931  | 0.262  | 7.358  | 0.000 |

Latent Class 17 (4)

DISCRIM BY

| Variable  | 2.601  | 0.197  | 13.180 | 0.000 |
|-----------|--------|--------|--------|-------|
|          | 108.777| 120.434| 0.903  | 0.366 |
|          | 3.455  | 0.348  | 9.938  | 0.000 |

Means

| DISCRIM | -1.181 | 0.121  | -9.749 | 0.000 |

Thresholds

| Variable  | 0.133  | 0.209  | 0.633  | 0.526 |
|-----------|--------|--------|--------|-------|
|          | 1.539  | 0.195  | 7.904  | 0.000 |
|          | -50.202| 56.262 | -0.892 | 0.372 |
|          | 39.733 | 46.886 | 0.847  | 0.397 |
|         | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|---------|--------|--------|--------|--------|
| TRTBD_R$1 | -0.626 | 0.320  | -1.959 | 0.050  |
| TRTBD_R$2 | 3.009  | 0.314  | 9.568  | 0.000  |

**Variances**

|         | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|---------|--------|--------|--------|--------|
| DISCRIM | 1.174  | 0.179  | 6.551  | 0.000  |

Latent Class 18 (18)

**DISCRIM BY**

|         | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|---------|--------|--------|--------|--------|
| PREDJ_R | 2.766  | 0.119  | 23.180 | 0.000  |
| LKRSP_R | 22.757 | 29.357 | 0.775  | 0.438  |
| TRTBD_R | 3.552  | 0.264  | 13.444 | 0.000  |

**Means**

|         | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|---------|--------|--------|--------|--------|
| DISCRIM | -0.849 | 0.167  | -5.081 | 0.000  |

**Thresholds**

|         | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|---------|--------|--------|--------|--------|
| PREDJ_R$1 | -0.255 | 0.298  | -0.856 | 0.392  |
| PREDJ_R$2 | 1.807  | 0.273  | 6.627  | 0.000  |
| LKRSP_R$1 | -4.214 | 3.261  | -1.292 | 0.196  |
| LKRSP_R$2 | 11.753 | 16.608 | 0.708  | 0.479  |
| TRTBD_R$1 | 0.107  | 0.394  | 0.272  | 0.785  |
| TRTBD_R$2 | 3.262  | 0.352  | 9.263  | 0.000  |

**Variances**

|         | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|---------|--------|--------|--------|--------|
| DISCRIM | 1.436  | 0.232  | 6.202  | 0.000  |

Latent Class 19 (26)

**DISCRIM BY**

|         | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|---------|--------|--------|--------|--------|
| PREDJ_R | 2.754  | 0.131  | 21.088 | 0.000  |
| LKRSP_R | 10.456 | 3.561  | 2.936  | 0.003  |
| TRTBD_R | 4.015  | 0.355  | 11.325 | 0.000  |

**Means**

|         | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|---------|--------|--------|--------|--------|
| DISCRIM | -0.559 | 0.067  | -8.359 | 0.000  |

**Thresholds**

|         | Mean 1 | Mean 2 | Mean 3 | Mean 4 |
|---------|--------|--------|--------|--------|
| PREDJ_R$1 | -0.197 | 0.145  | -1.355 | 0.175  |
| PREDJ_R$2 | 1.285  | 0.155  | 8.266  | 0.000  |
| LKRSP_R$1 | -0.661 | 0.633  | -1.044 | 0.296  |
| LKRSP_R$2 | 5.014  | 1.470  | 3.410  | 0.001  |
| TRTBD_R$1 | 0.415  | 0.212  | 1.959  | 0.050  |
| TRTBD_R$2 | 3.089  | 0.268  | 11.534 | 0.000  |
Variances

DISCRIM  0.929   0.142   6.536   0.000

Categorical Latent Variables

Means

C#1  0.635   0.035   17.947   0.000
C#2  0.665   0.034   19.293   0.000
C#3  0.478   0.036   13.410   0.000
C#4  0.609   0.035   17.262   0.000
C#5  0.595   0.035   17.035   0.000
C#6  0.351   0.037   9.609    0.000
C#7  0.454   0.036   12.678   0.000
C#8  0.696   0.034   20.275   0.000
C#9  0.123   0.039   3.167    0.002
C#10 0.186   0.038   4.914    0.000
C#11 0.314   0.037   8.516    0.000
C#12 0.188   0.038   4.967    0.000
C#13 0.229   0.038   6.111    0.000
C#14 0.612   0.035   17.575   0.000
C#15 0.483   0.036   13.514   0.000
C#16 0.550   0.035   15.634   0.000
C#17 -0.052  0.041  -1.278   0.201
C#18 0.433   0.038   11.544   0.000

APPROXIMATE MEASUREMENT INVARIANCE (NONINVARIANCE) FOR GROUPS

Intercepts/Thresholds

PREDJ_R$1    17  24  11 (28) (12)  3  5  9 (14) (15) 16 20 21 22 (23) 2 4 18 26
PREDJ_R$2    17  24  (11) 28 12 3  5  9 14 15 (16) 20 21 22 23 2 4 18 (26)
LKRSP_R$1    17  24  11 28 12 3  5  9 14 15 16 20 21 22 23 2 4 18 26
LKRSP_R$2    17  24  11 28 12 3  5  9 14 15 16 20 21 22 23 2 4 18 26
TRTBD_R$1    17  24  11 28 (12) 3  5  9 14 15 16 20 21 22 (23) (2) (4) 18 26
TRTBD_R$2    17  24  11 28 (12) 3  5  9 14 15 16 20 21 22 23 2 4 18 26

Loadings for DISCRIM

PREDJ_R     17  24  (11) (28) 12 3  5  9 14 15 16 20 21 22 23 2 4 18 26
LKRSP_R     17  24  11 28 12 3  5  9 14 15 16 20 21 22 23 2 4 18 26
TRTBD_R     (17) (24) 11 28 12 3  5  (9) 14 15 16 20 21 22 23 2 (4) (18) 26

FACTOR MEAN COMPARISON AT THE 5% SIGNIFICANCE LEVEL IN DESCENDING ORDER
### Results for Factor DISCRIM

| Ranking | Latent Class | Group Value | Factor Mean | Groups With Significantly Smaller Factor Mean |
|---------|--------------|-------------|-------------|-----------------------------------------------|
| 1       | 7            | 5           | 0.000       | 24 23 11 26 15 3 12 17 21 20 18 14 2 9 16 28 4 22 |
| 2       | 2            | 24          | -0.228      | 23 11 26 15 3 12 17 21 20 18 14 2 9 16 28 4 22 |
| 3       | 15           | 23          | -0.394      | 11 26 15 3 12 17 21 20 18 14 2 9 16 28 4 22 |
| 4       | 3            | 11          | -0.548      | 21 20 18 14 2 9 16 28 4 22 |
| 5       | 19           | 26          | -0.559      | 21 20 18 14 2 9 16 28 4 22 |
| 6       | 10           | 15          | -0.582      | 21 20 14 2 9 16 28 4 22 |
| 7       | 6            | 3           | -0.615      | 21 20 14 2 9 16 28 4 22 |
| 8       | 5            | 12          | -0.625      | 20 14 2 9 16 28 4 22 |
| 9       | 1            | 17          | -0.677      | 2 9 16 28 4 22 |
| 10      | 13           | 21          | -0.758      | 2 9 16 4 22 |
| 11      | 12           | 20          | -0.821      | 16 4 22 |
| 12      | 18           | 18          | -0.849      | 4 22 |
| 13      | 9            | 14          | -0.854      | 16 4 22 |
| 14      | 16           | 2           | -0.945      | 4 22 |
| 15      | 8            | 9           | -0.985      | 22 |
| 16      | 11           | 16          | -1.074      | 22 |
| 17      | 4            | 28          | -1.084      | |
| 18      | 17           | 4           | -1.181      | 22 |
| 19      | 14           | 22          | -1.548      | |

### QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix: $0.644E-08$  
(ratio of smallest to largest eigenvalue)

[Confidence intervals are omitted.]

[Suggested starting values omitted]

ALIGNMENT OUTPUT

INVARINACE ANALYSIS
### Intercepts/Thresholds

**Threshold PREDJ_R$1**

| Group | Group | Value  | Value  | Difference | SE   | P-value |
|-------|-------|--------|--------|------------|------|---------|
| 24    | 17    | -0.182 | 0.090  | -0.272     | 0.165| 0.098   |
| 11    | 17    | -0.360 | 0.090  | -0.450     | 0.194| 0.020   |
| 11    | 24    | -0.360 | -0.182 | -0.178     | 0.130| 0.170   |
| 28    | 17    | 0.774  | 0.090  | 0.684      | 0.206| 0.001   |
| 28    | 24    | 0.774  | -0.182 | 0.956      | 0.131| 0.000   |
| 28    | 11    | 0.774  | -0.360 | 1.134      | 0.164| 0.000   |
| 12    | 17    | 0.080  | 0.090  | -0.010     | 0.149| 0.944   |
| 12    | 24    | 0.080  | -0.182 | 0.262      | 0.078| 0.001   |
| 12    | 11    | 0.080  | -0.360 | 0.440      | 0.131| 0.001   |
| 12    | 28    | 0.080  | 0.774  | -0.694     | 0.136| 0.000   |
| 3     | 17    | -0.051 | 0.090  | -0.142     | 0.167| 0.397   |
| 3     | 24    | -0.051 | -0.182 | 0.131      | 0.086| 0.127   |
| 3     | 11    | -0.051 | -0.360 | 0.309      | 0.140| 0.028   |
| 3     | 28    | -0.051 | 0.774  | -0.825     | 0.137| 0.000   |
| 3     | 12    | -0.051 | 0.080  | -0.131     | 0.088| 0.135   |
| 5     | 17    | -0.265 | 0.090  | -0.355     | 0.189| 0.060   |
| 5     | 24    | -0.265 | -0.182 | -0.083     | 0.140| 0.554   |
| 5     | 11    | -0.265 | -0.360 | 0.095      | 0.162| 0.555   |
| 5     | 28    | -0.265 | 0.774  | -1.039     | 0.161| 0.000   |
| 5     | 12    | -0.265 | 0.080  | -0.344     | 0.141| 0.014   |
| 5     | 3     | -0.265 | -0.051 | -0.213     | 0.147| 0.146   |
| 9     | 17    | -0.352 | 0.090  | -0.442     | 0.183| 0.016   |
| 9     | 24    | -0.352 | -0.182 | -0.170     | 0.094| 0.069   |
| 9     | 11    | -0.352 | -0.360 | 0.008      | 0.144| 0.954   |
| 9     | 28    | -0.352 | 0.774  | -1.126     | 0.144| 0.000   |
| 9     | 12    | -0.352 | 0.080  | -0.432     | 0.102| 0.000   |
| 9     | 3     | -0.352 | -0.051 | -0.301     | 0.109| 0.006   |
| 9     | 5     | -0.352 | -0.265 | -0.087     | 0.158| 0.582   |
| 14    | 17    | 0.253  | 0.090  | 0.163      | 0.172| 0.343   |
| 14    | 24    | 0.253  | -0.182 | 0.435      | 0.099| 0.000   |
| 14    | 11    | 0.253  | -0.360 | 0.613      | 0.143| 0.000   |
| 14    | 28    | 0.253  | 0.774  | -0.521     | 0.135| 0.000   |
| 14    | 12    | 0.253  | 0.080  | 0.173      | 0.100| 0.083   |
| 14    | 3     | 0.253  | -0.051 | 0.304      | 0.108| 0.005   |
| 14    | 5     | 0.253  | -0.265 | 0.518      | 0.138| 0.000   |
| 14    | 9     | 0.253  | -0.352 | 0.605      | 0.119| 0.000   |
| 15    | 17    | 0.260  | 0.090  | 0.170      | 0.173| 0.324   |
| 15    | 24    | 0.260  | -0.182 | 0.442      | 0.101| 0.000   |
| 15    | 11    | 0.260  | -0.360 | 0.621      | 0.146| 0.000   |
| 15    | 28    | 0.260  | 0.774  | -0.514     | 0.138| 0.000   |
| 15    | 12    | 0.260  | 0.080  | 0.181      | 0.101| 0.073   |
| 15    | 3     | 0.260  | -0.051 | 0.312      | 0.111| 0.005   |
|   |   |   |   |   |
|----|----|----|----|----|
| 5  | 4.260 | -0.265 | 0.525 | 0.143 | 0.000 |
| 9  | 4.260 | -0.352 | 0.612 | 0.122 | 0.000 |
| 14 | 4.260 | 0.253 | 0.008 | 0.113 | 0.946 |
| 17 | -0.277 | 0.090 | -0.367 | 0.177 | 0.038 |
| 24 | -0.277 | -0.182 | -0.095 | 0.099 | 0.341 |
| 11 | -0.277 | -0.360 | 0.084 | 0.145 | 0.565 |
| 28 | -0.277 | 0.774 | -1.051 | 0.148 | 0.000 |
| 12 | -0.277 | 0.080 | -0.356 | 0.104 | 0.001 |
| 3  | -0.277 | -0.051 | -0.225 | 0.112 | 0.045 |
| 5  | -0.277 | -0.265 | -0.012 | 0.152 | 0.938 |
| 9  | -0.277 | -0.352 | 0.075 | 0.118 | 0.524 |
| 14 | -0.277 | 0.253 | -0.530 | 0.121 | 0.000 |
| 15 | -0.277 | 0.260 | -0.537 | 0.123 | 0.000 |
| 17 | -0.477 | 0.090 | -0.567 | 0.188 | 0.003 |
| 24 | -0.477 | -0.182 | -0.295 | 0.122 | 0.015 |
| 11 | -0.477 | -0.360 | -0.117 | 0.158 | 0.460 |
| 28 | -0.477 | 0.774 | -1.251 | 0.166 | 0.000 |
| 12 | -0.477 | 0.080 | -0.557 | 0.122 | 0.000 |
| 3  | -0.477 | -0.051 | -0.425 | 0.131 | 0.001 |
| 5  | -0.477 | -0.265 | -0.212 | 0.172 | 0.219 |
| 9  | -0.477 | -0.352 | -0.125 | 0.135 | 0.356 |
| 14 | -0.477 | 0.253 | -0.730 | 0.140 | 0.000 |
| 15 | -0.477 | 0.260 | -0.737 | 0.141 | 0.000 |
| 16 | -0.477 | -0.277 | -0.200 | 0.142 | 0.159 |
| 17 | 0.035 | 0.090 | -0.055 | 0.165 | 0.738 |
| 24 | 0.035 | -0.182 | 0.217 | 0.086 | 0.012 |
| 11 | 0.035 | -0.360 | 0.395 | 0.140 | 0.005 |
| 28 | 0.035 | 0.774 | -0.739 | 0.139 | 0.000 |
| 12 | 0.035 | 0.080 | -0.044 | 0.087 | 0.610 |
| 3  | 0.035 | -0.051 | 0.087 | 0.096 | 0.369 |
| 5  | 0.035 | -0.265 | 0.300 | 0.148 | 0.043 |
| 9  | 0.035 | -0.352 | 0.387 | 0.108 | 0.000 |
| 14 | 0.035 | 0.253 | -0.218 | 0.108 | 0.044 |
| 15 | 0.035 | 0.260 | -0.225 | 0.110 | 0.040 |
| 16 | 0.035 | -0.277 | 0.312 | 0.112 | 0.005 |
| 20 | 0.035 | -0.477 | 0.512 | 0.131 | 0.000 |
| 22 | -0.217 | 0.090 | -0.307 | 0.183 | 0.094 |
| 24 | -0.217 | -0.182 | -0.035 | 0.095 | 0.710 |
| 11 | -0.217 | -0.360 | 0.143 | 0.147 | 0.332 |
| 28 | -0.217 | 0.774 | -0.991 | 0.141 | 0.000 |
| 12 | -0.217 | 0.080 | -0.297 | 0.104 | 0.004 |
| 3  | -0.217 | -0.051 | -0.166 | 0.110 | 0.131 |
| 5  | -0.217 | -0.265 | 0.048 | 0.153 | 0.757 |
| 9  | -0.217 | -0.352 | 0.135 | 0.114 | 0.239 |
| 14 | -0.217 | 0.253 | -0.470 | 0.119 | 0.000 |
| Row | Column | a   | b   | c   | d   | e   |
|-----|--------|-----|-----|-----|-----|-----|
| 22  | 15     | -0.217 | 0.260 | -0.478 | 0.122 | 0.000 |
| 22  | 16     | -0.217 | -0.277 | 0.059 | 0.121 | 0.622 |
| 22  | 20     | -0.217 | -0.477 | 0.260 | 0.141 | 0.067 |
| 22  | 21     | -0.217 | 0.035 | -0.252 | 0.109 | 0.021 |
| 23  | 17     | 0.107  | 0.090 | 0.017 | 0.164 | 0.918 |
| 23  | 24     | 0.107  | -0.182 | 0.289 | 0.086 | 0.001 |
| 23  | 11     | 0.107  | -0.360 | 0.467 | 0.134 | 0.000 |
| 23  | 28     | 0.107  | 0.774 | -0.667 | 0.125 | 0.000 |
| 23  | 12     | 0.107  | 0.080 | 0.027 | 0.087 | 0.754 |
| 23  | 3      | 0.107  | -0.051 | 0.158 | 0.096 | 0.100 |
| 23  | 5      | 0.107  | -0.265 | 0.372 | 0.128 | 0.004 |
| 23  | 9      | 0.107  | -0.352 | 0.459 | 0.108 | 0.000 |
| 23  | 14     | 0.107  | 0.253 | -0.146 | 0.100 | 0.144 |
| 23  | 15     | 0.107  | 0.260 | -0.154 | 0.103 | 0.138 |
| 23  | 16     | 0.107  | -0.277 | 0.384 | 0.110 | 0.000 |
| 23  | 20     | 0.107  | -0.477 | 0.584 | 0.131 | 0.000 |
| 23  | 21     | 0.107  | 0.035 | 0.072 | 0.096 | 0.454 |
| 23  | 22     | 0.107  | -0.217 | 0.324 | 0.108 | 0.003 |
| 2   | 17     | -0.090 | 0.090 | -0.180 | 0.177 | 0.309 |
| 2   | 24     | -0.090 | -0.182 | 0.092 | 0.083 | 0.266 |
| 2   | 11     | -0.090 | -0.360 | 0.270 | 0.144 | 0.060 |
| 2   | 28     | -0.090 | 0.774 | -0.864 | 0.136 | 0.000 |
| 2   | 12     | -0.090 | 0.080 | -0.170 | 0.091 | 0.061 |
| 2   | 3      | -0.090 | -0.051 | -0.039 | 0.098 | 0.693 |
| 2   | 5      | -0.090 | -0.265 | 0.175 | 0.156 | 0.262 |
| 2   | 9      | -0.090 | -0.352 | 0.262 | 0.105 | 0.012 |
| 2   | 14     | -0.090 | 0.253 | -0.343 | 0.112 | 0.002 |
| 2   | 15     | -0.090 | 0.260 | -0.350 | 0.115 | 0.002 |
| 2   | 16     | -0.090 | -0.277 | 0.187 | 0.112 | 0.097 |
| 2   | 20     | -0.090 | -0.477 | 0.387 | 0.133 | 0.004 |
| 2   | 21     | -0.090 | 0.035 | -0.125 | 0.096 | 0.190 |
| 2   | 22     | -0.090 | -0.217 | 0.127 | 0.107 | 0.232 |
| 2   | 23     | -0.090 | 0.107 | -0.197 | 0.099 | 0.046 |
| 4   | 17     | 0.133 | 0.090 | 0.043 | 0.208 | 0.838 |
| 4   | 24     | 0.133 | -0.182 | 0.315 | 0.140 | 0.025 |
| 4   | 11     | 0.133 | -0.360 | 0.493 | 0.188 | 0.009 |
| 4   | 28     | 0.133 | 0.774 | -0.641 | 0.198 | 0.001 |
| 4   | 12     | 0.133 | 0.080 | 0.053 | 0.138 | 0.701 |
| 4   | 3      | 0.133 | -0.051 | 0.184 | 0.148 | 0.215 |
| 4   | 5      | 0.133 | -0.265 | 0.398 | 0.204 | 0.052 |
| 4   | 9      | 0.133 | -0.352 | 0.485 | 0.155 | 0.002 |
| 4   | 14     | 0.133 | 0.253 | -0.120 | 0.159 | 0.450 |
| 4   | 15     | 0.133 | 0.260 | -0.128 | 0.161 | 0.427 |
| 4   | 16     | 0.133 | -0.277 | 0.409 | 0.161 | 0.011 |
| 4   | 20     | 0.133 | -0.477 | 0.610 | 0.172 | 0.000 |
Approximate Measurement Invariance Holds For Groups:
17 24 11 3 5 9 16 20 21 22
2 4 18 26
Weighted Average Value Across Invariant Groups:  -0.182
R-square/Explained variance/Invariance index:   0.917
## Invariant Group Values, Difference to Average and Significance

| Group | Value | Difference | SE   | P-value |
|-------|-------|------------|------|---------|
| 17    | 0.090 | 0.272      | 0.149| 0.068   |
| 24    | -0.182| 0.000      | 0.050| 0.996   |
| 11    | -0.360| -0.178     | 0.115| 0.122   |
| 3     | -0.051| 0.131      | 0.070| 0.062   |
| 5     | -0.265| -0.083     | 0.129| 0.524   |
| 9     | -0.352| -0.170     | 0.077| 0.027   |
| 16    | -0.277| -0.094     | 0.085| 0.267   |
| 20    | -0.477| -0.295     | 0.108| 0.006   |
| 21    | 0.035 | 0.217      | 0.069| 0.002   |
| 22    | -0.217| -0.035     | 0.081| 0.665   |
| 2     | -0.090| 0.092      | 0.068| 0.177   |
| 4     | 0.133 | 0.315      | 0.129| 0.015   |
| 18    | -0.255| -0.072     | 0.207| 0.726   |
| 26    | -0.197| -0.015     | 0.074| 0.843   |

## Threshold PREDJ_R$2$

| Group | Group | Value | Value | Difference | SE   | P-value |
|-------|-------|-------|-------|------------|------|---------|
| 24    | 17    | 1.644 | 1.405 | 0.239      | 0.154| 0.122   |
| 11    | 17    | 0.823 | 1.405 | -0.582     | 0.185| 0.002   |
| 11    | 24    | 0.823 | 1.644 | -0.821     | 0.138| 0.000   |
| 28    | 17    | 1.944 | 1.405 | 0.539      | 0.188| 0.004   |
| 28    | 24    | 1.944 | 1.644 | 0.300      | 0.134| 0.025   |
| 28    | 11    | 1.944 | 0.823 | 1.121      | 0.165| 0.000   |
| 12    | 17    | 1.460 | 1.405 | 0.056      | 0.141| 0.693   |
| 12    | 24    | 1.460 | 1.644 | -0.183     | 0.089| 0.039   |
| 12    | 11    | 1.460 | 0.823 | 0.638      | 0.139| 0.000   |
| 12    | 28    | 1.460 | 1.944 | -0.483     | 0.139| 0.001   |
| 3     | 17    | 1.463 | 1.405 | 0.058      | 0.160| 0.716   |
| 3     | 24    | 1.463 | 1.644 | -0.181     | 0.100| 0.070   |
| 3     | 11    | 1.463 | 0.823 | 0.640      | 0.151| 0.000   |
| 3     | 28    | 1.463 | 1.944 | -0.481     | 0.144| 0.001   |
| 3     | 12    | 1.463 | 1.460 | 0.002      | 0.101| 0.981   |
| 5     | 17    | 1.674 | 1.405 | 0.269      | 0.180| 0.134   |
| 5     | 24    | 1.674 | 1.644 | 0.030      | 0.147| 0.839   |
| 5     | 11    | 1.674 | 0.823 | 0.851      | 0.171| 0.000   |
| 5     | 28    | 1.674 | 1.944 | -0.270     | 0.157| 0.085   |
| 5     | 12    | 1.674 | 1.460 | 0.213      | 0.148| 0.150   |
| 5     | 3     | 1.674 | 1.463 | 0.211      | 0.157| 0.180   |
| 9     | 17    | 1.719 | 1.405 | 0.314      | 0.165| 0.057   |
| 9     | 24    | 1.719 | 1.644 | 0.075      | 0.085| 0.375   |
| 9     | 11    | 1.719 | 0.823 | 0.896      | 0.143| 0.000   |
| 9     | 28    | 1.719 | 1.944 | -0.225     | 0.139| 0.106   |
| 9     | 12    | 1.719 | 1.460 | 0.259      | 0.096| 0.007   |
|   |   |    |    |    |    |    |
|---|---|----|----|----|----|----|
| 9 | 3 | 1.719 | 1.463 | 0.256 | 0.107 | 0.017 |
| 9 | 5 | 1.719 | 1.674 | 0.046 | 0.156 | 0.770 |
| 14 | 17 | 1.592 | 1.405 | 0.188 | 0.164 | 0.252 |
| 14 | 24 | 1.592 | 1.644 | -0.051 | 0.108 | 0.633 |
| 14 | 11 | 1.592 | 0.823 | 0.770 | 0.152 | 0.000 |
| 14 | 28 | 1.592 | 1.944 | -0.352 | 0.140 | 0.012 |
| 14 | 12 | 1.592 | 1.460 | 0.132 | 0.112 | 0.238 |
| 14 | 3 | 1.592 | 1.463 | 0.129 | 0.122 | 0.287 |
| 14 | 5 | 1.592 | 1.674 | -0.081 | 0.148 | 0.583 |
| 14 | 9 | 1.592 | 1.719 | -0.127 | 0.114 | 0.267 |
| 15 | 17 | 1.452 | 1.405 | 0.047 | 0.166 | 0.777 |
| 15 | 24 | 1.452 | 1.644 | -0.192 | 0.113 | 0.091 |
| 15 | 11 | 1.452 | 0.823 | 0.629 | 0.157 | 0.000 |
| 15 | 28 | 1.452 | 1.944 | -0.492 | 0.145 | 0.001 |
| 15 | 12 | 1.452 | 1.460 | -0.009 | 0.114 | 0.938 |
| 15 | 3 | 1.452 | 1.463 | -0.011 | 0.126 | 0.929 |
| 15 | 5 | 1.452 | 1.674 | -0.222 | 0.155 | 0.153 |
| 15 | 9 | 1.452 | 1.719 | -0.267 | 0.121 | 0.027 |
| 15 | 14 | 1.452 | 1.592 | -0.141 | 0.128 | 0.273 |
| 16 | 17 | 1.290 | 1.405 | -0.115 | 0.172 | 0.503 |
| 16 | 24 | 1.290 | 1.644 | -0.354 | 0.116 | 0.002 |
| 16 | 11 | 1.290 | 0.823 | 0.467 | 0.158 | 0.003 |
| 16 | 28 | 1.290 | 1.944 | -0.654 | 0.157 | 0.000 |
| 16 | 12 | 1.290 | 1.460 | -0.171 | 0.118 | 0.148 |
| 16 | 3 | 1.290 | 1.463 | -0.173 | 0.129 | 0.179 |
| 16 | 5 | 1.290 | 1.674 | -0.384 | 0.166 | 0.021 |
| 16 | 9 | 1.290 | 1.719 | -0.429 | 0.122 | 0.000 |
| 16 | 14 | 1.290 | 1.592 | -0.303 | 0.135 | 0.025 |
| 16 | 15 | 1.290 | 1.452 | -0.162 | 0.139 | 0.242 |
| 20 | 17 | 1.353 | 1.405 | -0.052 | 0.180 | 0.774 |
| 20 | 24 | 1.353 | 1.644 | -0.291 | 0.129 | 0.025 |
| 20 | 11 | 1.353 | 0.823 | 0.530 | 0.166 | 0.001 |
| 20 | 28 | 1.353 | 1.944 | -0.591 | 0.171 | 0.001 |
| 20 | 12 | 1.353 | 1.460 | -0.108 | 0.128 | 0.401 |
| 20 | 3 | 1.353 | 1.463 | -0.110 | 0.140 | 0.434 |
| 20 | 5 | 1.353 | 1.674 | -0.321 | 0.182 | 0.078 |
| 20 | 9 | 1.353 | 1.719 | -0.366 | 0.135 | 0.007 |
| 20 | 14 | 1.353 | 1.592 | -0.239 | 0.148 | 0.107 |
| 20 | 15 | 1.353 | 1.452 | -0.099 | 0.151 | 0.512 |
| 20 | 16 | 1.353 | 1.290 | 0.063 | 0.152 | 0.678 |
| 21 | 17 | 1.622 | 1.405 | 0.217 | 0.154 | 0.160 |
| 21 | 24 | 1.622 | 1.644 | -0.022 | 0.091 | 0.807 |
| 21 | 11 | 1.622 | 0.823 | 0.799 | 0.145 | 0.000 |
| 21 | 28 | 1.622 | 1.944 | -0.322 | 0.140 | 0.021 |
| 21 | 12 | 1.622 | 1.460 | 0.161 | 0.098 | 0.099 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 21 | 3 | 1.622 | 1.463 | 0.159 | 0.107 | 0.139 |
| 21 | 5 | 1.622 | 1.674 | −0.052 | 0.151 | 0.732 |
| 21 | 9 | 1.622 | 1.719 | −0.097 | 0.096 | 0.310 |
| 21 | 14 | 1.622 | 1.592 | 0.029 | 0.115 | 0.798 |
| 21 | 15 | 1.622 | 1.452 | 0.170 | 0.119 | 0.154 |
| 21 | 16 | 1.622 | 1.290 | 0.332 | 0.124 | 0.007 |
| 21 | 20 | 1.622 | 1.353 | 0.269 | 0.136 | 0.048 |
| 22 | 17 | 1.730 | 1.405 | 0.325 | 0.174 | 0.062 |
| 22 | 24 | 1.730 | 1.644 | 0.086 | 0.104 | 0.407 |
| 22 | 11 | 1.730 | 0.823 | 0.907 | 0.156 | 0.000 |
| 22 | 28 | 1.730 | 1.944 | −0.214 | 0.146 | 0.143 |
| 22 | 12 | 1.730 | 1.460 | 0.269 | 0.113 | 0.018 |
| 22 | 3 | 1.730 | 1.463 | 0.267 | 0.123 | 0.030 |
| 22 | 5 | 1.730 | 1.674 | 0.056 | 0.161 | 0.726 |
| 22 | 9 | 1.730 | 1.719 | 0.011 | 0.109 | 0.920 |
| 22 | 14 | 1.730 | 1.592 | 0.138 | 0.127 | 0.279 |
| 22 | 15 | 1.730 | 1.452 | 0.278 | 0.134 | 0.037 |
| 22 | 16 | 1.730 | 1.290 | 0.440 | 0.137 | 0.001 |
| 22 | 20 | 1.730 | 1.353 | 0.377 | 0.151 | 0.012 |
| 22 | 21 | 1.730 | 1.622 | 0.108 | 0.113 | 0.337 |
| 23 | 17 | 1.830 | 1.405 | 0.425 | 0.154 | 0.006 |
| 23 | 24 | 1.830 | 1.644 | 0.186 | 0.094 | 0.049 |
| 23 | 11 | 1.830 | 0.823 | 1.007 | 0.141 | 0.000 |
| 23 | 28 | 1.830 | 1.944 | −0.114 | 0.126 | 0.368 |
| 23 | 12 | 1.830 | 1.460 | 0.370 | 0.101 | 0.000 |
| 23 | 3 | 1.830 | 1.463 | 0.367 | 0.110 | 0.001 |
| 23 | 5 | 1.830 | 1.674 | 0.156 | 0.136 | 0.249 |
| 23 | 9 | 1.830 | 1.719 | 0.111 | 0.100 | 0.269 |
| 23 | 14 | 1.830 | 1.592 | 0.238 | 0.113 | 0.036 |
| 23 | 15 | 1.830 | 1.452 | 0.378 | 0.118 | 0.001 |
| 23 | 16 | 1.830 | 1.290 | 0.540 | 0.124 | 0.000 |
| 23 | 20 | 1.830 | 1.353 | 0.477 | 0.140 | 0.001 |
| 23 | 21 | 1.830 | 1.622 | 0.208 | 0.104 | 0.044 |
| 23 | 22 | 1.830 | 1.730 | 0.100 | 0.114 | 0.380 |
| 2 | 17 | 1.902 | 1.405 | 0.498 | 0.179 | 0.005 |
| 2 | 24 | 1.902 | 1.644 | 0.259 | 0.113 | 0.022 |
| 2 | 11 | 1.902 | 0.823 | 1.080 | 0.163 | 0.000 |
| 2 | 28 | 1.902 | 1.944 | −0.042 | 0.152 | 0.785 |
| 2 | 12 | 1.902 | 1.460 | 0.442 | 0.121 | 0.000 |
| 2 | 3 | 1.902 | 1.463 | 0.439 | 0.130 | 0.001 |
| 2 | 5 | 1.902 | 1.674 | 0.229 | 0.172 | 0.183 |
| 2 | 9 | 1.902 | 1.719 | 0.183 | 0.116 | 0.113 |
| 2 | 14 | 1.902 | 1.592 | 0.310 | 0.136 | 0.023 |
| 2 | 15 | 1.902 | 1.452 | 0.451 | 0.142 | 0.001 |
| 2 | 16 | 1.902 | 1.290 | 0.613 | 0.142 | 0.000 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 2 | 20 | 1.902 | 1.353 | 0.549 | 0.154 | 0.000 |
| 2 | 21 | 1.902 | 1.622 | 0.281 | 0.121 | 0.021 |
| 2 | 22 | 1.902 | 1.730 | 0.172 | 0.131 | 0.189 |
| 2 | 23 | 1.902 | 1.830 | 0.072 | 0.122 | 0.553 |
| 4 | 17 | 1.539 | 1.405 | 0.134 | 0.186 | 0.470 |
| 4 | 24 | 1.539 | 1.644 | -0.105 | 0.126 | 0.405 |
| 4 | 11 | 1.539 | 0.823 | 0.716 | 0.179 | 0.000 |
| 4 | 28 | 1.539 | 1.944 | -0.405 | 0.184 | 0.028 |
| 4 | 12 | 1.539 | 1.460 | 0.078 | 0.128 | 0.542 |
| 4 | 3 | 1.539 | 1.463 | 0.076 | 0.139 | 0.586 |
| 4 | 5 | 1.539 | 1.674 | -0.135 | 0.190 | 0.478 |
| 4 | 9 | 1.539 | 1.719 | -0.180 | 0.130 | 0.166 |
| 4 | 14 | 1.539 | 1.592 | -0.053 | 0.149 | 0.721 |
| 4 | 15 | 1.539 | 1.452 | 0.087 | 0.153 | 0.569 |
| 4 | 16 | 1.539 | 1.290 | 0.249 | 0.153 | 0.104 |
| 4 | 20 | 1.539 | 1.353 | 0.186 | 0.159 | 0.243 |
| 4 | 21 | 1.539 | 1.622 | -0.083 | 0.132 | 0.531 |
| 4 | 22 | 1.539 | 1.730 | -0.191 | 0.147 | 0.193 |
| 4 | 23 | 1.539 | 1.830 | -0.291 | 0.144 | 0.043 |
| 4 | 2 | 1.539 | 1.902 | -0.363 | 0.151 | 0.016 |
| 18 | 17 | 1.807 | 1.405 | 0.403 | 0.273 | 0.140 |
| 18 | 24 | 1.807 | 1.644 | 0.164 | 0.190 | 0.390 |
| 18 | 11 | 1.807 | 0.823 | 0.985 | 0.242 | 0.000 |
| 18 | 28 | 1.807 | 1.944 | -0.136 | 0.261 | 0.601 |
| 18 | 12 | 1.807 | 1.460 | 0.347 | 0.206 | 0.091 |
| 18 | 3 | 1.807 | 1.463 | 0.345 | 0.207 | 0.097 |
| 18 | 5 | 1.807 | 1.674 | 0.134 | 0.275 | 0.627 |
| 18 | 9 | 1.807 | 1.719 | 0.088 | 0.187 | 0.637 |
| 18 | 14 | 1.807 | 1.592 | 0.215 | 0.222 | 0.332 |
| 18 | 15 | 1.807 | 1.452 | 0.356 | 0.224 | 0.112 |
| 18 | 16 | 1.807 | 1.290 | 0.518 | 0.217 | 0.017 |
| 18 | 20 | 1.807 | 1.353 | 0.455 | 0.225 | 0.043 |
| 18 | 21 | 1.807 | 1.622 | 0.186 | 0.200 | 0.352 |
| 18 | 22 | 1.807 | 1.730 | 0.078 | 0.205 | 0.704 |
| 18 | 23 | 1.807 | 1.830 | -0.023 | 0.214 | 0.916 |
| 18 | 2 | 1.807 | 1.902 | -0.095 | 0.200 | 0.636 |
| 18 | 4 | 1.807 | 1.539 | 0.269 | 0.201 | 0.182 |
| 26 | 17 | 1.285 | 1.405 | -0.120 | 0.167 | 0.471 |
| 26 | 24 | 1.285 | 1.644 | -0.359 | 0.106 | 0.001 |
| 26 | 11 | 1.285 | 0.823 | 0.462 | 0.152 | 0.002 |
| 26 | 28 | 1.285 | 1.944 | -0.659 | 0.151 | 0.000 |
| 26 | 12 | 1.285 | 1.460 | -0.176 | 0.110 | 0.109 |
| 26 | 3 | 1.285 | 1.463 | -0.178 | 0.121 | 0.140 |
| 26 | 5 | 1.285 | 1.674 | -0.389 | 0.164 | 0.018 |
| 26 | 9 | 1.285 | 1.719 | -0.434 | 0.112 | 0.000 |
Approximate Measurement Invariance Holds For Groups:
17 24 28 12 3 5 9 14 15 20
21 22 23 2 4 18

Weighted Average Value Across Invariant Groups: 1.648
R-square/Explained variance/Invariance index: 0.832

| Group | Value Difference | SE  | P-value |
|-------|------------------|-----|---------|
| 17    | 1.405            | 0.135 | 0.072  |
| 24    | 1.644            | 0.056 | 0.941  |
| 28    | 1.944            | 0.115 | 0.010  |
| 12    | 1.460            | 0.064 | 0.003  |
| 3     | 1.463            | 0.080 | 0.021  |
| 5     | 1.674            | 0.128 | 0.841  |
| 9     | 1.719            | 0.066 | 0.278  |
| 14    | 1.592            | 0.088 | 0.529  |
| 15    | 1.452            | 0.094 | 0.037  |
| 20    | 1.353            | 0.114 | 0.010  |
| 21    | 1.622            | 0.070 | 0.707  |
| 22    | 1.730            | 0.086 | 0.339  |
| 23    | 1.830            | 0.070 | 0.009  |
| 2     | 1.902            | 0.094 | 0.007  |
| 4     | 1.539            | 0.114 | 0.340  |
| 18    | 1.807            | 0.189 | 0.397  |

Threshold LKRSP_R$1

| Group | Group | Value | Value | Difference | SE  | P-value |
|-------|-------|-------|-------|------------|-----|---------|
| 24    | 17    | -1.204| -2.179| 0.975      | 0.415 | 0.019  |
| 11    | 17    | -1.327| -2.179| 0.853      | 0.531 | 0.108  |
| 11    | 24    | -1.327| -1.204| -0.123     | 0.361 | 0.734  |
| 28    | 17    | -3.614| -2.179| -1.435     | 1.625 | 0.377  |
| 28    | 24    | -3.614| -1.204| -2.410     | 1.768 | 0.173  |
| 28    | 11    | -3.614| -1.327| -2.287     | 1.903 | 0.230  |
| 12    | 17    | -1.575| -2.179| 0.604      | 0.519 | 0.244  |
| 12    | 24    | -1.575| -1.204| -0.371     | 0.325 | 0.254  |
|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 12 | 11 | -1.575 | -1.327 | -0.248 | 0.247 | 0.314 |
| 12 | 28 | -1.575 | -3.614 | 2.039 | 1.891 | 0.281 |
| 3  | 17 | -1.032 | -2.179 | 1.147 | 0.499 | 0.022 |
| 3  | 24 | -1.032 | -1.204 | 0.172 | 0.318 | 0.589 |
| 3  | 11 | -1.032 | -1.327 | 0.295 | 0.263 | 0.262 |
| 3  | 28 | -1.032 | -3.614 | 2.582 | 1.866 | 0.166 |
| 3  | 12 | -1.032 | -1.575 | 0.543 | 0.228 | 0.017 |
| 5  | 17 | -1.770 | -2.179 | 0.409 | 0.631 | 0.517 |
| 5  | 24 | -1.770 | -1.204 | -0.566 | 0.459 | 0.217 |
| 5  | 11 | -1.770 | -1.327 | -0.443 | 0.325 | 0.172 |
| 5  | 28 | -1.770 | -3.614 | 1.844 | 1.999 | 0.356 |
| 5  | 12 | -1.770 | -1.575 | -0.195 | 0.308 | 0.526 |
| 5  | 3  | -1.770 | -1.032 | -0.738 | 0.330 | 0.025 |
| 9  | 17 | -1.367 | -2.179 | 0.812 | 0.445 | 0.068 |
| 9  | 24 | -1.367 | -1.204 | -0.163 | 0.355 | 0.646 |
| 9  | 11 | -1.367 | -1.327 | -0.040 | 0.397 | 0.919 |
| 9  | 28 | -1.367 | -3.614 | 2.247 | 1.773 | 0.205 |
| 9  | 12 | -1.367 | -1.575 | 0.208 | 0.368 | 0.572 |
| 9  | 3  | -1.367 | -1.032 | -0.335 | 0.360 | 0.353 |
| 9  | 5  | -1.367 | -1.770 | 0.403 | 0.487 | 0.408 |
| 14 | 17 | -1.763 | -2.179 | 0.417 | 0.724 | 0.565 |
| 14 | 24 | -1.763 | -1.204 | -0.559 | 0.746 | 0.454 |
| 14 | 11 | -1.763 | -1.327 | -0.436 | 0.808 | 0.590 |
| 14 | 28 | -1.763 | -3.614 | 1.851 | 1.780 | 0.298 |
| 14 | 12 | -1.763 | -1.575 | -0.188 | 0.786 | 0.811 |
| 14 | 3  | -1.763 | -1.032 | -0.731 | 0.780 | 0.349 |
| 14 | 5  | -1.763 | -1.770 | 0.008 | 0.878 | 0.993 |
| 14 | 9  | -1.763 | -1.367 | -0.396 | 0.770 | 0.607 |
| 15 | 17 | -1.310 | -2.179 | 0.869 | 0.527 | 0.099 |
| 15 | 24 | -1.310 | -1.204 | -0.106 | 0.343 | 0.758 |
| 15 | 11 | -1.310 | -1.327 | 0.017 | 0.262 | 0.949 |
| 15 | 28 | -1.310 | -3.614 | 2.304 | 1.888 | 0.222 |
| 15 | 12 | -1.310 | -1.575 | 0.265 | 0.231 | 0.251 |
| 15 | 3  | -1.310 | -1.032 | -0.278 | 0.242 | 0.252 |
| 15 | 5  | -1.310 | -1.770 | 0.460 | 0.313 | 0.142 |
| 15 | 9  | -1.310 | -1.367 | 0.057 | 0.381 | 0.881 |
| 15 | 14 | -1.310 | -1.763 | 0.453 | 0.798 | 0.570 |
| 16 | 17 | -1.375 | -2.179 | 0.804 | 0.511 | 0.116 |
| 16 | 24 | -1.375 | -1.204 | -0.171 | 0.355 | 0.629 |
| 16 | 11 | -1.375 | -1.327 | -0.049 | 0.313 | 0.876 |
| 16 | 28 | -1.375 | -3.614 | 2.238 | 1.866 | 0.230 |
| 16 | 12 | -1.375 | -1.575 | 0.200 | 0.286 | 0.485 |
| 16 | 3  | -1.375 | -1.032 | -0.343 | 0.291 | 0.238 |
| 16 | 5  | -1.375 | -1.770 | 0.395 | 0.377 | 0.295 |
| 16 | 9  | -1.375 | -1.367 | -0.008 | 0.394 | 0.983 |
|   |   | X   | X   |   | X   | X   |
|---|---|-----|-----|---|-----|-----|
| 16| 14| -1.375| -1.763| 0.387| 0.793| 0.625 |
| 16| 15| -1.375| -1.310| -0.066| 0.299| 0.826 |
| 20| 17| -1.413| -2.179| 0.766| 0.524| 0.144 |
| 20| 24| -1.413| -1.204| -0.209| 0.356| 0.556 |
| 20| 11| -1.413| -1.327| -0.087| 0.280| 0.757 |
| 20| 28| -1.413| -3.614| 2.200| 1.894| 0.245 |
| 20| 12| -1.413| -1.575| 0.162| 0.254| 0.524 |
| 20| 3 | -1.413| -1.032| -0.381| 0.267| 0.153 |
| 20| 5 | -1.413| -1.770| 0.357| 0.337| 0.290 |
| 20| 9 | -1.413| -1.367| -0.046| 0.395| 0.907 |
| 20| 14| -1.413| -1.763| 0.349| 0.801| 0.663 |
| 20| 15| -1.413| -1.310| -0.104| 0.269| 0.700 |
| 20| 16| -1.413| -1.375| -0.038| 0.317| 0.905 |
| 21| 17| -0.932| -2.179| 1.247| 0.481| 0.010 |
| 21| 24| -0.932| -1.204| 0.272| 0.313| 0.386 |
| 21| 11| -0.932| -1.327| 0.394| 0.290| 0.174 |
| 21| 28| -0.932| -3.614| 2.682| 1.844| 0.146 |
| 21| 12| -0.932| -1.575| 0.643| 0.253| 0.011 |
| 21| 3 | -0.932| -1.032| 0.100| 0.258| 0.699 |
| 21| 5 | -0.932| -1.770| 0.838| 0.365| 0.022 |
| 21| 9 | -0.932| -1.367| 0.435| 0.359| 0.226 |
| 21| 14| -0.932| -1.763| 0.830| 0.771| 0.281 |
| 21| 15| -0.932| -1.310| 0.378| 0.270| 0.162 |
| 21| 16| -0.932| -1.375| 0.443| 0.308| 0.150 |
| 21| 20| -0.932| -1.413| 0.481| 0.291| 0.098 |
| 22| 17| -1.636| -2.179| 0.543| 0.492| 0.269 |
| 22| 24| -1.636| -1.204| -0.432| 0.407| 0.289 |
| 22| 11| -1.636| -1.327| -0.309| 0.428| 0.470 |
| 22| 28| -1.636| -3.614| 1.978| 1.793| 0.270 |
| 22| 12| -1.636| -1.575| -0.061| 0.404| 0.880 |
| 22| 3 | -1.636| -1.032| -0.604| 0.398| 0.129 |
| 22| 5 | -1.636| -1.770| 0.134| 0.505| 0.790 |
| 22| 9 | -1.636| -1.367| -0.269| 0.440| 0.542 |
| 22| 14| -1.636| -1.763| 0.127| 0.799| 0.874 |
| 22| 15| -1.636| -1.310| -0.326| 0.413| 0.430 |
| 22| 16| -1.636| -1.375| -0.260| 0.429| 0.544 |
| 22| 20| -1.636| -1.413| -0.222| 0.426| 0.601 |
| 22| 21| -1.636| -0.932| -0.704| 0.401| 0.080 |
| 23| 17| -1.744| -2.179| 0.435| 0.533| 0.414 |
| 23| 24| -1.744| -1.204| -0.540| 0.516| 0.295 |
| 23| 11| -1.744| -1.327| -0.417| 0.591| 0.480 |
| 23| 28| -1.744| -3.614| 1.870| 1.728| 0.279 |
| 23| 12| -1.744| -1.575| -0.169| 0.564| 0.764 |
| 23| 3 | -1.744| -1.032| -0.712| 0.555| 0.200 |
| 23| 5 | -1.744| -1.770| 0.026| 0.675| 0.969 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 23| 9 | -1.744 | -1.367 | -0.377 | 0.548 | 0.492 |
| 23| 14| -1.744 | -1.763 | 0.018 | 0.845 | 0.983 |
| 23| 15| -1.744 | -1.310 | -0.434 | 0.577 | 0.451 |
| 23| 16| -1.744 | -1.375 | -0.369 | 0.574 | 0.521 |
| 23| 20| -1.744 | -1.413 | -0.331 | 0.584 | 0.571 |
| 23| 21| -1.744 | -0.932 | -0.812 | 0.544 | 0.136 |
| 23| 22| -1.744 | -1.636 | -0.108 | 0.588 | 0.854 |
| 2 | 17| -2.061 | -2.179 | 0.118 | 0.506 | 0.815 |
| 2 | 24| -2.061 | -1.204 | -0.857 | 0.341 | 0.012 |
| 2 | 11| -2.061 | -1.327 | -0.734 | 0.290 | 0.011 |
| 2 | 28| -2.061 | -3.614 | 1.553 | 1.864 | 0.405 |
| 2 | 12| -2.061 | -1.575 | -0.486 | 0.260 | 0.062 |
| 2 | 3 | -2.061 | -1.032 | -1.029 | 0.266 | 0.000 |
| 2 | 5 | -2.061 | -1.770 | -0.291 | 0.351 | 0.407 |
| 2 | 9 | -2.061 | -1.367 | -0.694 | 0.379 | 0.067 |
| 2 | 14| -2.061 | -1.763 | -0.298 | 0.788 | 0.705 |
| 2 | 15| -2.061 | -1.310 | -0.751 | 0.271 | 0.006 |
| 2 | 16| -2.061 | -1.375 | -0.686 | 0.316 | 0.030 |
| 2 | 20| -2.061 | -1.413 | -0.648 | 0.295 | 0.028 |
| 2 | 21| -2.061 | -0.932 | -1.129 | 0.286 | 0.000 |
| 2 | 22| -2.061 | -1.636 | -0.425 | 0.415 | 0.305 |
| 2 | 23| -2.061 | -1.744 | -0.317 | 0.568 | 0.577 |
| 4 | 17| -50.202 | -2.179 | -48.023 | 56.180 | 0.393 |
| 4 | 24| -50.202 | -1.204 | -48.998 | 56.215 | 0.383 |
| 4 | 11| -50.202 | -1.327 | -48.875 | 56.240 | 0.385 |
| 4 | 28| -50.202 | -3.614 | -46.588 | 56.040 | 0.406 |
| 4 | 12| -50.202 | -1.575 | -48.627 | 56.239 | 0.387 |
| 4 | 3 | -50.202 | -1.032 | -49.170 | 56.235 | 0.382 |
| 4 | 5 | -50.202 | -1.770 | -48.432 | 56.255 | 0.389 |
| 4 | 9 | -50.202 | -1.367 | -48.835 | 56.215 | 0.385 |
| 4 | 14| -50.202 | -1.763 | -48.440 | 56.205 | 0.389 |
| 4 | 15| -50.202 | -1.310 | -48.892 | 56.240 | 0.385 |
| 4 | 16| -50.202 | -1.375 | -48.827 | 56.232 | 0.385 |
| 4 | 20| -50.202 | -1.413 | -48.789 | 56.237 | 0.386 |
| 4 | 21| -50.202 | -0.932 | -49.270 | 56.231 | 0.381 |
| 4 | 22| -50.202 | -1.636 | -48.566 | 56.220 | 0.388 |
| 4 | 23| -50.202 | -1.744 | -48.458 | 56.209 | 0.389 |
| 4 | 2 | -50.202 | -2.061 | -48.141 | 56.236 | 0.392 |
| 18| 17| -4.214 | -2.179 | -2.034 | 3.455 | 0.556 |
| 18| 24| -4.214 | -1.204 | -3.009 | 3.396 | 0.376 |
| 18| 11| -4.214 | -1.327 | -2.887 | 3.307 | 0.383 |
| 18| 28| -4.214 | -3.614 | -0.600 | 3.555 | 0.866 |
| 18| 12| -4.214 | -1.575 | -2.638 | 3.313 | 0.426 |
| 18| 3 | -4.214 | -1.032 | -3.181 | 3.328 | 0.339 |
| 18| 5 | -4.214 | -1.770 | -2.443 | 3.251 | 0.452 |
Approximate Measurement Invariance Holds For Groups:
17 24 11 28 12 3 5 9 14 15
16 20 21 22 23 2 4 18 26

Weighted Average Value Across Invariant Groups: -3.372

R-square/Explained variance/Invariance index: 0.190

| Group | Value Difference | SE     | P-value |
|-------|------------------|--------|---------|
| 17    | -2.179           | 1.193  | 0.520   |
| 24    | -1.204           | 2.168  | 0.246   |
| 11    | -1.327           | 2.046  | 0.280   |
| 28    | -3.614           | 0.241  | 0.917   |
| 12    | -1.575           | 1.797  | 0.342   |
| 3     | -1.032           | 2.340  | 0.885   |
| 5     | -1.770           | 1.602  | 0.405   |
| 9     | -1.367           | 2.005  | 0.245   |
| 14    | -1.763           | 1.610  | 0.413   |
|   |   |   |   |   |
|---|---|---|---|---|
| 15 | -1.310 | 2.063 | 1.892 | 0.276 |
| 16 | -1.375 | 1.997 | 1.889 | 0.290 |
| 20 | -1.413 | 1.959 | 1.892 | 0.301 |
| 21 | -0.932 | 2.440 | 1.882 | 0.195 |
| 22 | -1.636 | 1.736 | 1.887 | 0.357 |
| 23 | -1.744 | 1.628 | 1.902 | 0.392 |
| 2 | -2.061 | 1.311 | 1.890 | 0.488 |
| 4  | -50.202 | -46.830 | 54.375 | 0.389 |
| 18 | -4.214 | -0.841 | 3.728 | 0.821 |
| 26 | -0.661 | 2.711 | 1.887 | 0.151 |

**Threshold LKRSP_R$2**

| Group | Group | Value | Value | Difference | SE  | P-value |
|-------|-------|-------|-------|------------|-----|---------|
| 24    | 17    | -3.704| -18.133| 14.429     | 22.576 | 0.523 |
| 11    | 17    | -0.507| -18.133| 17.626     | 22.629 | 0.436 |
| 11    | 24    | -0.507| -3.704 | 3.197      | 0.581  | 0.000 |
| 28    | 17    | -23.759| -18.133| -5.626    | 36.798 | 0.878 |
| 28    | 24    | -23.759| -3.704 | -20.055   | 29.057 | 0.490 |
| 28    | 11    | -23.759| -0.507| -23.252   | 29.183 | 0.426 |
| 12    | 17    | -0.520| -18.133| 17.613     | 22.592 | 0.436 |
| 12    | 24    | -0.520| -3.704 | 3.184      | 0.554  | 0.000 |
| 12    | 11    | -0.520| -0.507| -0.013    | 0.232  | 0.956 |
| 12    | 28    | -0.520| -23.759| 23.239    | 29.173 | 0.426 |
| 3     | 17    | -1.531| -18.133| 16.602     | 22.605 | 0.463 |
| 3     | 24    | -1.531| -3.704 | 2.173      | 0.555  | 0.000 |
| 3     | 11    | -1.531| -0.507| -1.024    | 0.270  | 0.000 |
| 3     | 28    | -1.531| -23.759| 22.228    | 29.146 | 0.446 |
| 3     | 12    | -1.531| -0.520| -1.011    | 0.199  | 0.000 |
| 5     | 17    | -3.029| -18.133| 15.104     | 22.670 | 0.505 |
| 5     | 24    | -3.029| -3.704 | 0.675      | 0.677  | 0.319 |
| 5     | 11    | -3.029| -0.507| -2.522    | 0.397  | 0.000 |
| 5     | 28    | -3.029| -23.759| 20.730    | 29.291 | 0.479 |
| 5     | 12    | -3.029| -0.520| -2.509    | 0.360  | 0.000 |
| 5     | 3     | -3.029| -1.531| -1.498    | 0.391  | 0.000 |
| 9     | 17    | -3.693| -18.133| 14.440     | 22.594 | 0.523 |
| 9     | 24    | -3.693| -3.704 | 0.011      | 0.694  | 0.988 |
| 9     | 11    | -3.693| -0.507| -3.186    | 0.546  | 0.000 |
| 9     | 28    | -3.693| -23.759| 20.066    | 29.052 | 0.490 |
| 9     | 12    | -3.693| -0.520| -3.173    | 0.517  | 0.000 |
| 9     | 3     | -3.693| -1.531| -2.162    | 0.520  | 0.000 |
| 9     | 5     | -3.693| -3.029| -0.664    | 0.646  | 0.304 |
| 14    | 17    | -4.728| -18.133| 13.406     | 22.626 | 0.554 |
| 14    | 24    | -4.728| -3.704 | -1.024    | 1.895  | 0.589 |
| 14    | 11    | -4.728| -0.507| -4.220    | 1.848  | 0.022 |
| 14    | 28    | -4.728| -23.759| 19.031    | 29.016 | 0.512 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 14| 12| -4.728| -0.520| -4.208| 1.841| 0.022|
| 14| 3 | -4.728| -1.531| -3.197| 1.839| 0.082|
| 14| 5 | -4.728| -3.029| -1.698| 1.878| 0.366|
| 14| 9 | -4.728| -3.693| -1.034| 1.882| 0.583|
| 15| 17| -1.096| -18.133| 17.037| 22.620| 0.451|
| 15| 24| -1.096| -3.704| 2.608| 0.566| 0.000|
| 15| 11| -1.096| -0.507| -0.589| 0.263| 0.025|
| 15| 28| -1.096| -23.759| 22.663| 29.165| 0.437|
| 15| 12| -1.096| -0.520| -0.576| 0.191| 0.003|
| 15| 3 | -1.096| -1.531| 0.435| 0.227| 0.056|
| 15| 5 | -1.096| -3.029| 1.933| 0.368| 0.000|
| 15| 9 | -1.096| -3.693| 2.597| 0.530| 0.000|
| 15| 14| -1.096| -4.728| 3.631| 1.841| 0.048|
| 16| 17| -2.014| -18.133| 16.119| 22.605| 0.476|
| 16| 24| -2.014| -3.704| 1.690| 0.590| 0.004|
| 16| 11| -2.014| -0.507| -1.507| 0.350| 0.000|
| 16| 28| -2.014| -23.759| 21.745| 29.144| 0.456|
| 16| 12| -2.014| -0.520| -1.494| 0.302| 0.000|
| 16| 3 | -2.014| -1.531| -0.483| 0.321| 0.132|
| 16| 5 | -2.014| -3.029| 0.105| 0.463| 0.028|
| 16| 9 | -2.014| -3.693| 1.679| 0.558| 0.003|
| 16| 14| -2.014| -4.728| 2.714| 1.849| 0.142|
| 16| 15| -2.014| -1.096| -0.918| 0.324| 0.005|
| 20| 17| -1.330| -18.133| 16.803| 22.613| 0.457|
| 20| 24| -1.330| -3.704| 2.374| 0.576| 0.000|
| 20| 11| -1.330| -0.507| -0.822| 0.282| 0.004|
| 20| 28| -1.330| -23.759| 22.429| 29.174| 0.442|
| 20| 12| -1.330| -0.520| -0.810| 0.228| 0.000|
| 20| 3 | -1.330| -1.531| 0.201| 0.263| 0.444|
| 20| 5 | -1.330| -3.029| 1.700| 0.402| 0.000|
| 20| 9 | -1.330| -3.693| 2.364| 0.541| 0.000|
| 20| 14| -1.330| -4.728| 3.398| 1.845| 0.066|
| 20| 15| -1.330| -1.096| -0.233| 0.257| 0.365|
| 20| 16| -1.330| -2.014| 0.684| 0.349| 0.050|
| 21| 17| -2.719| -18.133| 15.414| 22.590| 0.495|
| 21| 24| -2.719| -3.704| 0.985| 0.603| 0.102|
| 21| 11| -2.719| -0.507| -2.212| 0.371| 0.000|
| 21| 28| -2.719| -23.759| 21.040| 29.128| 0.470|
| 21| 12| -2.719| -0.520| -2.199| 0.324| 0.000|
| 21| 3 | -2.719| -1.531| -1.188| 0.337| 0.000|
| 21| 5 | -2.719| -3.029| 0.310| 0.475| 0.514|
| 21| 9 | -2.719| -3.693| 0.974| 0.568| 0.086|
| 21| 14| -2.719| -4.728| 2.009| 1.854| 0.279|
| 21| 15| -2.719| -1.096| -1.623| 0.340| 0.000|
| 21| 16| -2.719| -2.014| -0.705| 0.403| 0.080|
| 21  | 20  | -2.719   | -1.330  | -1.389 | 0.365 | 0.000 |
|-----|-----|----------|---------|--------|-------|-------|
| 22  | 17  | -3.321   | -18.133 | 14.812 | 22.603 | 0.512 |
| 22  | 24  | -3.321   | -3.704  | 0.383  | 0.658  | 0.560 |
| 22  | 11  | -3.321   | -0.507  | -2.813 | 0.497  | 0.000 |
| 22  | 28  | -3.321   | -23.759 | 20.438 | 29.060 | 0.482 |
| 22  | 12  | -3.321   | -0.520  | -2.801 | 0.460  | 0.000 |
| 22  | 3   | -3.321   | -1.531  | -1.790 | 0.465  | 0.000 |
| 22  | 5   | -3.321   | -3.029  | -0.292 | 0.596  | 0.625 |
| 22  | 9   | -3.321   | -3.693  | 0.373  | 0.630  | 0.554 |
| 22  | 14  | -3.321   | -4.728  | 1.407  | 1.867  | 0.451 |
| 22  | 15  | -3.321   | -1.096  | -2.225 | 0.473  | 0.000 |
| 22  | 16  | -3.321   | -2.014  | -1.307 | 0.512  | 0.011 |
| 22  | 20  | -3.321   | -1.330  | -1.991 | 0.492  | 0.000 |
| 22  | 21  | -3.321   | -2.719  | -0.602 | 0.517  | 0.245 |
| 23  | 17  | -4.980   | -18.133 | 13.153 | 22.589 | 0.560 |
| 23  | 24  | -4.980   | -3.704  | -1.276 | 1.391  | 0.359 |
| 23  | 11  | -4.980   | -0.507  | -4.473 | 1.328  | 0.001 |
| 23  | 28  | -4.980   | -23.759 | 18.779 | 29.003 | 0.517 |
| 23  | 12  | -4.980   | -0.520  | -4.460 | 1.316  | 0.001 |
| 23  | 3   | -4.980   | -1.531  | -3.449 | 1.315  | 0.009 |
| 23  | 5   | -4.980   | -3.029  | -1.951 | 1.374  | 0.156 |
| 23  | 9   | -4.980   | -3.693  | -1.287 | 1.375  | 0.349 |
| 23  | 14  | -4.980   | -4.728  | -0.253 | 2.225  | 0.910 |
| 23  | 15  | -4.980   | -1.096  | -3.884 | 1.319  | 0.003 |
| 23  | 16  | -4.980   | -2.014  | -2.966 | 1.330  | 0.026 |
| 23  | 20  | -4.980   | -1.330  | -3.650 | 1.325  | 0.006 |
| 23  | 21  | -4.980   | -2.719  | -2.261 | 1.335  | 0.090 |
| 23  | 22  | -4.980   | -3.321  | -1.659 | 1.355  | 0.221 |
| 2   | 17  | -1.815   | -18.133 | 16.318 | 22.618 | 0.471 |
| 2   | 24  | -1.815   | -3.704  | 1.889  | 0.561  | 0.001 |
| 2   | 11  | -1.815   | -0.507  | -1.308 | 0.280  | 0.000 |
| 2   | 28  | -1.815   | -23.759 | 21.944 | 29.142 | 0.451 |
| 2   | 12  | -1.815   | -0.520  | -1.295 | 0.215  | 0.000 |
| 2   | 3   | -1.815   | -1.531  | -0.284 | 0.243  | 0.241 |
| 2   | 5   | -1.815   | -3.029  | 1.214  | 0.395  | 0.002 |
| 2   | 9   | -1.815   | -3.693  | 1.878  | 0.526  | 0.000 |
| 2   | 14  | -1.815   | -4.728  | 2.913  | 1.841  | 0.114 |
| 2   | 15  | -1.815   | -1.096  | -0.719 | 0.241  | 0.003 |
| 2   | 16  | -1.815   | -2.014  | 0.199  | 0.332  | 0.549 |
| 2   | 20  | -1.815   | -1.330  | -0.485 | 0.276  | 0.079 |
| 2   | 21  | -1.815   | -2.719  | 0.904  | 0.347  | 0.009 |
| 2   | 22  | -1.815   | -3.321  | 1.506  | 0.469  | 0.001 |
| 2   | 23  | -1.815   | -4.980  | 3.165  | 1.315  | 0.016 |
| 4   | 17  | -39.733  | -18.133 | -21.599 | 51.318 | 0.674 |
| 4   | 24  | -39.733  | -3.704  | -36.029 | 46.829 | 0.442 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 4 | 11 | -39.733 | -0.507 | -39.225 | 46.857 | 0.403 |
| 4 | 28 | -39.733 | -23.759 | -15.974 | 53.408 | 0.765 |
| 4 | 12 | -39.733 | -0.520 | -39.213 | 46.850 | 0.403 |
| 4 | 3  | -39.733 | -1.531 | -38.202 | 46.848 | 0.415 |
| 4 | 5  | -39.733 | -3.029 | -36.703 | 46.881 | 0.434 |
| 4 | 9  | -39.733 | -3.693 | -36.039 | 46.831 | 0.442 |
| 4 | 14 | -39.733 | -4.728 | -35.005 | 46.856 | 0.455 |
| 4 | 15 | -39.733 | -1.096 | -38.636 | 46.854 | 0.410 |
| 4 | 16 | -39.733 | -2.014 | -37.719 | 46.847 | 0.421 |
| 4 | 20 | -39.733 | -3.029 | -36.703 | 46.881 | 0.434 |
| 4 | 21 | -39.733 | -2.719 | -37.014 | 46.841 | 0.429 |
| 4 | 22 | -39.733 | -3.321 | -36.412 | 46.833 | 0.437 |
| 4 | 23 | -39.733 | -4.980 | -34.752 | 46.829 | 0.458 |
| 4 | 2  | -39.733 | -1.815 | -37.918 | 46.846 | 0.418 |
| 18 | 17 | -11.753 | -18.133 | 6.380 | 27.902 | 0.819 |
| 18 | 24 | -11.753 | -3.704 | -8.049 | 16.389 | 0.623 |
| 18 | 11 | -11.753 | -0.507 | -11.246 | 16.516 | 0.496 |
| 18 | 28 | -11.753 | -23.759 | 12.006 | 32.960 | 0.716 |
| 18 | 12 | -11.753 | -0.520 | -11.233 | 16.503 | 0.496 |
| 18 | 3  | -11.753 | -1.531 | -10.222 | 16.482 | 0.535 |
| 18 | 5  | -11.753 | -3.029 | -8.724 | 16.609 | 0.599 |
| 18 | 9  | -11.753 | -3.693 | -8.060 | 16.392 | 0.623 |
| 18 | 14 | -11.753 | -4.728 | -7.025 | 16.461 | 0.670 |
| 18 | 15 | -11.753 | -1.096 | -10.657 | 16.509 | 0.519 |
| 18 | 16 | -11.753 | -2.014 | -9.739 | 16.469 | 0.554 |
| 18 | 20 | -11.753 | -1.330 | -10.423 | 16.461 | 0.528 |
| 18 | 21 | -11.753 | -2.719 | -9.034 | 16.461 | 0.583 |
| 18 | 22 | -11.753 | -3.321 | -8.432 | 16.411 | 0.607 |
| 18 | 23 | -11.753 | -4.980 | -6.773 | 16.408 | 0.680 |
| 18 | 2  | -11.753 | -1.815 | -9.938 | 16.478 | 0.546 |
| 18 | 4  | -11.753 | -39.733 | 27.980 | 48.419 | 0.563 |
| 26 | 17 | -5.014 | -18.133 | 13.119 | 22.588 | 0.561 |
| 26 | 24 | -5.014 | -3.704 | -1.310 | 1.516 | 0.387 |
| 26 | 11 | -5.014 | -0.507 | -4.507 | 1.452 | 0.002 |
| 26 | 28 | -5.014 | -23.759 | 18.745 | 29.030 | 0.518 |
| 26 | 12 | -5.014 | -0.520 | -4.494 | 1.442 | 0.002 |
| 26 | 3  | -5.014 | -1.531 | -3.483 | 1.444 | 0.016 |
| 26 | 5  | -5.014 | -3.029 | -1.985 | 1.489 | 0.183 |
| 26 | 9  | -5.014 | -3.693 | -1.321 | 1.504 | 0.380 |
| 26 | 14 | -5.014 | -4.728 | -0.286 | 2.311 | 0.901 |
| 26 | 15 | -5.014 | -1.096 | -3.918 | 1.448 | 0.007 |
| 26 | 16 | -5.014 | -2.014 | -3.000 | 1.456 | 0.039 |
| 26 | 20 | -5.014 | -1.330 | -3.684 | 1.450 | 0.011 |
| 26 | 21 | -5.014 | -2.719 | -2.295 | 1.461 | 0.116 |
| 26 | 22 | -5.014 | -3.321 | -1.693 | 1.488 | 0.255 |
Approximate Measurement Invariance Holds For Groups:
17 24 11 28 12 3 5 9 14 15
16 20 21 22 23 2 4 18 26
Weighted Average Value Across Invariant Groups: -6.695
R-square/Explained variance/Invariance index: 0.098

| Group | Value Difference | SE   | P-value |
|-------|------------------|------|---------|
| 17    | -18.133          | 21.236 | 0.590   |
| 24    | -3.704           | 2.991 | 0.329   |
| 11    | -0.507           | 6.188 | 0.053   |
| 28    | -23.759          | 17.064 | 0.531   |
| 12    | -0.520           | 6.175 | 0.051   |
| 3     | -1.531           | 5.164 | 0.100   |
| 5     | -3.029           | 3.666 | 0.269   |
| 9     | -3.693           | 3.002 | 0.328   |
| 14    | -4.728           | 1.967 | 0.567   |
| 15    | -1.096           | 5.599 | 0.077   |
| 16    | -2.014           | 4.681 | 0.136   |
| 20    | -1.330           | 5.365 | 0.091   |
| 21    | -2.719           | 3.976 | 0.203   |
| 22    | -3.321           | 3.374 | 0.273   |
| 23    | -4.980           | 1.715 | 0.592   |
| 2     | -1.815           | 4.880 | 0.121   |
| 4     | -39.733          | 33.037 | 0.464   |
| 18    | -11.753          | 5.058 | 0.747   |
| 26    | -5.014           | 5.058 | 0.747   |

Threshold TRTBD_R$1

| Group | Group | Value | Value | Difference | SE   | P-value |
|-------|-------|-------|-------|------------|------|---------|
| 24    | 17    | -0.279 | -0.461 | 0.182      | 0.236 | 0.440   |
| 11    | 17    | -0.683 | -0.461 | -0.222     | 0.364 | 0.542   |
| 11    | 24    | -0.683 | -0.279 | -0.404     | 0.269 | 0.133   |
| 28    | 17    | 0.092  | -0.461 | 0.553      | 0.561 | 0.324   |
| 28    | 24    | 0.092  | -0.279 | 0.371      | 0.449 | 0.409   |
| 28    | 11    | 0.092  | -0.683 | 0.774      | 0.488 | 0.112   |
| 12    | 17    | -0.673 | -0.461 | -0.213     | 0.225 | 0.345   |
| 12    | 24    | -0.673 | -0.279 | -0.395     | 0.115 | 0.001   |
| 12    | 11    | -0.673 | -0.683 | 0.009      | 0.264 | 0.972   |
| 12    | 28    | -0.673 | 0.092  | -0.765     | 0.453 | 0.091   |
| 3     | 17    | -0.224 | -0.461 | 0.236      | 0.259 | 0.360   |
|    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|
| 3  | 24 | -0.224 | -0.279 | 0.055 | 0.134 | 0.683 |
| 3  | 11 | -0.224 | -0.683 | 0.458 | 0.278 | 0.100 |
| 3  | 28 | -0.224 | 0.092 | -0.316 | 0.438 | 0.471 |
| 3  | 12 | -0.224 | -0.673 | 0.449 | 0.145 | 0.002 |
| 5  | 17 | 0.137 | -0.461 | 0.598 | 0.269 | 0.026 |
| 5  | 24 | 0.137 | -0.279 | 0.416 | 0.203 | 0.040 |
| 5  | 11 | 0.137 | -0.683 | 0.819 | 0.362 | 0.024 |
| 5  | 28 | 0.137 | 0.092 | 0.045 | 0.554 | 0.935 |
| 5  | 12 | 0.137 | -0.673 | 0.810 | 0.224 | 0.000 |
| 5  | 3  | 0.137 | -0.224 | 0.361 | 0.247 | 0.144 |
| 9  | 17 | -0.158 | -0.461 | 0.303 | 0.251 | 0.228 |
| 9  | 24 | -0.158 | -0.279 | 0.121 | 0.112 | 0.280 |
| 9  | 11 | -0.158 | -0.683 | 0.525 | 0.276 | 0.057 |
| 9  | 28 | -0.158 | 0.092 | -0.249 | 0.447 | 0.577 |
| 9  | 12 | -0.158 | -0.673 | 0.516 | 0.133 | 0.000 |
| 9  | 3  | -0.158 | -0.224 | 0.067 | 0.147 | 0.650 |
| 9  | 5  | -0.158 | 0.137 | -0.294 | 0.214 | 0.169 |
| 14 | 17 | 0.186 | -0.461 | 0.646 | 0.264 | 0.014 |
| 14 | 24 | 0.186 | -0.279 | 0.464 | 0.147 | 0.002 |
| 14 | 11 | 0.186 | -0.683 | 0.868 | 0.292 | 0.003 |
| 14 | 28 | 0.186 | 0.092 | 0.094 | 0.441 | 0.832 |
| 14 | 12 | 0.186 | -0.673 | 0.859 | 0.163 | 0.000 |
| 14 | 3  | 0.186 | -0.224 | 0.410 | 0.174 | 0.018 |
| 14 | 5  | 0.186 | 0.137 | 0.049 | 0.234 | 0.835 |
| 14 | 9  | 0.186 | -0.158 | 0.343 | 0.157 | 0.029 |
| 15 | 17 | -0.005 | -0.461 | 0.456 | 0.294 | 0.121 |
| 15 | 24 | -0.005 | -0.279 | 0.274 | 0.184 | 0.137 |
| 15 | 11 | -0.005 | -0.683 | 0.678 | 0.306 | 0.027 |
| 15 | 28 | -0.005 | 0.092 | -0.097 | 0.438 | 0.825 |
| 15 | 12 | -0.005 | -0.673 | 0.668 | 0.191 | 0.000 |
| 15 | 3  | -0.005 | -0.224 | 0.219 | 0.198 | 0.269 |
| 15 | 5  | -0.005 | 0.137 | -0.142 | 0.284 | 0.618 |
| 15 | 9  | -0.005 | -0.158 | 0.153 | 0.193 | 0.429 |
| 15 | 14 | -0.005 | 0.186 | -0.191 | 0.210 | 0.364 |
| 16 | 17 | -0.335 | -0.461 | 0.126 | 0.272 | 0.644 |
| 16 | 24 | -0.335 | -0.279 | -0.056 | 0.150 | 0.707 |
| 16 | 11 | -0.335 | -0.683 | 0.347 | 0.278 | 0.212 |
| 16 | 28 | -0.335 | 0.092 | -0.427 | 0.449 | 0.341 |
| 16 | 12 | -0.335 | -0.673 | 0.338 | 0.159 | 0.033 |
| 16 | 3  | -0.335 | -0.224 | -0.111 | 0.168 | 0.510 |
| 16 | 5  | -0.335 | 0.137 | -0.472 | 0.261 | 0.071 |
| 16 | 9  | -0.335 | -0.158 | -0.178 | 0.164 | 0.278 |
| 16 | 14 | -0.335 | 0.186 | -0.521 | 0.187 | 0.055 |
| 16 | 15 | -0.335 | -0.005 | -0.330 | 0.209 | 0.114 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
|20 | 24 | -0.708 | -0.279 | -0.429 | 0.188 | 0.022 |
|20 | 11 | -0.708 | -0.683 | -0.026 | 0.288 | 0.929 |
|20 | 28 | -0.708 | 0.092 | -0.800 | 0.466 | 0.086 |
|20 | 12 | -0.708 | -0.673 | -0.035 | 0.186 | 0.851 |
|20 | 3  | -0.708 | -0.224 | -0.484 | 0.203 | 0.017 |
|20 | 5  | -0.708 | 0.137 | -0.845 | 0.285 | 0.003 |
|20 | 9  | -0.708 | -0.158 | -0.551 | 0.200 | 0.006 |
|20 | 14 | -0.708 | 0.186 | -0.894 | 0.218 | 0.000 |
|20 | 15 | -0.708 | -0.005 | -0.703 | 0.238 | 0.003 |
|20 | 16 | -0.708 | -0.335 | -0.373 | 0.214 | 0.082 |
|21 | 17 | -0.162 | -0.461 | 0.298 | 0.242 | 0.217 |
|21 | 24 | -0.162 | -0.279 | 0.117 | 0.119 | 0.328 |
|21 | 11 | -0.162 | -0.683 | 0.520 | 0.278 | 0.061 |
|21 | 28 | -0.162 | 0.092 | -0.254 | 0.449 | 0.572 |
|21 | 12 | -0.162 | -0.673 | 0.511 | 0.135 | 0.000 |
|21 | 3  | -0.162 | -0.224 | 0.062 | 0.148 | 0.676 |
|21 | 5  | -0.162 | 0.137 | -0.299 | 0.222 | 0.178 |
|21 | 9  | -0.162 | -0.158 | -0.005 | 0.133 | 0.971 |
|21 | 14 | -0.162 | 0.186 | -0.348 | 0.164 | 0.034 |
|21 | 15 | -0.162 | -0.005 | -0.157 | 0.193 | 0.414 |
|21 | 16 | -0.162 | -0.335 | 0.173 | 0.163 | 0.289 |
|21 | 20 | -0.162 | -0.708 | 0.546 | 0.199 | 0.006 |
|22 | 17 | 0.148 | -0.461 | 0.609 | 0.281 | 0.030 |
|22 | 24 | 0.148 | -0.279 | 0.427 | 0.153 | 0.005 |
|22 | 11 | 0.148 | -0.683 | 0.831 | 0.291 | 0.004 |
|22 | 28 | 0.148 | 0.092 | 0.056 | 0.438 | 0.898 |
|22 | 12 | 0.148 | -0.673 | 0.821 | 0.168 | 0.000 |
|22 | 3  | 0.148 | -0.224 | 0.372 | 0.177 | 0.035 |
|22 | 5  | 0.148 | 0.137 | 0.011 | 0.251 | 0.964 |
|22 | 9  | 0.148 | -0.158 | 0.306 | 0.164 | 0.062 |
|22 | 14 | 0.148 | 0.186 | -0.038 | 0.183 | 0.837 |
|22 | 15 | 0.148 | -0.005 | 0.153 | 0.212 | 0.470 |
|22 | 16 | 0.148 | -0.335 | 0.483 | 0.191 | 0.011 |
|22 | 20 | 0.148 | -0.708 | 0.856 | 0.223 | 0.000 |
|22 | 21 | 0.148 | -0.162 | 0.310 | 0.167 | 0.064 |
|23 | 17 | 0.336 | -0.461 | 0.797 | 0.257 | 0.002 |
|23 | 24 | 0.336 | -0.279 | 0.615 | 0.128 | 0.000 |
|23 | 11 | 0.336 | -0.683 | 1.019 | 0.280 | 0.000 |
|23 | 28 | 0.336 | 0.092 | 0.244 | 0.433 | 0.573 |
|23 | 12 | 0.336 | -0.673 | 1.010 | 0.144 | 0.000 |
|23 | 3  | 0.336 | -0.224 | 0.561 | 0.156 | 0.000 |
|23 | 5  | 0.336 | 0.137 | 0.199 | 0.231 | 0.388 |
|23 | 9  | 0.336 | -0.158 | 0.494 | 0.141 | 0.000 |
|23 | 14 | 0.336 | 0.186 | 0.151 | 0.162 | 0.352 |
|23 | 15 | 0.336 | -0.005 | 0.341 | 0.196 | 0.082 |
|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 23| 16| 0.336| -0.335| 0.671| 0.170| 0.000|
| 23| 20| 0.336| -0.708| 1.044| 0.204| 0.000|
| 23| 21| 0.336| -0.162| 0.499| 0.147| 0.001|
| 23| 22| 0.336| 0.148| 0.188| 0.167| 0.260|
| 2 | 17| 0.620| -0.461| 1.081| 0.266| 0.000|
| 2 | 24| 0.620| -0.279| 0.899| 0.144| 0.000|
| 2 | 11| 0.620| -0.683| 1.302| 0.292| 0.000|
| 2 | 28| 0.620| 0.092| 0.528| 0.449| 0.239|
| 2 | 12| 0.620| -0.673| 1.293| 0.159| 0.000|
| 2 | 3 | 0.620| -0.224| 0.844| 0.173| 0.000|
| 2 | 5 | 0.620| 0.137| 0.483| 0.235| 0.039|
| 2 | 9 | 0.620| -0.158| 0.777| 0.156| 0.000|
| 2 | 14| 0.620| 0.186| 0.434| 0.180| 0.016|
| 2 | 15| 0.620| -0.005| 0.625| 0.215| 0.004|
| 2 | 16| 0.620| -0.335| 0.955| 0.187| 0.000|
| 2 | 20| 0.620| -0.708| 1.328| 0.219| 0.000|
| 2 | 21| 0.620| -0.162| 0.782| 0.161| 0.000|
| 2 | 22| 0.620| 0.148| 0.472| 0.185| 0.011|
| 2 | 23| 0.620| 0.336| 0.284| 0.162| 0.080|
| 4 | 17| 0.626| -0.461| 1.087| 0.329| 0.001|
| 4 | 24| 0.626| -0.279| 0.905| 0.233| 0.000|
| 4 | 11| 0.626| -0.683| 1.309| 0.336| 0.000|
| 4 | 28| 0.626| 0.092| 0.534| 0.504| 0.289|
| 4 | 12| 0.626| -0.673| 1.300| 0.234| 0.000|
| 4 | 3 | 0.626| -0.224| 0.850| 0.245| 0.001|
| 4 | 5 | 0.626| 0.137| 0.489| 0.318| 0.123|
| 4 | 9 | 0.626| -0.158| 0.784| 0.243| 0.001|
| 4 | 14| 0.626| 0.186| 0.441| 0.256| 0.085|
| 4 | 15| 0.626| -0.005| 0.631| 0.273| 0.021|
| 4 | 16| 0.626| -0.335| 0.961| 0.256| 0.000|
| 4 | 20| 0.626| -0.708| 1.334| 0.277| 0.000|
| 4 | 21| 0.626| -0.162| 0.788| 0.241| 0.001|
| 4 | 22| 0.626| 0.148| 0.478| 0.259| 0.065|
| 4 | 23| 0.626| 0.336| 0.290| 0.239| 0.225|
| 4 | 2 | 0.626| 0.620| 0.006| 0.250| 0.980|
| 18| 17| -0.107| -0.461| 0.354| 0.411| 0.390|
| 18| 24| -0.107| -0.279| 0.172| 0.278| 0.537|
| 18| 11| -0.107| -0.683| 0.575| 0.359| 0.109|
| 18| 28| -0.107| 0.092| -0.199| 0.549| 0.717|
| 18| 12| -0.107| -0.673| 0.566| 0.291| 0.052|
| 18| 3 | -0.107| -0.224| 0.117| 0.283| 0.679|
| 18| 5 | -0.107| 0.137| -0.244| 0.399| 0.541|
| 18| 9 | -0.107| -0.158| 0.050| 0.282| 0.858|
| 18| 14| -0.107| 0.186| -0.293| 0.303| 0.335|
| 18| 15| -0.107| -0.005| -0.102| 0.307| 0.739|
Approximate Measurement Invariance Holds For Groups:
17 24 11 28 3 5 9 14 15 16
20 21 22 18 26
Weighted Average Value Across Invariant Groups: -0.192
R-square/Explained variance/Invariance index: 0.681

| Group | Value | Difference | SE     | P-value |
|-------|-------|------------|--------|---------|
| 17    | -0.461| -0.269     | 0.235  | 0.252   |
| 24    | -0.279| -0.087     | 0.077  | 0.262   |
| 11    | -0.683| -0.491     | 0.242  | 0.043   |
| 28    | 0.092 | 0.284      | 0.413  | 0.492   |
| 3     | -0.224| -0.032     | 0.110  | 0.769   |
| 5     | 0.137 | 0.329      | 0.218  | 0.132   |
| 9     | -0.158| 0.034      | 0.094  | 0.716   |
| 14    | 0.186 | 0.378      | 0.127  | 0.003   |
| 15    | -0.005| 0.187      | 0.159  | 0.240   |
| 16    | -0.335| -0.143     | 0.128  | 0.265   |
| 20    | -0.708| -0.516     | 0.168  | 0.002   |
| 21    | -0.162| 0.030      | 0.101  | 0.769   |
| Threshold TRTBD_R$2 | Group | Group | Value | Value | Difference | SE  | P-value |
|-------------------|-------|-------|-------|-------|------------|-----|---------|
| 24                | 17    | -2.872| -2.470| -0.402| 0.253      | 0.112|
| 11                | 17    | -3.182| -2.470| -0.712| 0.259      | 0.006|
| 11                | 24    | -3.182| -2.872| -0.310| 0.151      | 0.040|
| 28                | 17    | -3.202| -2.470| -0.733| 0.538      | 0.173|
| 28                | 24    | -3.202| -2.872| -0.331| 0.439      | 0.451|
| 28                | 11    | -3.202| -3.182| -0.021| 0.394      | 0.958|
| 12                | 17    | -2.690| -2.470| -0.220| 0.257      | 0.392|
| 12                | 24    | -2.690| -2.872| 0.182 | 0.193      | 0.344|
| 12                | 11    | -2.690| -3.182| 0.492 | 0.183      | 0.007|
| 12                | 28    | -2.690| -3.202| 0.513 | 0.449      | 0.254|
| 3                 | 17    | -3.111| -2.470| -0.642| 0.282      | 0.023|
| 3                 | 24    | -3.111| -2.872| -0.239| 0.201      | 0.234|
| 3                 | 11    | -3.111| -3.182| 0.071 | 0.172      | 0.681|
| 3                 | 28    | -3.111| -3.202| 0.091 | 0.430      | 0.832|
| 3                 | 12    | -3.111| -2.690| -0.422| 0.227      | 0.063|
| 5                 | 17    | -3.642| -2.470| -1.173| 0.329      | 0.000|
| 5                 | 24    | -3.642| -2.872| -0.771| 0.302      | 0.011|
| 5                 | 11    | -3.642| -3.182| -0.461| 0.313      | 0.141|
| 5                 | 28    | -3.642| -3.202| -0.440| 0.568      | 0.439|
| 5                 | 12    | -3.642| -2.690| -0.953| 0.323      | 0.003|
| 5                 | 3     | -3.642| -3.111| 0.531 | 0.334      | 0.111|
| 9                 | 17    | -3.144| -2.470| -0.674| 0.260      | 0.010|
| 9                 | 24    | -3.144| -2.872| -0.272| 0.169      | 0.107|
| 9                 | 11    | -3.144| -3.182| 0.038 | 0.147      | 0.794|
| 9                 | 28    | -3.144| -3.202| 0.059 | 0.432      | 0.891|
| 9                 | 12    | -3.144| -2.690| -0.454| 0.196      | 0.021|
| 9                 | 3     | -3.144| -3.111| 0.032 | 0.197      | 0.870|
| 9                 | 5     | -3.144| -3.642| 0.499 | 0.302      | 0.099|
| 14                | 17    | -2.882| -2.470| -0.413| 0.286      | 0.150|
| 14                | 24    | -2.882| -2.872| -0.010| 0.206      | 0.960|
| 14                | 11    | -2.882| -3.182| 0.300 | 0.186      | 0.107|
| 14                | 28    | -2.882| -3.202| 0.320 | 0.437      | 0.463|
| 14                | 12    | -2.882| -2.690| -0.193| 0.227      | 0.397|
| 14                | 3     | -2.882| -3.111| 0.229 | 0.231      | 0.322|
| 14                | 5     | -2.882| -3.642| 0.760 | 0.333      | 0.022|
| 14                | 9     | -2.882| -3.144| 0.261 | 0.208      | 0.208|
| 15                | 17    | -3.076| -2.470| -0.606| 0.311      | 0.052|
| 15                | 24    | -3.076| -2.872| -0.204| 0.229      | 0.374|
| 15                | 11    | -3.076| -3.182| 0.106 | 0.198      | 0.591|
| Page | Column 1 | Column 2 | Column 3 | Column 4 | Column 5 |
|------|---------|---------|---------|---------|---------|
| 15   | 28      | -3.076  | -3.202  | 0.127   | 0.429   | 0.767   |
| 15   | 12      | -3.076  | -2.690  | -0.386  | 0.254   | 0.128   |
| 15   | 3       | -3.076  | -3.111  | 0.036   | 0.249   | 0.886   |
| 15   | 5       | -3.076  | -3.642  | 0.567   | 0.360   | 0.115   |
| 15   | 9       | -3.076  | -3.144  | 0.068   | 0.227   | 0.764   |
| 15   | 14      | -3.076  | -2.882  | -0.193  | 0.259   | 0.455   |
| 16   | 17      | -3.480  | -2.470  | -1.010  | 0.317   | 0.001   |
| 16   | 24      | -3.480  | -2.872  | -0.608  | 0.252   | 0.016   |
| 16   | 11      | -3.480  | -3.182  | -0.298  | 0.234   | 0.203   |
| 16   | 28      | -3.480  | -3.202  | -0.277  | 0.457   | 0.544   |
| 16   | 12      | -3.480  | -2.690  | -0.790  | 0.272   | 0.004   |
| 16   | 3       | -3.480  | -3.111  | -0.369  | 0.272   | 0.175   |
| 16   | 5       | -3.480  | -3.642  | 0.163   | 0.357   | 0.649   |
| 16   | 9       | -3.480  | -3.144  | -0.336  | 0.249   | 0.177   |
| 16   | 14      | -3.480  | -2.882  | -0.598  | 0.277   | 0.031   |
| 16   | 15      | -3.480  | -3.076  | -0.404  | 0.292   | 0.167   |
| 20   | 17      | -3.448  | -2.470  | -0.979  | 0.286   | 0.001   |
| 20   | 24      | -3.448  | -2.872  | -0.576  | 0.214   | 0.007   |
| 20   | 11      | -3.448  | -3.182  | -0.266  | 0.202   | 0.188   |
| 20   | 28      | -3.448  | -3.202  | -0.246  | 0.441   | 0.577   |
| 20   | 12      | -3.448  | -2.690  | -0.759  | 0.240   | 0.002   |
| 20   | 3       | -3.448  | -3.111  | -0.337  | 0.238   | 0.157   |
| 20   | 5       | -3.448  | -3.642  | 0.194   | 0.330   | 0.556   |
| 20   | 9       | -3.448  | -3.144  | -0.305  | 0.212   | 0.150   |
| 20   | 14      | -3.448  | -2.882  | -0.566  | 0.244   | 0.020   |
| 20   | 15      | -3.448  | -3.076  | -0.373  | 0.262   | 0.156   |
| 20   | 16      | -3.448  | -3.480  | 0.032   | 0.277   | 0.090   |
| 21   | 17      | -2.727  | -2.470  | -0.258  | 0.278   | 0.353   |
| 21   | 24      | -2.727  | -2.872  | 0.144   | 0.206   | 0.483   |
| 21   | 11      | -2.727  | -3.182  | 0.454   | 0.192   | 0.018   |
| 21   | 28      | -2.727  | -3.202  | 0.475   | 0.451   | 0.292   |
| 21   | 12      | -2.727  | -2.690  | -0.038  | 0.225   | 0.866   |
| 21   | 3       | -2.727  | -3.111  | 0.384   | 0.235   | 0.103   |
| 21   | 5       | -2.727  | -3.642  | 0.915   | 0.331   | 0.006   |
| 21   | 9       | -2.727  | -3.144  | 0.416   | 0.209   | 0.046   |
| 21   | 14      | -2.727  | -2.882  | 0.155   | 0.238   | 0.516   |
| 21   | 15      | -2.727  | -3.076  | 0.348   | 0.261   | 0.181   |
| 21   | 16      | -2.727  | -3.480  | 0.752   | 0.279   | 0.007   |
| 21   | 20      | -2.727  | -3.448  | 0.721   | 0.245   | 0.003   |
| 22   | 17      | -3.232  | -2.470  | -0.762  | 0.301   | 0.011   |
| 22   | 24      | -3.232  | -2.872  | -0.360  | 0.216   | 0.096   |
| 22   | 11      | -3.232  | -3.182  | -0.050  | 0.183   | 0.785   |
| 22   | 28      | -3.232  | -3.202  | -0.029  | 0.432   | 0.946   |
| 22   | 12      | -3.232  | -2.690  | -0.542  | 0.236   | 0.022   |
| 22   | 3       | -3.232  | -3.111  | -0.121  | 0.232   | 0.603   |
|   |   | -3.232 | -3.144 | -0.088 | 0.212 | 0.677 |
|---|---|--------|--------|--------|-------|-------|
| 22|  5| -3.232 | -3.642 | 0.411  | 0.340 | 0.227 |
| 22|  9| -3.232 | -3.144 | -0.350 | 0.245 | 0.153 |
| 22| 14| -3.232 | -2.882 | -0.156 | 0.256 | 0.541 |
| 22| 15| -3.232 | -3.448 | 0.216  | 0.241 | 0.369 |
| 22| 20| -3.232 | -2.727 | -0.504 | 0.247 | 0.041 |
| 23|  7| -2.824 | -2.470 | -0.355 | 0.276 | 0.199 |
| 23| 24| -2.824 | -2.872 | 0.048  | 0.187 | 0.779 |
| 23|  1| -2.824 | -3.182 | 0.356  | 0.165 | 0.030 |
| 23| 28| -2.824 | -3.202 | 0.378  | 0.427 | 0.375 |
| 23|  2| -2.824 | -2.690 | -0.135 | 0.209 | 0.519 |
| 23|  3| -2.824 | -3.111 | 0.287  | 0.214 | 0.180 |
| 23|  5| -2.824 | -3.642 | 0.818  | 0.327 | 0.012 |
| 23|  9| -2.824 | -3.144 | 0.319  | 0.190 | 0.093 |
| 23| 14| -2.824 | -2.882 | 0.058  | 0.224 | 0.796 |
| 23| 15| -2.824 | -3.076 | 0.251  | 0.240 | 0.296 |
| 23| 16| -2.824 | -3.480 | 0.656  | 0.263 | 0.013 |
| 23| 20| -2.824 | -3.448 | 0.624  | 0.228 | 0.006 |
| 23| 21| -2.824 | -2.727 | -0.097 | 0.220 | 0.660 |
| 23| 22| -2.824 | -3.232 | 0.408  | 0.230 | 0.076 |
| 2  | 17| -3.099 | -2.470 | -0.630 | 0.283 | 0.026 |
| 2  | 24| -3.099 | -2.872 | -0.228 | 0.196 | 0.246 |
| 2  | 11| -3.099 | -3.182 | 0.082  | 0.169 | 0.625 |
| 2  | 28| -3.099 | -3.202 | 0.103  | 0.438 | 0.814 |
| 2  | 12| -3.099 | -2.690 | -0.410 | 0.220 | 0.063 |
| 2  |  3| -3.099 | -3.111 | 0.012  | 0.219 | 0.957 |
| 2  |  5| -3.099 | -3.642 | 0.543  | 0.326 | 0.096 |
| 2  |  9| -3.099 | -3.144 | 0.044  | 0.193 | 0.819 |
| 2  | 14| -3.099 | -2.882 | -0.217 | 0.227 | 0.338 |
| 2  | 15| -3.099 | -3.076 | -0.024 | 0.242 | 0.921 |
| 2  | 16| -3.099 | -3.480 | 0.380  | 0.266 | 0.153 |
| 2  | 20| -3.099 | -3.448 | 0.349  | 0.230 | 0.130 |
| 2  | 21| -3.099 | -2.727 | -0.372 | 0.231 | 0.107 |
| 2  | 22| -3.099 | -3.232 | 0.132  | 0.233 | 0.569 |
| 2  | 23| -3.099 | -2.824 | -0.275 | 0.215 | 0.202 |
| 4  | 17| -3.009 | -2.470 | -0.539 | 0.325 | 0.096 |
| 4  | 24| -3.009 | -2.872 | -0.137 | 0.247 | 0.578 |
| 4  | 11| -3.009 | -3.182 | 0.173  | 0.225 | 0.441 |
| 4  | 28| -3.009 | -3.202 | 0.193  | 0.478 | 0.686 |
| 4  | 12| -3.009 | -2.690 | -0.319 | 0.268 | 0.234 |
| 4  |  3| -3.009 | -3.111 | 0.102  | 0.267 | 0.702 |
| 4  |  5| -3.009 | -3.642 | 0.633  | 0.369 | 0.086 |
| 4  |  9| -3.009 | -3.144 | 0.135  | 0.246 | 0.585 |
| 4  | 14| -3.009 | -2.882 | -0.127 | 0.273 | 0.643 |
| 4 | 15 | -3.009 | -3.076 | 0.067 | 0.288 | 0.817 |
| 4 | 16 | -3.009 | -3.480 | 0.471 | 0.308 | 0.126 |
| 4 | 20 | -3.009 | -3.448 | 0.439 | 0.280 | 0.117 |
| 4 | 21 | -3.009 | -2.727 | -0.282 | 0.275 | 0.306 |
| 4 | 22 | -3.009 | -3.232 | 0.223 | 0.276 | 0.419 |
| 4 | 23 | -3.009 | -2.824 | -0.185 | 0.257 | 0.472 |
| 4 | 2 | -3.009 | -3.099 | 0.090 | 0.261 | 0.729 |
| 18 | 17 | -3.262 | -2.470 | -0.792 | 0.372 | 0.033 |
| 18 | 24 | -3.262 | -2.872 | -0.390 | 0.261 | 0.136 |
| 18 | 11 | -3.262 | -3.182 | -0.080 | 0.227 | 0.726 |
| 18 | 28 | -3.262 | -3.202 | -0.059 | 0.504 | 0.907 |
| 18 | 12 | -3.262 | -2.690 | -0.572 | 0.284 | 0.044 |
| 18 | 3 | -3.262 | -3.111 | -0.150 | 0.272 | 0.581 |
| 18 | 5 | -3.262 | -3.642 | 0.381 | 0.408 | 0.350 |
| 18 | 9 | -3.262 | -3.144 | -0.118 | 0.258 | 0.647 |
| 18 | 14 | -3.262 | -2.882 | -0.380 | 0.291 | 0.192 |
| 18 | 15 | -3.262 | -3.076 | -0.186 | 0.293 | 0.526 |
| 18 | 16 | -3.262 | -3.480 | 0.218 | 0.305 | 0.474 |
| 18 | 20 | -3.262 | -3.448 | 0.186 | 0.282 | 0.508 |
| 18 | 21 | -3.262 | -2.727 | -0.534 | 0.289 | 0.064 |
| 18 | 22 | -3.262 | -3.232 | -0.030 | 0.281 | 0.916 |
| 18 | 23 | -3.262 | -2.824 | -0.437 | 0.275 | 0.111 |
| 18 | 2 | -3.262 | -3.099 | -0.162 | 0.277 | 0.559 |
| 18 | 4 | -3.262 | -3.009 | -0.253 | 0.307 | 0.411 |
| 26 | 17 | -3.089 | -2.470 | -0.619 | 0.291 | 0.034 |
| 26 | 24 | -3.089 | -2.872 | -0.217 | 0.217 | 0.318 |
| 26 | 11 | -3.089 | -3.182 | 0.093 | 0.197 | 0.637 |
| 26 | 28 | -3.089 | -3.202 | 0.114 | 0.455 | 0.803 |
| 26 | 12 | -3.089 | -2.690 | -0.399 | 0.238 | 0.093 |
| 26 | 3 | -3.089 | -3.111 | 0.022 | 0.239 | 0.925 |
| 26 | 5 | -3.089 | -3.642 | 0.554 | 0.338 | 0.101 |
| 26 | 9 | -3.089 | -3.144 | 0.055 | 0.215 | 0.799 |
| 26 | 14 | -3.089 | -2.882 | -0.207 | 0.249 | 0.407 |
| 26 | 15 | -3.089 | -3.076 | -0.013 | 0.262 | 0.960 |
| 26 | 16 | -3.089 | -3.480 | 0.391 | 0.287 | 0.174 |
| 26 | 20 | -3.089 | -3.448 | 0.359 | 0.253 | 0.156 |
| 26 | 21 | -3.089 | -2.727 | -0.361 | 0.247 | 0.144 |
| 26 | 22 | -3.089 | -3.232 | 0.143 | 0.250 | 0.568 |
| 26 | 23 | -3.089 | -2.824 | -0.265 | 0.235 | 0.260 |
| 26 | 2 | -3.089 | -3.099 | 0.011 | 0.236 | 0.964 |
| 26 | 4 | -3.089 | -3.009 | -0.080 | 0.276 | 0.773 |
| 26 | 18 | -3.089 | -3.262 | 0.173 | 0.294 | 0.556 |

Approximate Measurement Invariance Holds For Groups:
17 24 11 28 12 3 5 9 14 15
16 20 21 22 23 2 4 18 26

63
Weighted Average Value Across Invariant Groups: -3.067
R-square/Explained variance/Invariance index: 0.783

| Group | Value Difference | SE  | P-value |
|-------|------------------|-----|---------|
| 17    | -2.470           | 0.597 | 0.230  |
| 24    | -2.872           | 0.195 | 0.105  |
| 11    | -3.182           | -0.115 | 0.081  |
| 28    | -3.202           | -0.135 | 0.396  |
| 12    | -2.690           | 0.377 | 0.013  |
| 3     | -3.111           | -0.044 | 0.154  |
| 5     | -3.642           | -0.575 | 0.042  |
| 9     | -3.144           | -0.077 | 0.517  |
| 14    | -2.882           | 0.185 | 0.268  |
| 15    | -3.076           | -0.009 | 0.963  |
| 16    | -3.480           | -0.413 | 0.049  |
| 20    | -3.448           | -0.381 | 0.026  |
| 21    | -2.727           | 0.340 | 0.043  |
| 22    | -3.232           | -0.165 | 0.321  |
| 23    | -2.824           | 0.243 | 0.089  |
| 2     | -3.099           | -0.032 | 0.829  |
| 4     | -3.009           | 0.058 | 0.787  |
| 18    | -3.262           | -0.195 | 0.401  |
| 26    | -3.089           | -0.022 | 0.903  |

Loadings

Loadings for PREDJ_R

| Group | Group | Value | Value | Value | Difference | SE  | P-value |
|-------|-------|-------|-------|-------|------------|-----|---------|
| 24    | 17    | 2.776 | 2.742 | 0.035 | 0.158      | 0.827|
| 11    | 17    | 2.503 | 2.742 | -0.239 | 0.098      | 0.015|
| 11    | 24    | 2.503 | 2.776 | -0.274 | 0.106      | 0.010|
| 28    | 17    | 1.125 | 2.742 | -1.617 | 0.468      | 0.001|
| 28    | 24    | 1.125 | 2.776 | -1.652 | 0.327      | 0.000|
| 28    | 11    | 1.125 | 2.503 | -1.378 | 0.414      | 0.001|
| 12    | 17    | 2.743 | 2.742 | 0.001 | 0.128      | 0.992|
| 12    | 24    | 2.743 | 2.776 | -0.033 | 0.078      | 0.670|
| 12    | 11    | 2.743 | 2.503 | 0.240 | 0.083      | 0.004|
| 12    | 28    | 2.743 | 1.125 | 1.618 | 0.372      | 0.000|
| 3     | 17    | 2.676 | 2.742 | -0.066 | 0.123      | 0.592|
| 3     | 24    | 2.676 | 2.776 | -0.100 | 0.098      | 0.307|
| 3     | 11    | 2.676 | 2.503 | 0.173 | 0.087      | 0.047|
| 3     | 28    | 2.676 | 1.125 | 1.551 | 0.391      | 0.000|
| 3     | 12    | 2.676 | 2.743 | -0.067 | 0.095      | 0.478|
|   |   |     |     |     |     |     |
|---|---|-----|-----|-----|-----|-----|
|   |   |     |     |     |     |     |
| 5 | 17 | 2.706 | 2.742 | -0.036 | 0.120 | 0.762 |
| 5 | 24 | 2.706 | 2.776 | -0.071 | 0.078 | 0.362 |
| 5 | 11 | 2.706 | 2.503 | 0.203 | 0.074 | 0.006 |
| 5 | 28 | 2.706 | 1.125 | 1.581 | 0.379 | 0.000 |
| 5 | 12 | 2.706 | 2.743 | -0.038 | 0.083 | 0.653 |
| 5 |  3 | 2.706 | 2.676 | 0.030 | 0.089 | 0.740 |
| 9 | 17 | 2.816 | 2.742 | 0.075 | 0.149 | 0.617 |
| 9 | 24 | 2.816 | 2.776 | 0.040 | 0.052 | 0.438 |
| 9 | 11 | 2.816 | 2.503 | 0.314 | 0.099 | 0.002 |
| 9 | 28 | 2.816 | 1.125 | 1.692 | 0.337 | 0.000 |
| 9 | 12 | 2.816 | 2.743 | 0.073 | 0.072 | 0.312 |
| 9 |  3 | 2.816 | 2.676 | 0.140 | 0.093 | 0.133 |
| 9 |  5 | 2.816 | 2.706 | 0.111 | 0.072 | 0.126 |
| 14 | 17 | 2.520 | 2.742 | -0.222 | 0.137 | 0.105 |
| 14 | 24 | 2.520 | 2.776 | -0.256 | 0.137 | 0.062 |
| 14 | 11 | 2.520 | 2.503 | 0.017 | 0.093 | 0.851 |
| 14 | 28 | 2.520 | 1.125 | 1.395 | 0.416 | 0.001 |
| 14 | 12 | 2.520 | 2.743 | -0.223 | 0.123 | 0.069 |
| 14 |   3 | 2.520 | 2.676 | -0.156 | 0.134 | 0.246 |
| 14 |   5 | 2.520 | 2.706 | -0.185 | 0.115 | 0.107 |
| 14 |   9 | 2.520 | 2.816 | -0.296 | 0.133 | 0.026 |
| 15 | 17 | 2.555 | 2.742 | -0.187 | 0.098 | 0.057 |
| 15 | 24 | 2.555 | 2.776 | -0.222 | 0.097 | 0.023 |
| 15 | 11 | 2.555 | 2.503 | 0.052 | 0.044 | 0.241 |
| 15 | 28 | 2.555 | 1.125 | 1.430 | 0.406 | 0.000 |
| 15 | 12 | 2.555 | 2.743 | -0.188 | 0.076 | 0.014 |
| 15 |   3 | 2.555 | 2.676 | -0.121 | 0.081 | 0.136 |
| 15 |   5 | 2.555 | 2.706 | -0.151 | 0.067 | 0.025 |
| 15 |   9 | 2.555 | 2.816 | -0.262 | 0.090 | 0.004 |
| 15 |  14 | 2.555 | 2.520 | 0.035 | 0.096 | 0.719 |
| 16 | 17 | 2.596 | 2.742 | -0.146 | 0.113 | 0.197 |
| 16 | 24 | 2.596 | 2.776 | -0.180 | 0.104 | 0.082 |
| 16 | 11 | 2.596 | 2.503 | 0.093 | 0.073 | 0.201 |
| 16 | 28 | 2.596 | 1.125 | 1.471 | 0.402 | 0.000 |
| 16 | 12 | 2.596 | 2.743 | -0.147 | 0.088 | 0.095 |
| 16 |   3 | 2.596 | 2.676 | -0.080 | 0.102 | 0.436 |
| 16 |   5 | 2.596 | 2.706 | -0.109 | 0.080 | 0.172 |
| 16 |   9 | 2.596 | 2.816 | -0.220 | 0.098 | 0.024 |
| 16 |  14 | 2.596 | 2.520 | 0.076 | 0.126 | 0.547 |
| 16 |  15 | 2.596 | 2.555 | 0.041 | 0.069 | 0.546 |
| 20 | 17 | 2.692 | 2.742 | -0.049 | 0.131 | 0.705 |
| 20 | 24 | 2.692 | 2.776 | -0.084 | 0.105 | 0.426 |
| 20 | 11 | 2.692 | 2.503 | 0.190 | 0.101 | 0.060 |
| 20 | 28 | 2.692 | 1.125 | 1.568 | 0.392 | 0.000 |
| 20 | 12 | 2.692 | 2.743 | -0.051 | 0.105 | 0.630 |
|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 20 | 3 | 2.692 | 2.676 | 0.017 | 0.125 | 0.895 |
| 20 | 5 | 2.692 | 2.706 | -0.013 | 0.102 | 0.897 |
| 20 | 9 | 2.692 | 2.816 | -0.124 | 0.101 | 0.218 |
| 20 | 14 | 2.692 | 2.520 | 0.172 | 0.146 | 0.240 |
| 20 | 15 | 2.692 | 2.555 | 0.138 | 0.094 | 0.145 |
| 20 | 16 | 2.692 | 2.596 | 0.096 | 0.115 | 0.402 |
| 21 | 17 | 2.774 | 2.742 | 0.033 | 0.143 | 0.819 |
| 21 | 24 | 2.774 | 2.776 | -0.002 | 0.061 | 0.976 |
| 21 | 11 | 2.774 | 2.503 | 0.272 | 0.092 | 0.003 |
| 21 | 28 | 2.774 | 1.125 | 1.650 | 0.349 | 0.000 |
| 21 | 12 | 2.774 | 2.743 | 0.031 | 0.081 | 0.699 |
| 21 | 3 | 2.774 | 2.676 | 0.099 | 0.092 | 0.281 |
| 21 | 5 | 2.774 | 2.706 | 0.069 | 0.074 | 0.350 |
| 21 | 9 | 2.774 | 2.816 | -0.042 | 0.057 | 0.464 |
| 21 | 14 | 2.774 | 2.520 | 0.254 | 0.127 | 0.045 |
| 21 | 15 | 2.774 | 2.555 | 0.220 | 0.084 | 0.009 |
| 21 | 16 | 2.774 | 2.596 | 0.178 | 0.093 | 0.054 |
| 21 | 20 | 2.774 | 2.692 | 0.082 | 0.100 | 0.413 |
| 22 | 17 | 2.676 | 2.742 | -0.066 | 0.121 | 0.586 |
| 22 | 24 | 2.676 | 2.776 | -0.100 | 0.084 | 0.235 |
| 22 | 11 | 2.676 | 2.503 | 0.173 | 0.074 | 0.019 |
| 22 | 28 | 2.676 | 1.125 | 1.551 | 0.381 | 0.000 |
| 22 | 12 | 2.676 | 2.743 | -0.067 | 0.089 | 0.453 |
| 22 | 3 | 2.676 | 2.676 | 0.000 | 0.094 | 0.998 |
| 22 | 5 | 2.676 | 2.706 | -0.030 | 0.079 | 0.710 |
| 22 | 9 | 2.676 | 2.816 | -0.140 | 0.080 | 0.080 |
| 22 | 14 | 2.676 | 2.520 | 0.156 | 0.116 | 0.179 |
| 22 | 15 | 2.676 | 2.555 | 0.121 | 0.068 | 0.075 |
| 22 | 16 | 2.676 | 2.596 | 0.080 | 0.082 | 0.332 |
| 22 | 20 | 2.676 | 2.692 | -0.016 | 0.107 | 0.879 |
| 22 | 21 | 2.676 | 2.774 | -0.098 | 0.080 | 0.221 |
| 23 | 17 | 2.431 | 2.742 | -0.311 | 0.148 | 0.035 |
| 23 | 24 | 2.431 | 2.776 | -0.346 | 0.160 | 0.030 |
| 23 | 11 | 2.431 | 2.503 | -0.072 | 0.107 | 0.502 |
| 23 | 28 | 2.431 | 1.125 | 1.306 | 0.433 | 0.003 |
| 23 | 12 | 2.431 | 2.743 | -0.313 | 0.141 | 0.026 |
| 23 | 3 | 2.431 | 2.676 | -0.245 | 0.147 | 0.095 |
| 23 | 5 | 2.431 | 2.706 | -0.275 | 0.133 | 0.039 |
| 23 | 9 | 2.431 | 2.816 | -0.386 | 0.155 | 0.013 |
| 23 | 14 | 2.431 | 2.520 | -0.090 | 0.139 | 0.519 |
| 23 | 15 | 2.431 | 2.555 | -0.124 | 0.115 | 0.280 |
| 23 | 16 | 2.431 | 2.596 | -0.166 | 0.148 | 0.264 |
| 23 | 20 | 2.431 | 2.692 | -0.262 | 0.159 | 0.099 |
| 23 | 21 | 2.431 | 2.774 | -0.344 | 0.148 | 0.020 |
| 23 | 22 | 2.431 | 2.676 | -0.245 | 0.133 | 0.065 |
Approximate Measurement Invariance Holds For Groups:
17 24 12 3 5 9 14 15 16 20
21 22 23 2 4 18 26

Weighted Average Value Across Invariant Groups: 2.697
R-square/Explained variance/Invariance index: 0.000

| Group | Value | Difference | SE   | P-value |
|-------|-------|------------|------|---------|
| 17    | 2.742 | 0.045      | 0.109| 0.678   |
| 24    | 2.776 | 0.080      | 0.062| 0.197   |
| 12    | 2.743 | 0.046      | 0.056| 0.407   |
| 3     | 2.676 | -0.021     | 0.072| 0.772   |
| 5     | 2.706 | 0.009      | 0.049| 0.855   |
| 9     | 2.816 | 0.120      | 0.055| 0.029   |
| 14    | 2.520 | -0.177     | 0.104| 0.088   |
| 15    | 2.555 | -0.142     | 0.046| 0.002   |
| 16    | 2.596 | -0.101     | 0.068| 0.141   |
| 20    | 2.692 | -0.004     | 0.085| 0.959   |
| 21    | 2.774 | 0.078      | 0.055| 0.156   |
| 22    | 2.676 | -0.021     | 0.054| 0.702   |
| 23    | 2.431 | -0.266     | 0.122| 0.030   |
| 2     | 2.849 | 0.152      | 0.082| 0.064   |
| 4     | 2.601 | -0.096     | 0.159| 0.548   |
| 18    | 2.766 | 0.069      | 0.030| 0.020   |
| Group | Group | Value | Value | Difference | SE    | P-value |
|-------|-------|-------|-------|------------|-------|---------|
| 24    | 17    | 8.325 | 37.660| -29.335    | 42.442| 0.489   |
| 11    | 17    | 4.934 | 37.660| -32.726    | 42.518| 0.441   |
| 11    | 24    | 4.934 | 8.325 | -3.391     | 1.431 | 0.018   |
| 28    | 17    | 39.741| 37.660| 2.081      | 46.811| 0.965   |
| 28    | 24    | 39.741| 8.325 | 31.416     | 31.327| 0.316   |
| 28    | 11    | 39.741| 4.934 | 34.807     | 31.171| 0.263   |
| 12    | 17    | 4.478 | 37.660| -33.182    | 42.494| 0.435   |
| 12    | 24    | 4.478 | 8.325 | -3.847     | 1.393 | 0.006   |
| 12    | 11    | 4.478 | 4.934 | -0.456     | 0.690 | 0.508   |
| 12    | 28    | 4.478 | 39.741| -35.263    | 31.200| 0.258   |
| 3     | 17    | 4.957 | 37.660| -32.703    | 42.508| 0.442   |
| 3     | 24    | 4.957 | 8.325 | -3.368     | 1.452 | 0.020   |
| 3     | 11    | 4.957 | 4.934 | 0.023      | 0.797 | 0.977   |
| 3     | 28    | 4.957 | 39.741| -34.784    | 31.176| 0.265   |
| 3     | 12    | 4.957 | 4.478 | 0.479      | 0.746 | 0.521   |
| 5     | 17    | 6.112 | 37.660| -31.548    | 42.510| 0.458   |
| 5     | 24    | 6.112 | 8.325 | -2.213     | 1.489 | 0.137   |
| 5     | 11    | 6.112 | 4.934 | 1.178      | 0.825 | 0.153   |
| 5     | 28    | 6.112 | 39.741| -33.628    | 31.205| 0.281   |
| 5     | 12    | 6.112 | 4.478 | 1.635      | 0.770 | 0.034   |
| 5     | 3     | 6.112 | 4.957 | 1.156      | 0.875 | 0.187   |
| 9     | 17    | 7.684 | 37.660| -29.976    | 42.461| 0.480   |
| 9     | 24    | 7.684 | 8.325 | -0.641     | 1.750 | 0.714   |
| 9     | 11    | 7.684 | 4.934 | 2.750      | 1.317 | 0.037   |
| 9     | 28    | 7.684 | 39.741| -32.057    | 31.293| 0.306   |
| 9     | 12    | 7.684 | 4.478 | 3.206      | 1.277 | 0.012   |
| 9     | 3     | 7.684 | 4.957 | 2.727      | 1.341 | 0.042   |
| 9     | 5     | 7.684 | 6.112 | 1.572      | 1.375 | 0.253   |
| 14    | 17    | 12.462| 37.660| -25.198    | 42.865| 0.557   |
| 14    | 24    | 12.462| 8.325 | 4.136      | 5.335 | 0.438   |
| 14    | 11    | 12.462| 4.934 | 7.527      | 5.186 | 0.147   |
| 14    | 28    | 12.462| 39.741| -27.279    | 31.480| 0.386   |
| 14    | 12    | 12.462| 4.478 | 7.984      | 5.194 | 0.124   |
| 14    | 3     | 12.462| 4.957 | 7.505      | 5.213 | 0.150   |
| 14    | 5     | 12.462| 6.112 | 6.349      | 5.230 | 0.225   |
| 14    | 9     | 12.462| 7.684 | 4.777      | 5.308 | 0.368   |
| 15    | 17    | 4.656 | 37.660| -33.004    | 42.514| 0.438   |
| 15    | 24    | 4.656 | 8.325 | -3.669     | 1.426 | 0.010   |
| 15    | 11    | 4.656 | 4.934 | -0.278     | 0.735 | 0.705   |
| 15    | 28    | 4.656 | 39.741| -35.085    | 31.140| 0.260   |
| 15    | 12    | 4.656 | 4.478 | 0.178      | 0.682 | 0.794   |
|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 15 | 3 | 4.656 | 4.957 | -0.301 | 0.791 | 0.704 |
| 15 | 5 | 4.656 | 6.112 | -1.457 | 0.815 | 0.074 |
| 15 | 9 | 4.656 | 7.684 | -3.028 | 1.311 | 0.021 |
| 15 | 14 | 4.656 | 12.462 | -7.806 | 5.190 | 0.133 |
| 16 | 17 | 5.484 | 37.660 | -32.176 | 42.518 | 0.449 |
| 16 | 24 | 5.484 | 8.325 | -2.841 | 1.528 | 0.063 |
| 16 | 11 | 5.484 | 4.934 | 0.550 | 0.925 | 0.552 |
| 16 | 28 | 5.484 | 39.741 | -34.257 | 31.151 | 0.271 |
| 16 | 12 | 5.484 | 4.478 | 1.006 | 0.882 | 0.254 |
| 16 | 3 | 5.484 | 4.957 | 0.527 | 0.973 | 0.588 |
| 16 | 5 | 5.484 | 6.112 | -0.629 | 0.996 | 0.528 |
| 16 | 9 | 5.484 | 7.684 | -2.200 | 1.422 | 0.122 |
| 16 | 14 | 5.484 | 12.462 | -6.978 | 5.232 | 0.182 |
| 16 | 15 | 5.484 | 4.656 | 0.828 | 0.921 | 0.369 |
| 20 | 17 | 4.180 | 37.660 | -33.480 | 42.505 | 0.431 |
| 20 | 24 | 4.180 | 8.325 | -4.145 | 1.425 | 0.004 |
| 20 | 11 | 4.180 | 4.934 | -0.754 | 0.747 | 0.313 |
| 20 | 28 | 4.180 | 39.741 | -35.561 | 31.180 | 0.254 |
| 20 | 12 | 4.180 | 4.478 | -0.298 | 0.687 | 0.665 |
| 20 | 3 | 4.180 | 4.957 | -0.776 | 0.802 | 0.333 |
| 20 | 5 | 4.180 | 6.112 | -1.932 | 0.816 | 0.018 |
| 20 | 9 | 4.180 | 7.684 | -3.504 | 1.312 | 0.008 |
| 20 | 14 | 4.180 | 12.462 | -8.281 | 5.206 | 0.112 |
| 20 | 15 | 4.180 | 4.656 | -0.476 | 0.738 | 0.520 |
| 20 | 16 | 4.180 | 5.484 | -1.304 | 0.931 | 0.161 |
| 21 | 17 | 5.801 | 37.660 | -31.859 | 42.472 | 0.453 |
| 21 | 24 | 5.801 | 8.325 | -2.524 | 1.527 | 0.098 |
| 21 | 11 | 5.801 | 4.934 | 0.867 | 0.945 | 0.359 |
| 21 | 28 | 5.801 | 39.741 | -33.940 | 31.243 | 0.277 |
| 21 | 12 | 5.801 | 4.478 | 1.323 | 0.900 | 0.141 |
| 21 | 3 | 5.801 | 4.957 | 0.845 | 0.985 | 0.391 |
| 21 | 5 | 5.801 | 6.112 | -0.311 | 1.014 | 0.759 |
| 21 | 9 | 5.801 | 7.684 | -1.883 | 1.424 | 0.186 |
| 21 | 14 | 5.801 | 12.462 | -6.660 | 5.231 | 0.203 |
| 21 | 15 | 5.801 | 4.656 | 1.145 | 0.941 | 0.224 |
| 21 | 16 | 5.801 | 5.484 | 0.317 | 1.090 | 0.771 |
| 21 | 20 | 5.801 | 4.180 | 1.621 | 0.945 | 0.086 |
| 22 | 17 | 7.478 | 37.660 | -30.182 | 42.515 | 0.478 |
| 22 | 24 | 7.478 | 8.325 | -0.847 | 1.783 | 0.635 |
| 22 | 11 | 7.478 | 4.934 | 2.544 | 1.343 | 0.058 |
| 22 | 28 | 7.478 | 39.741 | -32.263 | 31.200 | 0.301 |
| 22 | 12 | 7.478 | 4.478 | 3.000 | 1.313 | 0.022 |
| 22 | 3 | 7.478 | 4.957 | 2.521 | 1.374 | 0.066 |
| 22 | 5 | 7.478 | 6.112 | 1.366 | 1.408 | 0.332 |
| 22 | 9 | 7.478 | 7.684 | -0.206 | 1.691 | 0.903 |
| 22 | 14 | 7.478 | 12.462 | -4.983 | 5.317 | 0.349 |
| 22 | 15 | 7.478 | 4.656  | 2.822  | 1.339 | 0.035 |
| 22 | 16 | 7.478 | 5.484  | 1.994  | 1.449 | 0.169 |
| 22 | 20 | 7.478 | 4.180  | 3.298  | 1.345 | 0.014 |
| 22 | 21 | 7.478 | 5.801  | 1.677  | 1.456 | 0.249 |
| 23 | 17 | 11.753| 37.660 | -25.907| 42.684| 0.544 |
| 23 | 24 | 11.753| 8.325  | 3.428  | 3.444 | 0.320 |
| 23 | 11 | 11.753| 4.934  | 6.819  | 3.220 | 0.034 |
| 23 | 28 | 11.753| 39.741 | -27.988| 31.159| 0.369 |
| 23 | 12 | 11.753| 4.478  | 7.275  | 3.215 | 0.024 |
| 23 | 3  | 11.753| 4.957  | 6.796  | 3.244 | 0.036 |
| 23 | 5  | 11.753| 6.112  | 5.640  | 3.270 | 0.085 |
| 23 | 9  | 11.753| 7.684  | 4.069  | 3.401 | 0.232 |
| 23 | 14 | 11.753| 12.462 | -0.709 | 5.868 | 0.904 |
| 23 | 15 | 11.753| 4.656  | 7.097  | 3.221 | 0.028 |
| 23 | 16 | 11.753| 5.484  | 6.269  | 3.300 | 0.058 |
| 23 | 20 | 11.753| 4.180  | 7.572  | 3.232 | 0.019 |
| 23 | 21 | 11.753| 5.801  | 5.952  | 3.278 | 0.069 |
| 23 | 22 | 11.753| 7.478  | 4.275  | 3.410 | 0.210 |
| 2  | 17 | 4.588 | 37.660 | -33.072| 42.449| 0.436 |
| 2  | 24 | 4.588 | 8.325  | -3.737 | 1.386 | 0.007 |
| 2  | 11 | 4.588 | 4.934  | -0.346 | 0.705 | 0.623 |
| 2  | 28 | 4.588 | 39.741 | -35.153| 31.264| 0.261 |
| 2  | 12 | 4.588 | 4.478  | 0.110  | 0.628 | 0.861 |
| 2  | 3  | 4.588 | 4.957  | -0.369 | 0.752 | 0.624 |
| 2  | 5  | 4.588 | 6.112  | -1.525 | 0.773 | 0.048 |
| 2  | 9  | 4.588 | 7.684  | -3.096 | 1.272 | 0.015 |
| 2  | 14 | 4.588 | 12.462 | -7.874 | 5.196 | 0.130 |
| 2  | 15 | 4.588 | 4.656  | -0.068 | 0.695 | 0.922 |
| 2  | 16 | 4.588 | 5.484  | -0.896 | 0.890 | 0.314 |
| 2  | 20 | 4.588 | 4.180  | 0.407  | 0.693 | 0.557 |
| 2  | 21 | 4.588 | 5.801  | -1.213 | 0.896 | 0.176 |
| 2  | 22 | 4.588 | 7.478  | -2.890 | 1.311 | 0.027 |
| 2  | 23 | 4.588 | 11.753 | -7.165 | 3.222 | 0.026 |
| 4  | 17 | 108.777| 37.660| 71.117 | 127.983| 0.578 |
| 4  | 24 | 108.777| 8.325 | 100.452| 120.426| 0.404 |
| 4  | 11 | 108.777| 4.934 | 103.843| 120.427| 0.389 |
| 4  | 28 | 108.777| 39.741| 69.036 | 124.283| 0.579 |
| 4  | 12 | 108.777| 4.478 | 104.299| 120.427| 0.386 |
| 4  | 3  | 108.777| 4.957 | 103.820| 120.429| 0.389 |
| 4  | 5  | 108.777| 6.112 | 102.664| 120.438| 0.394 |
| 4  | 9  | 108.777| 7.684 | 101.093| 120.427| 0.401 |
| 4  | 14 | 108.777| 12.462| 96.315 | 120.522| 0.424 |
| 4  | 15 | 108.777| 4.656 | 104.121| 120.430| 0.387 |
| 4  | 16 | 108.777| 5.484 | 103.293| 120.432| 0.391 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
| 4 | 20 | 108.777 | 4.180 | 104.596 | 120.429 | 0.385 |
| 4 | 21 | 108.777 | 5.801 | 102.975 | 120.422 | 0.392 |
| 4 | 22 | 108.777 | 7.478 | 101.299 | 120.434 | 0.400 |
| 4 | 23 | 108.777 | 11.753 | 97.024 | 120.435 | 0.420 |
| 4 | 2 | 108.777 | 4.588 | 104.189 | 120.422 | 0.387 |
| 18 | 17 | 22.757 | 37.660 | -14.903 | 51.965 | 0.774 |
| 18 | 24 | 22.757 | 8.325 | 14.432 | 29.386 | 0.623 |
| 18 | 11 | 22.757 | 4.934 | 17.823 | 29.350 | 0.544 |
| 18 | 28 | 22.757 | 39.741 | -16.984 | 43.428 | 0.696 |
| 18 | 12 | 22.757 | 4.478 | 18.279 | 29.355 | 0.533 |
| 18 | 3 | 22.757 | 4.957 | 17.800 | 29.357 | 0.544 |
| 18 | 5 | 22.757 | 6.112 | 16.644 | 29.365 | 0.571 |
| 18 | 9 | 22.757 | 7.684 | 15.073 | 29.379 | 0.608 |
| 18 | 14 | 22.757 | 12.462 | 10.295 | 29.835 | 0.730 |
| 18 | 15 | 22.757 | 4.656 | 18.101 | 29.350 | 0.537 |
| 18 | 16 | 22.757 | 5.484 | 17.273 | 29.359 | 0.556 |
| 18 | 20 | 22.757 | 4.180 | 18.576 | 29.356 | 0.527 |
| 18 | 21 | 22.757 | 5.801 | 16.956 | 29.362 | 0.564 |
| 18 | 22 | 22.757 | 7.478 | 15.279 | 29.377 | 0.603 |
| 18 | 23 | 22.757 | 11.753 | 11.004 | 29.554 | 0.710 |
| 18 | 2 | 22.757 | 4.588 | 18.169 | 29.357 | 0.536 |
| 18 | 4 | 22.757 | 108.777 | -86.020 | 124.049 | 0.488 |
| 26 | 17 | 10.456 | 37.660 | -27.204 | 42.559 | 0.523 |
| 26 | 24 | 10.456 | 8.325 | 2.131 | 3.770 | 0.572 |
| 26 | 11 | 10.456 | 4.934 | 5.522 | 3.577 | 0.123 |
| 26 | 28 | 10.456 | 39.741 | -29.284 | 31.528 | 0.353 |
| 26 | 12 | 10.456 | 4.478 | 5.979 | 3.572 | 0.094 |
| 26 | 3 | 10.456 | 4.957 | 5.500 | 3.591 | 0.126 |
| 26 | 5 | 10.456 | 6.112 | 4.344 | 3.617 | 0.230 |
| 26 | 9 | 10.456 | 7.684 | 2.772 | 3.734 | 0.458 |
| 26 | 14 | 10.456 | 12.462 | -2.005 | 6.225 | 0.747 |
| 26 | 15 | 10.456 | 4.656 | 5.801 | 3.578 | 0.105 |
| 26 | 16 | 10.456 | 5.484 | 4.973 | 3.616 | 0.169 |
| 26 | 20 | 10.456 | 4.180 | 6.276 | 3.582 | 0.080 |
| 26 | 21 | 10.456 | 5.801 | 4.655 | 3.630 | 0.200 |
| 26 | 22 | 10.456 | 7.478 | 2.978 | 3.743 | 0.426 |
| 26 | 23 | 10.456 | 11.753 | -1.296 | 4.663 | 0.781 |
| 26 | 2 | 10.456 | 4.588 | 5.869 | 3.573 | 0.100 |
| 26 | 4 | 10.456 | 108.777 | -98.320 | 120.461 | 0.414 |
| 26 | 18 | 10.456 | 22.757 | -12.300 | 29.578 | 0.678 |

Approximate Measurement Invariance Holds For Groups:
17 24 11 28 12 3 5 9 14 15
16 20 21 22 23 2 4 18 26

Weighted Average Value Across Invariant Groups: 15.113
R-square/Explained variance/Invariance index: 0.157
### Invariant Group Values, Difference to Average and Significance

| Group | Value Difference | SE   | P-value |
|-------|------------------|------|---------|
| 17    | 37.660           | 39.606 | 0.569  |
| 24    | 8.325            | 5.770  | 0.239  |
| 11    | 4.934            | 5.643  | 0.071  |
| 28    | 39.741           | 29.059 | 0.397  |
| 12    | 4.478            | 5.656  | 0.060  |
| 3     | 4.957            | 5.667  | 0.073  |
| 5     | 6.112            | 5.692  | 0.114  |
| 9     | 7.684            | 5.748  | 0.196  |
| 14    | 12.462           | 7.488  | 0.723  |
| 15    | 4.656            | 5.650  | 0.064  |
| 16    | 5.484            | 5.680  | 0.090  |
| 20    | 4.180            | 5.662  | 0.053  |
| 21    | 5.801            | 5.684  | 0.101  |
| 22    | 7.478            | 5.752  | 0.184  |
| 23    | 11.753           | 6.337  | 0.596  |
| 2     | 4.588            | 5.653  | 0.063  |
| 4     | 108.777          | 116.562| 0.422 |
| 18    | 22.757           | 28.425 | 0.788 |
| 26    | 10.456           | 6.588  | 0.480  |

### Loadings for TRTBD_R

| Group | Value | Value | Difference | SE   | P-value |
|-------|-------|-------|------------|------|---------|
| 24    | 17    | 3.886 | 3.469      | 0.417 | 0.323  | 0.196 |
| 11    | 17    | 7.183 | 3.469      | 3.714 | 1.186  | 0.002 |
| 11    | 24    | 7.183 | 3.469      | 3.297 | 1.198  | 0.006 |
| 28    | 17    | 3.929 | 3.469      | 0.460 | 1.347  | 0.733 |
| 28    | 24    | 3.929 | 3.886      | 0.043 | 1.176  | 0.971 |
| 28    | 11    | 3.929 | 7.183      | -3.254 | 1.788 | 0.069 |
| 12    | 17    | 4.417 | 3.469      | 0.948 | 0.440  | 0.031 |
| 12    | 24    | 4.417 | 3.886      | 0.531 | 0.428  | 0.215 |
| 12    | 11    | 4.417 | 7.183      | -2.766 | 1.234 | 0.025 |
| 12    | 28    | 4.417 | 3.929      | 0.488 | 1.283  | 0.704 |
| 3     | 17    | 4.744 | 3.469      | 1.275 | 0.446  | 0.004 |
| 3     | 24    | 4.744 | 3.886      | 0.858 | 0.449  | 0.056 |
| 3     | 11    | 4.744 | 7.183      | -2.439 | 1.227 | 0.047 |
| 3     | 28    | 4.744 | 3.929      | 0.815 | 1.322  | 0.538 |
| 3     | 12    | 4.744 | 4.417      | 0.327 | 0.527  | 0.535 |
| 5     | 17    | 4.510 | 3.469      | 1.041 | 0.352  | 0.003 |
| 5     | 24    | 4.510 | 3.886      | 0.623 | 0.346  | 0.072 |
| 5     | 11    | 4.510 | 7.183      | -2.673 | 1.205 | 0.026 |
| 5     | 28    | 4.510 | 3.929      | 0.581 | 1.272  | 0.648 |
| 5     | 12    | 4.510 | 4.417      | 0.093 | 0.439  | 0.833 |
|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 5 | 3 | 4.510 | 4.744 | -0.234 | 0.456 | 0.608 |
| 9 | 17 | 3.722 | 3.469 | 0.253 | 0.314 | 0.421 |
| 9 | 24 | 3.722 | 3.886 | -0.164 | 0.272 | 0.546 |
| 9 | 11 | 3.722 | 7.183 | -3.461 | 1.197 | 0.004 |
| 9 | 28 | 3.722 | 3.929 | -0.207 | 1.197 | 0.863 |
| 9 | 12 | 3.722 | 4.417 | -0.695 | 0.432 | 0.107 |
| 9 | 3 | 3.722 | 4.744 | -1.022 | 0.449 | 0.023 |
| 9 | 5 | 3.722 | 4.510 | -0.788 | 0.348 | 0.023 |
| 14 | 17 | 4.878 | 3.469 | 1.409 | 0.393 | 0.000 |
| 14 | 24 | 4.878 | 3.886 | 0.992 | 0.412 | 0.016 |
| 14 | 11 | 4.878 | 7.183 | -2.305 | 1.215 | 0.058 |
| 14 | 28 | 4.878 | 3.929 | 0.949 | 1.345 | 0.481 |
| 14 | 12 | 4.878 | 4.417 | 0.461 | 0.494 | 0.351 |
| 14 | 3 | 4.878 | 4.744 | 0.134 | 0.456 | 0.769 |
| 14 | 5 | 4.878 | 4.510 | 0.368 | 0.418 | 0.378 |
| 14 | 9 | 4.878 | 3.722 | 1.156 | 0.411 | 0.005 |
| 15 | 17 | 5.816 | 3.469 | 2.347 | 0.910 | 0.010 |
| 15 | 24 | 5.816 | 3.886 | 1.930 | 0.920 | 0.036 |
| 15 | 11 | 5.816 | 7.183 | -1.367 | 1.462 | 0.350 |
| 15 | 28 | 5.816 | 3.929 | 1.887 | 1.586 | 0.234 |
| 15 | 12 | 5.816 | 4.417 | 1.399 | 0.968 | 0.149 |
| 15 | 3 | 5.816 | 4.744 | 1.072 | 0.965 | 0.267 |
| 15 | 5 | 5.816 | 4.510 | 1.306 | 0.931 | 0.161 |
| 15 | 9 | 5.816 | 3.722 | 2.094 | 0.919 | 0.023 |
| 15 | 14 | 5.816 | 4.878 | 0.938 | 0.946 | 0.322 |
| 16 | 17 | 5.057 | 3.469 | 1.588 | 0.495 | 0.001 |
| 16 | 24 | 5.057 | 3.886 | 1.170 | 0.506 | 0.021 |
| 16 | 11 | 5.057 | 7.183 | -2.126 | 1.241 | 0.087 |
| 16 | 28 | 5.057 | 3.929 | 1.128 | 1.366 | 0.409 |
| 16 | 12 | 5.057 | 4.417 | 0.640 | 0.583 | 0.273 |
| 16 | 3 | 5.057 | 4.744 | 0.313 | 0.558 | 0.575 |
| 16 | 5 | 5.057 | 4.510 | 0.547 | 0.519 | 0.292 |
| 16 | 9 | 5.057 | 3.722 | 1.335 | 0.505 | 0.008 |
| 16 | 14 | 5.057 | 4.878 | 0.179 | 0.498 | 0.719 |
| 16 | 15 | 5.057 | 5.816 | -0.759 | 0.983 | 0.440 |
| 20 | 17 | 4.731 | 3.469 | 1.262 | 0.513 | 0.014 |
| 20 | 24 | 4.731 | 3.886 | 0.845 | 0.515 | 0.101 |
| 20 | 11 | 4.731 | 7.183 | -2.452 | 1.251 | 0.050 |
| 20 | 28 | 4.731 | 3.929 | 0.802 | 1.343 | 0.551 |
| 20 | 12 | 4.731 | 4.417 | 0.314 | 0.582 | 0.590 |
| 20 | 3 | 4.731 | 4.744 | -0.013 | 0.559 | 0.982 |
| 20 | 5 | 4.731 | 4.510 | 0.221 | 0.517 | 0.668 |
| 20 | 9 | 4.731 | 3.722 | 1.009 | 0.515 | 0.050 |
| 20 | 14 | 4.731 | 4.878 | -0.147 | 0.510 | 0.774 |
| 20 | 15 | 4.731 | 5.816 | -1.085 | 0.997 | 0.276 |
|   |   |   |   |   |   |
|---|---|---|---|---|---|
|20 | 16 |  4.731|  5.057| -0.326|  0.608|  0.592|
|21 | 17 |  4.193|  3.469|  0.725|  0.409|  0.077|
|21 | 24 |  4.193|  3.886|  0.307|  0.375|  0.413|
|21 | 11 |  4.193|  7.183| -2.989|  1.224|  0.015|
|21 | 28 |  4.193|  3.929|  0.264|  1.229|  0.830|
|21 | 12 |  4.193|  4.417| -0.224|  0.485|  0.645|
|21 |   |  4.193|  4.744| -0.550|  0.512|  0.282|
|21 |  5 |  4.193|  4.510| -0.316|  0.422|  0.454|
|21 |  9 |  4.193|  3.722|  0.472|  0.384|  0.219|
|21 | 14 |  4.193|  4.878| -0.684|  0.480|  0.154|
|21 | 15 |  4.193|  5.816| -1.622|  0.954|  0.089|
|21 | 16 |  4.193|  5.057| -0.863|  0.565|  0.127|
|21 | 20 |  4.193|  4.731| -0.537|  0.570|  0.346|
|22 | 17 |  4.527|  3.469|  1.058|  0.373|  0.005|
|22 | 24 |  4.527|  3.886|  0.641|  0.369|  0.083|
|22 | 11 |  4.527|  7.183| -2.656|  1.209|  0.028|
|22 | 28 |  4.527|  3.929|  0.598|  1.282|  0.641|
|22 | 12 |  4.527|  4.417|  0.110|  0.453|  0.809|
|22 |   |  4.527|  4.744| -0.217|  0.467|  0.642|
|22 |  5 |  4.527|  4.510|  0.017|  0.380|  0.964|
|22 |  9 |  4.527|  3.722|  0.805|  0.371|  0.030|
|22 | 14 |  4.527|  4.878| -0.351|  0.431|  0.415|
|22 | 15 |  4.527|  5.816| -1.289|  0.939|  0.170|
|22 | 16 |  4.527|  5.057| -0.530|  0.531|  0.318|
|22 | 20 |  4.527|  4.731| -0.204|  0.526|  0.698|
|22 | 21 |  4.527|  4.193|  0.333|  0.439|  0.448|
|23 | 17 |  5.045|  3.469|  1.576|  0.357|  0.000|
|23 | 24 |  5.045|  3.886|  1.158|  0.392|  0.003|
|23 | 11 |  5.045|  7.183| -2.138|  1.195|  0.074|
|23 | 28 |  5.045|  3.929|  1.116|  1.366|  0.414|
|23 | 12 |  5.045|  4.417|  0.627|  0.475|  0.186|
|23 |   |  5.045|  4.744|  0.301|  0.424|  0.479|
|23 |  5 |  5.045|  4.510|  0.535|  0.392|  0.172|
|23 |  9 |  5.045|  3.722|  1.323|  0.389|  0.001|
|23 | 14 |  5.045|  4.878|  0.167|  0.427|  0.696|
|23 | 15 |  5.045|  5.816| -0.771|  0.924|  0.404|
|23 | 16 |  5.045|  5.057| -0.012|  0.410|  0.977|
|23 | 20 |  5.045|  4.731|  0.314|  0.481|  0.515|
|23 | 21 |  5.045|  4.193|  0.851|  0.462|  0.065|
|23 | 22 |  5.045|  4.527|  0.518|  0.406|  0.202|
|2  | 17 |  3.861|  3.469|  0.392|  0.372|  0.292|
|2  | 24 |  3.861|  3.886| -0.025|  0.309|  0.935|
|2  | 11 |  3.861|  7.183| -3.322|  1.214|  0.006|
|2  | 28 |  3.861|  3.929| -0.068|  1.169|  0.954|
|2  | 12 |  3.861|  4.417| -0.556|  0.465|  0.232|

75
| 2  | 3  | 3.861 | 4.744 | -0.883 | 0.486 | 0.069 |
|----|----|-------|-------|--------|-------|-------|
| 2  | 5  | 3.861 | 4.510 | -0.649 | 0.391 | 0.097 |
| 2  | 9  | 3.861 | 3.722 | 0.139  | 0.319 | 0.663 |
| 2  | 14 | 3.861 | 4.878 | -1.017 | 0.455 | 0.025 |
| 2  | 15 | 3.861 | 5.816 | -1.955 | 0.940 | 0.037 |
| 2  | 16 | 3.861 | 5.057 | -1.196 | 0.541 | 0.027 |
| 2  | 20 | 3.861 | 4.731 | -0.870 | 0.547 | 0.112 |
| 2  | 21 | 3.861 | 4.193 | -0.332 | 0.414 | 0.422 |
| 2  | 22 | 3.861 | 4.527 | -0.666 | 0.411 | 0.105 |
| 2  | 23 | 3.861 | 5.045 | -1.184 | 0.438 | 0.007 |
| 4  | 17 | 3.455 | 3.469 | -0.014 | 0.366 | 0.969 |
| 4  | 24 | 3.455 | 3.886 | -0.431 | 0.380 | 0.256 |
| 4  | 11 | 3.455 | 7.183 | -3.728 | 1.214 | 0.002 |
| 4  | 28 | 3.455 | 3.929 | -0.474 | 1.294 | 0.714 |
| 4  | 12 | 3.455 | 4.417 | -0.962 | 0.491 | 0.050 |
| 4  | 3  | 3.455 | 4.744 | -1.289 | 0.500 | 0.010 |
| 4  | 5  | 3.455 | 4.510 | -1.055 | 0.417 | 0.011 |
| 4  | 9  | 3.455 | 3.722 | -0.267 | 0.375 | 0.476 |
| 4  | 14 | 3.455 | 4.878 | -1.423 | 0.470 | 0.002 |
| 4  | 15 | 3.455 | 5.816 | -2.361 | 0.942 | 0.012 |
| 4  | 16 | 3.455 | 5.057 | -1.602 | 0.550 | 0.004 |
| 4  | 20 | 3.455 | 4.731 | -1.276 | 0.559 | 0.022 |
| 4  | 21 | 3.455 | 4.193 | -0.739 | 0.461 | 0.109 |
| 4  | 22 | 3.455 | 4.527 | -1.072 | 0.436 | 0.014 |
| 4  | 23 | 3.455 | 5.045 | -1.590 | 0.446 | 0.000 |
| 4  | 2  | 3.455 | 3.861 | -0.406 | 0.421 | 0.334 |
| 18 | 17 | 3.552 | 3.469 | 0.083  | 0.303 | 0.784 |
| 18 | 24 | 3.552 | 3.886 | -0.334 | 0.292 | 0.253 |
| 18 | 11 | 3.552 | 7.183 | -3.631 | 1.194 | 0.002 |
| 18 | 28 | 3.552 | 3.929 | -0.377 | 1.240 | 0.761 |
| 18 | 12 | 3.552 | 4.417 | -0.865 | 0.435 | 0.047 |
| 18 | 3  | 3.552 | 4.744 | -1.192 | 0.449 | 0.008 |
| 18 | 5  | 3.552 | 4.510 | -0.958 | 0.350 | 0.006 |
| 18 | 9  | 3.552 | 3.722 | -0.170 | 0.289 | 0.556 |
| 18 | 14 | 3.552 | 4.878 | -1.326 | 0.408 | 0.001 |
| 18 | 15 | 3.552 | 5.816 | -2.264 | 0.917 | 0.014 |
| 18 | 16 | 3.552 | 5.057 | -1.505 | 0.503 | 0.003 |
| 18 | 20 | 3.552 | 4.731 | -1.179 | 0.515 | 0.022 |
| 18 | 21 | 3.552 | 4.193 | -0.642 | 0.394 | 0.103 |
| 18 | 22 | 3.552 | 4.527 | -0.975 | 0.372 | 0.009 |
| 18 | 23 | 3.552 | 5.045 | -1.493 | 0.383 | 0.000 |
| 18 | 2  | 3.552 | 3.861 | -0.309 | 0.341 | 0.364 |
| 18 | 4  | 3.552 | 3.455 | 0.097  | 0.369 | 0.793 |
| 26 | 17 | 4.015 | 3.469 | 0.546  | 0.397 | 0.168 |
| 26 | 24 | 4.015 | 3.886 | 0.129  | 0.347 | 0.710 |
| Group | Value | Difference | SE  | P-value |
|-------|-------|------------|-----|---------|
| 11    | 7.183 | 2.416      | 1.100 | 0.028   |
| 28    | 3.929 | -0.837     | 1.154 | 0.468   |
| 12    | 4.417 | -0.349     | 0.370 | 0.345   |
| 3     | 4.744 | -0.023     | 0.384 | 0.953   |
| 5     | 4.510 | -0.257     | 0.294 | 0.383   |
| 14    | 4.878 | 0.111      | 0.361 | 0.758   |
| 15    | 5.816 | 1.049      | 0.861 | 0.223   |
| 16    | 5.057 | 0.290      | 0.442 | 0.511   |
| 20    | 4.731 | -0.035     | 0.449 | 0.937   |
| 21    | 4.193 | -0.573     | 0.338 | 0.090   |
| 22    | 4.527 | -0.240     | 0.310 | 0.440   |
| 23    | 5.045 | 0.278      | 0.328 | 0.397   |
| 2     | 3.861 | -0.905     | 0.280 | 0.001   |
| 26    | 4.015 | -0.751     | 0.323 | 0.020   |

Average Invariance index: 0.464
ALIGNMENT RESULTS FOR DISCRIM

FIT FUNCTION VALUES FOR ALIGNMENT SIMPLICITY FUNCTION USING DIFFERENT STARTING VALUES IN ORDER OF BEST TO WORST.

| VALUE   | DRAW |
|---------|------|
| -1002.2704 | 25   |
| -1002.2704 | 1    |
| -1002.2704 | 22   |
| -1002.2704 | 27   |
| -1002.2704 | 19   |
| -1002.2704 | 12   |
| -1002.2704 | 14   |
| -1002.2704 | 7    |
| -1002.2704 | 13   |
| -1004.4717 | 17   |
| -1004.4717 | 20   |
| -1004.4717 | 4    |
| -1004.4717 | 5    |
| -1005.3375 | 11   |
| -1005.3375 | 6    |
| -1005.3375 | 28   |
| -1005.3375 | 24   |
| -1005.3375 | 16   |
| -1005.3375 | 3    |
| -1005.3375 | 8    |
| -1005.3375 | 2    |
| -1006.0412 | 18   |
| -1007.5388 | 21   |
| -1007.5388 | 23   |
| -1007.5388 | 10   |
| -1007.5388 | 9    |
| -1007.5388 | 26   |
| -1007.5388 | 30   |
| -1007.6163 | 15   |
| -1007.6163 | 29   |

Beginning Time: 12:52:54
Country Group 2

Country Group 2 included 10 countries (group number in parentheses):

Belgium (1), Germany (6), Denmark (7), Estonia (8), Finland (10), Greece (13), Netherlands (19), Sweden (25), Slovakia (27), Ukraine (29)

Mplus VERSION 7.4 (Mac)
MUTHEN & MUTHEN
01/25/2017  8:08 PM

INPUT INSTRUCTIONS

TITLE:
Approximate measurement invariance, Country Group 2;
DATA:
FILE = "CountriesAlignmentGroup2.dat";

VARIABLE:
NAMES = predj_r lkrsp_r trtbd_r country;
MISSING=.;

    usevariables = predj_r lkrsp_r trtbd_r country;
    categorical = predj_r lkrsp_r trtbd_r;
    classes=c(10);
    knownclass=c(country);

ANALYSIS:

    type=mixture;
    estimator=mlf;
    algorithm=integration;
    estimator = mlf;
    alignment = fixed(27);

MODEL:

    %overall%
    discrim BY predj_r lkrsp_r trtbd_r;

OUTPUT:

    tech1 tech8 align cinterval svalues;

*** WARNING
Data set contains cases with missing on all variables.
These cases were not included in the analysis.
Number of cases with missing on all variables: 64
1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

Approximate measurement invariance, Country Group 1;

SUMMARY OF ANALYSIS

Number of groups 1
Number of observations 19208

Number of dependent variables 3
Number of independent variables 0
Number of continuous latent variables 1
Number of categorical latent variables 1

Observed dependent variables

Binary and ordered categorical (ordinal)
  PREDJ_R  LKRSP_R  TRTBD_R

Continuous latent variables
  DISCRIM

Categorical latent variables
  C

Knownclass C

Estimator MLF
Information matrix OBSERVED

Optimization Specifications for the Quasi-Newton Algorithm for Continuous Outcomes
  Maximum number of iterations 100
  Convergence criterion 0.100D-05

Optimization Specifications for the EM Algorithm
  Maximum number of iterations 500
  Convergence criteria
    Loglikelihood change 0.100D-02
    Relative loglikelihood change 0.100D-05
    Derivative 0.100D-02

Optimization Specifications for the M step of the EM Algorithm for
Categorical Latent variables

Number of M step iterations 1
M step convergence criterion 0.100D-02
Basis for M step termination ITERATION

Optimization Specifications for the M step of the EM Algorithm for Censored, Binary or Ordered Categorical (Ordinal), Unordered Categorical (Nominal) and Count Outcomes

Number of M step iterations 1
M step convergence criterion 0.100D-02
Basis for M step termination ITERATION
Maximum value for logit thresholds 15
Minimum value for logit thresholds -15
Minimum expected cell size for chi-square 0.100D-01

Maximum number of iterations for H1 2000
Convergence criterion for H1 0.100D-03
Optimization algorithm EMA

Integration Specifications
Type STANDARD
Number of integration points 15
Dimensions of numerical integration 1
Adaptive quadrature ON
Link LOGIT

Specifications for Alignment Analysis
Factor mean for reference group FIXED
Simplicity function SQRT
Factor variance metric Reference group
Reference group 27
Tolerance value 0.100D-01
Number of random starts 30
Maximum number of iterations 5000
Convergence criterion 0.100D-02

Cholesky OFF

Input data file(s)
CountriesAlignmentGroup2.dat
Input data format FREE

SUMMARY OF DATA

Number of missing data patterns 7
Number of y missing data patterns 0
Number of u missing data patterns 7
COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value 0.100

PROPORTION OF DATA PRESENT FOR U

| Covariance Coverage | PREDJ_R | LKRSP_R | TRTBD_R |
|---------------------|---------|---------|---------|
| PREDJ_R             | 0.996   |         |         |
| LKRSP_R             | 0.991   | 0.995   |         |
| TRTBD_R             | 0.990   | 0.991   | 0.994   |

UNIVARIATE PROPORTIONS AND COUNTS FOR CATEGORICAL VARIABLES

PREDJ_R
- Category 1: 0.628, 12013.000
- Category 2: 0.193, 3691.000
- Category 3: 0.179, 3426.000

LKRSP_R
- Category 1: 0.629, 12025.000
- Category 2: 0.203, 3875.000
- Category 3: 0.168, 3208.000

TRTBD_R
- Category 1: 0.734, 14024.000
- Category 2: 0.165, 3159.000
- Category 3: 0.100, 1915.000

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 99

Loglikelihood
- H0 Value -83762.101
Information Criteria

Akaike (AIC) 167722.202
Bayesian (BIC) 168500.647
Sample-Size Adjusted BIC 168186.030
\( (n^* = (n + 2) / 24) \)

Chi-Square Test of Model Fit for the Binary and Ordered Categorical (Ordinal) Outcomes

Pearson Chi-Square

| Value               | 1831.590 |
|---------------------|----------|
| Degrees of Freedom  | 170      |
| P-Value             | 0.0000   |

Likelihood Ratio Chi-Square

| Value               | 1341.015 |
|---------------------|----------|
| Degrees of Freedom  | 170      |
| P-Value             | 0.0000   |

Chi-Square Test for MCAR under the Unrestricted Latent Class Indicator Model

Pearson Chi-Square

| Value               | 387.945 |
|---------------------|---------|
| Degrees of Freedom  | 291     |
| P-Value             | 0.0001  |

Likelihood Ratio Chi-Square

| Value               | 245.037 |
|---------------------|---------|
| Degrees of Freedom  | 291     |
| P-Value             | 0.9766  |

FINAL CLASS COUNTS AND PROPORTIONS FOR THE LATENT CLASSES BASED ON THE ESTIMATED MODEL

| Latent Classes | Value   | Proportion |
|----------------|---------|------------|
| 1              | 2065.0000 | 0.10751    |
MODEL RESULTS

| Estimate S.E. | Est./S.E. | P-Value |
|---------------|-----------|---------|
| DISCRIM       | 2.725     | 0.127   | 21.439 | 0.000 |
| LKRSP_R      | 6.849     | 1.032   | 6.638 | 0.000 |
| TRTBD_R      | 3.136     | 0.254   | 12.348 | 0.000 |

Means

| DISCRIM | -0.641 | 0.074 | -8.696 | 0.000 |

Thresholds

| PREDJ_R$1 | 0.889 | 0.112 | 7.947 | 0.000 |
| PREDJ_R$2 | 3.057 | 0.133 | 22.944 | 0.000 |
| LKRSP_R$1 | -1.001 | 0.304 | -3.293 | 0.001 |
| LKRSP_R$2 | 4.236 | 0.592 | 7.156 | 0.000 |
| TRTBD_R$1 | -0.252 | 0.150 | -1.683 | 0.092 |
| TRTBD_R$2 | 2.790 | 0.187 | 14.931 | 0.000 |

Variances

| DISCRIM | 1.459 | 0.193 | 7.562 | 0.000 |

Latent Class 2 (27)

| DISCRIM BY |
| PREDJ_R | 2.718 | 0.150 | 18.135 | 0.000 |
| LKRSP_R | 6.414 | 0.823 | 7.794 | 0.000 |
| TRTBD_R | 3.438 | 0.209 | 16.461 | 0.000 |

Means
| Variable | Value1 | Value2 | Value3 | Value4 |
|----------|--------|--------|--------|--------|
| DISCRIM  | 0.000  | 0.000  | 999.000| 999.000 |

**Thresholds**

| Variable | Value1 | Value2 | Value3 | Value4 |
|----------|--------|--------|--------|--------|
| PREDJ_R$1 | 0.825  | 0.105  | 7.874  | 0.000  |
| PREDJ_R$2 | 2.977  | 0.143  | 20.884 | 0.000  |
| LKRSP_R$1 | -0.484 | 0.206  | -2.354 | 0.019  |
| LKRSP_R$2 | 4.160  | 0.505  | 8.232  | 0.000  |
| TRTBD_R$1 | 0.684  | 0.124  | 5.495  | 0.000  |
| TRTBD_R$2 | 3.635  | 0.202  | 18.000 | 0.000  |

**Variances**

| Variable | Value1 | Value2 | Value3 | Value4 |
|----------|--------|--------|--------|--------|
| DISCRIM  | 1.000  | 0.000  | 999.000| 999.000 |

**Latent Class 3 (29)**

**DISCRIM BY**

| Variable | Value1 | Value2 | Value3 | Value4 |
|----------|--------|--------|--------|--------|
| PREDJ_R  | 1.907  | 0.302  | 6.314  | 0.000  |
| LKRSP_R  | 5.671  | 0.761  | 7.455  | 0.000  |
| TRTBD_R  | 4.453  | 0.818  | 5.445  | 0.000  |

**Means**

| Variable | Value1 | Value2 | Value3 | Value4 |
|----------|--------|--------|--------|--------|
| DISCRIM  | -0.333 | 0.080  | -4.184 | 0.000  |

**Thresholds**

| Variable | Value1 | Value2 | Value3 | Value4 |
|----------|--------|--------|--------|--------|
| PREDJ_R$1 | 0.532  | 0.126  | 4.213  | 0.000  |
| PREDJ_R$2 | 1.996  | 0.143  | 13.925 | 0.000  |
| LKRSP_R$1 | -0.653 | 0.286  | -2.282 | 0.022  |
| LKRSP_R$2 | 3.727  | 0.624  | 5.969  | 0.000  |
| TRTBD_R$1 | 0.093  | 0.260  | 0.355  | 0.722  |
| TRTBD_R$2 | 3.767  | 0.225  | 16.762 | 0.000  |

**Variances**

| Variable | Value1 | Value2 | Value3 | Value4 |
|----------|--------|--------|--------|--------|
| DISCRIM  | 1.706  | 0.507  | 3.367  | 0.001  |

**Latent Class 4 (1)**

**DISCRIM BY**

| Variable | Value1 | Value2 | Value3 | Value4 |
|----------|--------|--------|--------|--------|
| PREDJ_R  | 2.323  | 0.364  | 6.383  | 0.000  |
| LKRSP_R  | 4.848  | 0.664  | 7.305  | 0.000  |
| TRTBD_R  | 5.563  | 1.095  | 5.081  | 0.000  |

**Means**

| Variable | Value1 | Value2 | Value3 | Value4 |
|----------|--------|--------|--------|--------|
| DISCRIM  | -0.367 | 0.081  | -4.530 | 0.000  |

**Thresholds**
|       |         |         |         |         |         |         |
|-------|---------|---------|---------|---------|---------|---------|
| PREDJ_R$1 | -0.483  | 0.162   | -2.980  | 0.003   |
| PREDJ_R$2 | 0.992   | 0.165   | 6.001   | 0.000   |
| LKRSP_R$1 | -0.185  | 0.306   | -0.605  | 0.545   |
| LKRSP_R$2 | 2.261   | 0.393   | 5.759   | 0.000   |
| TRTBD_R$1 | 1.308   | 0.289   | 4.526   | 0.000   |
| TRTBD_R$2 | 3.930   | 0.280   | 14.024  | 0.000   |

**Variance**

**DISCRIM**

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
|         | 0.608   | 0.178   | 3.422   | 0.001   |

**Latent Class 5 (6)**

**DISCRIM BY**

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| PREDJ_R | 2.855   | 0.162   | 17.603  | 0.000   |
| LKRSP_R | 4.988   | 0.569   | 8.766   | 0.000   |
| TRTBD_R | 3.570   | 0.257   | 13.887  | 0.000   |

**Means**

**DISCRIM**

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
|         | -0.385  | 0.068   | -5.709  | 0.000   |

**Thresholds**

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| PREDJ_R$1 | 0.070   | 0.180   | 0.388   | 0.698   |
| PREDJ_R$2 | 1.542   | 0.172   | 8.962   | 0.000   |
| LKRSP_R$1 | -0.511  | 0.291   | -1.755  | 0.079   |
| LKRSP_R$2 | 1.947   | 0.343   | 5.672   | 0.000   |
| TRTBD_R$1 | 1.551   | 0.217   | 7.137   | 0.000   |
| TRTBD_R$2 | 3.378   | 0.241   | 13.997  | 0.000   |

**Variance**

**DISCRIM**

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
|         | 0.526   | 0.063   | 8.306   | 0.000   |

**Latent Class 6 (7)**

**DISCRIM BY**

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| PREDJ_R | 2.722   | 0.166   | 16.364  | 0.000   |
| LKRSP_R | 4.829   | 0.680   | 7.106   | 0.000   |
| TRTBD_R | 4.284   | 0.521   | 8.224   | 0.000   |

**Means**

**DISCRIM**

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
|         | -0.678  | 0.090   | -7.511  | 0.000   |

**Thresholds**

|         |         |         |         |         |         |         |
|---------|---------|---------|---------|---------|---------|---------|
| PREDJ_R$1 | -0.339  | 0.195   | -1.742  | 0.082   |
| PREDJ_R$2 | 1.345   | 0.195   | 6.900   | 0.000   |
| LKRSP_R$1 | -0.619  | 0.316   | -1.959  | 0.050   |

87
| Variable  | Mean   | SD    | Lower CI | Upper CI | P    |
|-----------|--------|-------|----------|----------|------|
| LKRSP_R$2 | 2.152  | 0.389 | 5.531    | 0.000    |      |
| TRTBD_R$1 | 1.336  | 0.260 | 5.138    | 0.000    |      |
| TRTBD_R$2 | 4.012  | 0.293 | 13.713   | 0.000    |      |

### Variances

| Parameter | Mean   | SD    | Lower CI | Upper CI | P    |
|-----------|--------|-------|----------|----------|------|
| DISCRIM   | 0.685  | 0.111 | 6.199    | 0.000    |      |

### Latent Class 7 (10)

#### DISCRIM BY

| Variable | Mean   | SD    | Lower CI | Upper CI | P    |
|----------|--------|-------|----------|----------|------|
| PREDJ_R  | 2.720  | 0.145 | 18.753   | 0.000    |      |
| LKRSP_R  | 5.145  | 0.563 | 9.141    | 0.000    |      |
| TRTBD_R  | 3.892  | 0.321 | 12.142   | 0.000    |      |

### Means

| Parameter | Mean   | SD    | Lower CI | Upper CI | P    |
|-----------|--------|-------|----------|----------|------|
| DISCRIM   | -0.301 | 0.066 | -4.543   | 0.000    |      |

### Thresholds

| Parameter | Mean   | SD    | Lower CI | Upper CI | P    |
|-----------|--------|-------|----------|----------|------|
| PREDJ_R$1 | -0.551 | 0.167 | -3.291   | 0.001    |      |
| PREDJ_R$2 | 1.390  | 0.173 | 8.048    | 0.000    |      |
| LKRSP_R$1 | -0.075 | 0.309 | -0.244   | 0.807    |      |
| LKRSP_R$2 | 3.233  | 0.400 | 8.083    | 0.000    |      |
| TRTBD_R$1 | 1.259  | 0.223 | 5.634    | 0.000    |      |
| TRTBD_R$2 | 3.867  | 0.250 | 15.472   | 0.000    |      |

### Variances

| Parameter | Mean   | SD    | Lower CI | Upper CI | P    |
|-----------|--------|-------|----------|----------|------|
| DISCRIM   | 0.721  | 0.090 | 7.978    | 0.000    |      |

### Latent Class 8 (25)

#### DISCRIM BY

| Variable | Mean   | SD    | Lower CI | Upper CI | P    |
|----------|--------|-------|----------|----------|------|
| PREDJ_R  | 2.923  | 0.185 | 15.761   | 0.000    |      |
| LKRSP_R  | 4.657  | 0.552 | 8.432    | 0.000    |      |
| TRTBD_R  | 3.613  | 0.266 | 13.578   | 0.000    |      |

### Means

| Parameter | Mean   | SD    | Lower CI | Upper CI | P    |
|-----------|--------|-------|----------|----------|------|
| DISCRIM   | -0.595 | 0.081 | -7.334   | 0.000    |      |

### Thresholds

| Parameter | Mean   | SD    | Lower CI | Upper CI | P    |
|-----------|--------|-------|----------|----------|------|
| PREDJ_R$1 | -0.391 | 0.194 | -2.015   | 0.044    |      |
| PREDJ_R$2 | 1.654  | 0.202 | 8.180    | 0.000    |      |
| LKRSP_R$1 | -0.618 | 0.304 | -2.035   | 0.042    |      |
| LKRSP_R$2 | 2.534  | 0.369 | 6.864    | 0.000    |      |
| TRTBD_R$1 | 1.261  | 0.224 | 5.622    | 0.000    |      |
| TRTBD_R$2 | 3.809  | 0.261 | 14.589   | 0.000    |      |
### Latent Class 9 (8)

**DISCRIM BY**
- PREDJ_R: 2.250 0.353 6.380 0.000
- LKRSP_R: 21.704 29.998 0.724 0.469
- TRTBD_R: 3.566 0.408 8.731 0.000

**Means**
- DISCRIM: -0.564 0.101 -5.564 0.000

**Thresholds**
- PREDJ_R$1: -0.209 0.189 -1.104 0.269
- PREDJ_R$2: 1.530 0.175 8.724 0.000
- LKRSP_R$1: -0.884 0.734 -1.204 0.229
- LKRSP_R$2: 12.788 20.156 0.634 0.526
- TRTBD_R$1: 1.253 0.341 3.672 0.000
- TRTBD_R$2: 3.910 0.333 11.728 0.000

**Variances**
- DISCRIM: 1.166 0.244 4.787 0.000

### Latent Class 10 (19)

**DISCRIM BY**
- PREDJ_R: 1.815 0.341 5.319 0.000
- LKRSP_R: 5.288 0.729 7.254 0.000
- TRTBD_R: 5.400 1.276 4.234 0.000

**Means**
- DISCRIM: -0.496 0.100 -4.957 0.000

**Thresholds**
- PREDJ_R$1: -0.674 0.129 -5.203 0.000
- PREDJ_R$2: 0.714 0.131 5.449 0.000
- LKRSP_R$1: 0.103 0.322 0.320 0.749
- LKRSP_R$2: 2.907 0.496 5.865 0.000
- TRTBD_R$1: 0.988 0.296 3.333 0.001
- TRTBD_R$2: 4.062 0.286 14.215 0.000

**Variances**
- DISCRIM: 0.702 0.241 2.909 0.004

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Categorical Latent Variables

Means

|   |   |   |   |   |
|---|---|---|---|---|
| C#1 | 0.151 | 0.032 | 4.658 | 0.000 |
| C#2 | 0.011 | 0.033 | 0.318 | 0.751 |
| C#3 | 0.028 | 0.033 | 0.833 | 0.405 |
| C#4 | -0.010 | 0.034 | -0.286 | 0.775 |
| C#5 | 0.428 | 0.030 | 14.025 | 0.000 |
| C#6 | -0.104 | 0.034 | -3.010 | 0.003 |
| C#7 | 0.210 | 0.032 | 6.562 | 0.000 |
| C#8 | 0.022 | 0.033 | 0.667 | 0.505 |
| C#9 | -0.070 | 0.035 | -2.013 | 0.044 |

Approximate Measurement Invariance (Noninvariance) for Groups

Intercepts/Thresholds

|   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|
| PREDJ_R$1 | (13) | (27) | (29) | 1 | (6) | 7 | 10 | 25 | 8 | 19 |
| PREDJ_R$2 | (13) | (27) | 29 | (1) | 6 | 7 | 10 | 25 | 8 | 19 |
| LKRSP_R$1 | 13 | 27 | 29 | 1 | 6 | 7 | 10 | 25 | 8 | 19 |
| LKRSP_R$2 | 13 | 27 | 29 | 1 | 6 | 7 | 10 | 25 | 8 | 19 |
| TRTBD_R$1 | (13) | 27 | (29) | 1 | (6) | 7 | 10 | 25 | 8 | 19 |
| TRTBD_R$2 | (13) | 27 | 29 | 1 | 6 | 7 | 10 | 25 | 8 | 19 |

Loadings for DISCRIM

|   |   |   |   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|---|---|---|
| PREDJ_R | 13 | 27 | 29 | 1 | 6 | 7 | 10 | 25 | 8 | 19 |
| LKRSP_R | 13 | 27 | 29 | 1 | 6 | 7 | 10 | 25 | 8 | 19 |
| TRTBD_R | 13 | 27 | 29 | 1 | 6 | 7 | 10 | 25 | 8 | 19 |

Factor Mean Comparison at the 5% Significance Level in Descending Order

Results for Factor DISCRIM

| Ranking | Latent Class | Group Value | Factor Mean | Groups With Significantly Smaller Factor Mean |
|---------|--------------|-------------|-------------|----------------------------------------------|
| 1       | 2            | 27          | 0.000       | 10 29 1 6 19 8 25 13 7                       |
| 2       | 7            | 10          | -0.301      | 6 19 8 25 13 7                              |
| 3       | 3            | 29          | -0.333      | 19 8 25 13 7                                |
| 4       | 4            | 1           | -0.367      | 8 25 13 7                                   |
| 5       | 5            | 6           | -0.385      | 8 25 13 7                                   |
| 6       | 10           | 19          | -0.496      | 7                                            |
| 7       | 9            | 8           | -0.564      |                                               |
QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.147E-06
(ratio of smallest to largest eigenvalue)

[Parts of the output omitted]

ALIGNMENT RESULTS FOR DISCRIM

FIT FUNCTION VALUES FOR ALIGNMENT SIMPLICITY FUNCTION USING DIFFERENT STARTING VALUES
IN ORDER OF BEST TO WORST.

| VALUE  | DRAW |
|--------|------|
| -267.6079 | 11   |
| -267.6079 | 27   |
| -267.6079 | 2    |
| -267.6079 | 22   |
| -267.6079 | 30   |
| -267.6079 | 21   |
| -267.6079 | 19   |
| -267.6079 | 12   |
| -267.6079 | 28   |
| -267.6079 | 8    |
| -267.6079 | 9    |
| -267.6079 | 16   |
| -267.6079 | 6    |
| -267.6079 | 26   |
| -267.6079 | 1    |
| -267.6079 | 17   |
| -267.6079 | 15   |
| -267.6079 | 3    |
| -267.6079 | 13   |
| -267.6079 | 23   |
| -267.6079 | 5    |
| -269.8490 | 20   |
| -269.8490 | 29   |
| -269.8490 | 18   |
|       |       |
|-------|-------|
| -269.8490 | 10    |
| -269.8490 | 14    |
| -269.8490 | 24    |
| -269.8490 | 7     |
| -269.8490 | 25    |
| -269.8490 | 4     |

[Part of output omitted]
Moderated Non-Linear Factor Analysis

Country Group 1

Mplus VERSION 7.4 (Mac)
MUTHEN & MUTHEN
01/30/2017  1:39 PM

INPUT INSTRUCTIONS

TITLE:
MNFLA 2DIF prejudice and treated badly;
DATA:
FILE = "MNLFA_predj_trtbd_DIF_Group1.dat";

VARIABLE:
NAMES = predj_r lkrsp_r trtbd_r predj_r2 lkrsp_r2 trtbd_r2 c_age agesq c_agesq pspwght country;
MISSING=.;
usevariables = predj_r2 lkrsp_r2 trtbd_r2 country c_age c_agesq pspwght;
categorical = predj_r2 lkrsp_r2 trtbd_r2;
constraint = c_age c_agesq;
weight = pspwght;
cluster = country;

ANALYSIS:

type = complex;
estimator = mlr;
link = logit;

MODEL:

discrim BY predj_r2*2.94342;
discrim BY lkrsp_r2*6.90506;
discrim BY trtbd_r2*5.30191;

discrim ON c_age*0.04570;
discrim ON c_agesq*0.04126;
[ discrim@0 ];

[ predj_r2$1*1.69574 ];
[ lkrsp_r2$1*2.69708 ];
[ trtbd_r2$1*3.32651 ];
discrim*999 (v_disc);

discrim BY predj_r2 (L_a);
   predj_r2 ON c_age c_agesq;
discrim BY trtbd_r2 (L_b);
   trtbd_r2 ON c_age c_agesq;

model constraint:
   NEW(v_disc1*0.01429);
   NEW(v_disc2*-0.00602);
   new(L_a0*2.519 L_a1*-0.099 L_a2*0.072);
   new(L_b0*2 L_b1*0 L_b2*0);
   v_disc = exp(v_disc1*c_age + v_disc2*c_agesq);
   L_a = L_a0 + L_a1*c_age + L_a2*c_agesq;
   L_b = L_b0 + L_b1*c_age + L_b2*c_agesq;

OUTPUT:
   svalues;
SAVEDATA:
   SAVE=fscores;
   file=MNLFA_predj_trtbd_DIFgroup1.dat;

*** WARNING
   Data set contains cases with missing on all variables except
   x-variables. These cases were not included in the analysis.
   Number of cases with missing on all variables except x-variables: 207
   1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

MNFLA 2DIF prejudice and treated badly;

SUMMARY OF ANALYSIS

|                        |       |
|------------------------|-------|
| Number of groups       | 1     |
| Number of observations | 37064 |
| Number of dependent variables | 3   |
| Number of independent variables | 2   |
| Number of continuous latent variables | 1   |
Observed dependent variables

Binary and ordered categorical (ordinal)
PREDJ_R2 LKRSP_R2 TRTBD_R2

Observed independent variables
C_AGE C_AGESQ

Continuous latent variables
DISCRIM

Variables with special functions

Cluster variable COUNTRY
Weight variable PSPWGHT

Estimator MLR
Information matrix OBSERVED

Optimization Specifications for the Quasi-Newton Algorithm for Continuous Outcomes
Maximum number of iterations 100
Convergence criterion 0.100D-05

Optimization Specifications for the EM Algorithm
Maximum number of iterations 500
Convergence criteria
Loglikelihood change 0.100D-02
Relative loglikelihood change 0.100D-05
Derivative 0.100D-02

Optimization Specifications for the M step of the EM Algorithm for Categorical Latent variables
Number of M step iterations 1
M step convergence criterion 0.100D-02
Basis for M step termination ITERATION

Optimization Specifications for the M step of the EM Algorithm for Censored, Binary or Ordered Categorical (Ordinal), Unordered Categorical (Nominal) and Count Outcomes
Number of M step iterations 1
M step convergence criterion 0.100D-02
Basis for M step termination ITERATION
Maximum value for logit thresholds 15
Minimum value for logit thresholds -15
Minimum expected cell size for chi-square 0.100D-01
Maximum number of iterations for H1 2000
Convergence criterion for H1 0.100D-03
Optimization algorithm: EMA
Integration Specifications
- Type: STANDARD
- Number of integration points: 15
- Dimensions of numerical integration: 1
- Adaptive quadrature: ON
- Link: LOGIT
- Cholesky: ON

Input data file(s):
- MNLFA_predj_trtbd_DIF_Group1.dat

Input data format: FREE

SUMMARY OF DATA
- Number of missing data patterns: 7
- Number of y missing data patterns: 0
- Number of u missing data patterns: 7
- Number of clusters: 19

COVARIANCE COVERAGE OF DATA
- Minimum covariance coverage value: 0.100

PROPORTION OF DATA PRESENT FOR U

| Covariance Coverage | PREDJ_R2 | LKRSP_R2 | TRTBD_R2 |
|---------------------|---------|---------|---------|
| PREDJ_R2            | 0.991   | --------| --------|
| LKRSP_R2            | 0.984   | 0.992   | --------|
| TRTBD_R2            | 0.985   | 0.988   | 0.993   |

UNIVARIATE PROPORTIONS AND COUNTS FOR CATEGORICAL VARIABLES

| PREDJ_R2          |     |
|-------------------|-----|
| Category 1        | 0.684| 25130.941|
| Category 2        | 0.316| 11611.111|

LKRSP_R2

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THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 18

Loglikelihood

H0 Value -49606.376
H0 Scaling Correction Factor 17.1703 for MLR

Information Criteria

Akaike (AIC) 99248.752
Bayesian (BIC) 99402.119
Sample-Size Adjusted BIC 99344.915
(n* = (n + 2) / 24)

MODEL RESULTS

Two-Tailed

|                | Estimate | S.E. | Est./S.E. | P-Value |
|----------------|----------|------|-----------|---------|
| DISCRIM BY     |          |      |           |         |
| PREDJ_R2       | 999.000  | 0.000| 999.000   | 999.000 |
| LKRSP_R2       | 7.298    | 0.901| 8.097     | 0.000   |
| TRTBD_R2       | 999.000  | 0.000| 999.000   | 999.000 |
| DISCRIM ON     |          |      |           |         |
| C_AGE          | -0.049   | 0.008| -5.941    | 0.000   |
| C_AGESQ        | 0.043    | 0.006| 6.704     | 0.000   |
### Logistic Regression Odds Ratio Results

**PREDJ_R2 ON**
- **C_AGE**: 1.034
- **C_AGESQ**: 0.975

**TRTBD_R2 ON**
- **C_AGE**: 0.960
- **C_AGESQ**: 1.046

### Quality of Numerical Results

**Condition Number for the Information Matrix**: 0.518E-07

(ratio of smallest to largest eigenvalue)

98
[Parts of the output omitted.]
INPUT INSTRUCTIONS

TITLE:
MNFLA 2DIF prejudice and treated badly;
DATA:
FILE = "MNLFA_predj_trtbd_DIF_Group2.dat";

VARIABLE:
NAMES = predj_r lkrsp_r trtbd_r predj_r2 lkrsp_r2 trtbd_r2 c_age agesq c_agesq pspwght country;
MISSING=.;
usevariables = predj_r2 lkrsp_r2 trtbd_r2 country c_age c_agesq pspwght;
categorical = predj_r2 lkrsp_r2 trtbd_r2;
constraint = c_age c_agesq;
weight = pspwght;
cluster = country;

ANALYSIS:

    type = complex;
estimator = mlr;
    link = logit;

MODEL:

    discrim BY predj_r2*2.94342;
    discrim BY lkrsp_r2*6.90506;
    discrim BY trtbd_r2*5.30191;

    discrim ON c_age*-0.04570;
    discrim ON c_agesq*0.04126;

[ discrim@0 ];
[ predj_r2$1*1.69574 ];
[ lkrsp_r2$1*2.69708 ];
[ trtbd_r2$1*3.32651 ];

    discrim*999 (v_disc);
discrim BY predj_r2 (L_a);
    predj_r2 ON c_age c_agesq;
discrim BY trtbd_r2 (L_b);
    trtbd_r2 ON c_age c_agesq;

model constraint:
    NEW(v_disc1*0.01429);
    NEW(v_disc2*-0.00602);
    new(L_a0*2.519 L_a1*-0.099 L_a2*0.072);
    new(L_b0*2 L_b1*0 L_b2*0);
    v_disc = exp(v_disc1*c_age + v_disc2*c_agesq);
    L_a = L_a0 + L_a1*c_age + L_a2*c_agesq;
    L_b = L_b0 + L_b1*c_age + L_b2*c_agesq;

OUTPUT:
    svalues;
SAVEDATA:
    SAVE=fscores;
    file=MNLFA_predj_trtbd_DIF.dat;

*** WARNING
Data set contains cases with missing on all variables except x-variables. These cases were not included in the analysis.
Number of cases with missing on all variables except x-variables: 64
1 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS

MNFLA 2DIF prejudice and treated badly;

SUMMARY OF ANALYSIS

| Category                          | Value   |
|----------------------------------|---------|
| Number of groups                 | 1       |
| Number of observations           | 19208   |
| Number of dependent variables    | 3       |
| Number of independent variables  | 2       |
| Number of continuous latent variables | 1       |

Observed dependent variables
Binary and ordered categorical (ordinal)
PREDJ_R2   LKRSP_R2   TRTBD_R2

Observed independent variables
C_AGE       C_AGESQ

Continuous latent variables
DISCRIM

Variables with special functions

Cluster variable       COUNTRY
Weight variable        PSPWGHT

Estimator MLR
Information matrix OBSERVED
Optimization Specifications for the Quasi-Newton Algorithm for
Continuous Outcomes
Maximum number of iterations 100
Convergence criterion 0.100D-05
Optimization Specifications for the EM Algorithm
Maximum number of iterations 500
Convergence criteria
Loglikelihood change 0.100D-02
Relative loglikelihood change 0.100D-05
Derivative 0.100D-02
Optimization Specifications for the M step of the EM Algorithm for
Categorical Latent variables
Number of M step iterations 1
M step convergence criterion 0.100D-02
Basis for M step termination ITERATION
Optimization Specifications for the M step of the EM Algorithm for
Censored, Binary or Ordered Categorical (Ordinal), Unordered
Categorical (Nominal) and Count Outcomes
Number of M step iterations 1
M step convergence criterion 0.100D-02
Basis for M step termination ITERATION
Maximum value for logit thresholds 15
Minimum value for logit thresholds -15
Minimum expected cell size for chi-square 0.100D-01
Maximum number of iterations for H1 2000
Convergence criterion for H1 0.100D-03
Optimization algorithm EMA
Integration Specifications
Type: STANDARD
Number of integration points: 15
Dimensions of numerical integration: 1
Adaptive quadrature: ON
Link: LOGIT
Cholesky: ON

Input data file(s):
- MNLFA_predj_trtbd_DIF_Group2.dat
Input data format: FREE

SUMMARY OF DATA

| Metric                              | Value  |
|-------------------------------------|--------|
| Number of missing data patterns     | 7      |
| Number of y missing data patterns   | 0      |
| Number of u missing data patterns   | 7      |
| Number of clusters                 | 10     |

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value: 0.100

PROPORTION OF DATA PRESENT FOR U

| Covariance Coverage | PREDJ_R2 | LKRSP_R2 | TRTBD_R2 |
|---------------------|----------|----------|----------|
| PREDJ_R2            | 0.996    |          |          |
| LKRSP_R2            | 0.991    | 0.995    |          |
| TRTBD_R2            | 0.990    | 0.991    | 0.994    |

UNIVARIATE PROPORTIONS AND COUNTS FOR CATEGORICAL VARIABLES

| Variable | Category 1 | Category 2 |
|----------|------------|------------|
| PREDJ_R2 | 0.618      | 0.382      |
| LKRSP_R2 | 0.618      | 0.382      |
THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 18

Loglikelihood

\( H_0 \) Value -28648.396
\( H_0 \) Scaling Correction Factor 17.4490 for MLR

Information Criteria

Akaike (AIC) 57332.792
Bayesian (BIC) 57474.327
Sample-Size Adjusted BIC 57417.124
\( (n^* = (n + 2) / 24) \)

MODEL RESULTS

|                | Estimate | S.E.  | Est./S.E. | Two-Tailed P-Value |
|----------------|----------|-------|-----------|-------------------|
| DISCRIM BY     |          |       |           |                   |
| PREDJ_R2       | 999.000  | 0.000 | 999.000   | 999.000           |
| LKRSP_R2       | 6.556    | 1.279 | 5.126     | 0.000             |
| TRTBD_R2       | 999.000  | 0.000 | 999.000   | 999.000           |
| DISCRIM ON     |          |       |           |                   |
| C_AGE          | -0.060   | 0.008 | -7.665    | 0.000             |
| C_AGESQ        | 0.045    | 0.009 | 5.081     | 0.000             |
| PREDJ_R2 ON    |          |       |           |                   |
| C_AGE          | 0.024    | 0.013 | 1.910     | 0.056             |
|        | C_AGESQ | 0.015 | -1.186 | 0.236 |
|--------|---------|-------|--------|-------|
| TRTBD_R2 ON C_AGE | -0.006 | 0.029 | -0.212 | 0.832 |
| C_AGESQ | 0.025 | 0.025 | 0.982 | 0.326 |
| Intercepts DISCRIM | 0.000 | 0.000 | 999.000 | 999.000 |
| Thresholds PREDJ_R2$1 | 0.989 | 0.191 | 5.168 | 0.000 |
| LKRSP_R2$1 | 2.809 | 0.718 | 3.911 | 0.000 |
| TRTBD_R2$1 | 3.032 | 0.567 | 5.348 | 0.000 |
| Residual Variances DISCRIM | 999.000 | 0.000 | 999.000 | 999.000 |
| New/Additional Parameters V_DISC1 | 0.024 | 0.024 | 0.968 | 0.333 |
| V_DISC2 | 0.003 | 0.032 | 0.095 | 0.924 |
| L_A0 | 1.948 | 0.150 | 13.003 | 0.000 |
| L_A1 | -0.066 | 0.018 | -3.587 | 0.000 |
| L_A2 | 0.044 | 0.024 | 1.820 | 0.069 |
| L_B0 | 4.126 | 0.429 | 9.627 | 0.000 |
| L_B1 | 0.080 | 0.040 | 1.999 | 0.046 |
| L_B2 | -0.103 | 0.032 | -3.238 | 0.001 |

LOGISTIC REGRESSION ODDS RATIO RESULTS

PREDJ_R2 ON
| C_AGE | 1.025 |
| C_AGESQ | 0.982 |

TRTBD_R2 ON
| C_AGE | 0.994 |
| C_AGESQ | 1.025 |

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.972E-07
(ratio of smallest to largest eigenvalue)
[Parts of the output omitted.]
Approximate Measurement Invariance across Age

Country Group 1

Mplus VERSION 7.4 (Mac)
MUTHEN & MUTHEN
02/02/2017 12:48 PM

INPUT INSTRUCTIONS

TITLE:
Approximate measurement invariance across age, Country Group 1;
DATA:
FILE = "15AgeGroupsCountrygroup1.dat";

VARIABLE:
NAMES = predj_r lkrsp_r trtbd_r age_group;
missing=.;
usevariables = predj_r lkrsp_r trtbd_r age_group;
categorical = predj_r lkrsp_r trtbd_r;
classes=c(15);
knownclass=c(age_group);

ANALYSIS:
type=mixture;
estimator=mlf;
algorithm=integration;
alignment = fixed(1);

MODEL:
%overall%
   discrim BY predj_r lkrsp_r trtbd_r;

OUTPUT:
tech1 tech8 cinterval;

*** WARNING
Data set contains unknown or missing values for variable AGE_GROUP.
This variable is used to determine the KNOWNCLASS specification.
Number of such cases:  98

*** WARNING
Data set contains cases with missing on all variables.
These cases were not included in the analysis.
Number of cases with missing on all variables:  204

2 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS
e01 Countries, traditional measurement invariance;

**SUMMARY OF ANALYSIS**

| Description                                      | Value   |
|--------------------------------------------------|---------|
| Number of groups                                 | 1       |
| Number of observations                           | 36969   |
| Number of dependent variables                    | 3       |
| Number of independent variables                  | 0       |
| Number of continuous latent variables            | 1       |
| Number of categorical latent variables           | 1       |

**Observed dependent variables**

- Binary and ordered categorical (ordinal)
  - PREDJ_R  LKRSP_R  TRTBD_R

**Continuous latent variables**

- DISCRIM

**Categorical latent variables**

- C

**Knownclass**

- C

**Estimator**

- MLF

**Information matrix**

- OBSERVED

**Optimization Specifications for the Quasi-Newton Algorithm for Continuous Outcomes**

- Maximum number of iterations: 100
- Convergence criterion: 0.100D-05

**Optimization Specifications for the EM Algorithm**

- Maximum number of iterations: 500
- Convergence criteria:
  - Loglikelihood change: 0.100D-02
  - Relative loglikelihood change: 0.100D-05
  - Derivative: 0.100D-02

**Optimization Specifications for the M step of the EM Algorithm for Categorical Latent variables**

- Number of M step iterations: 1
- M step convergence criterion: 0.100D-02

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Basis for M step termination: ITERATION

Optimization Specifications for the M step of the EM Algorithm for Censored, Binary or Ordered Categorical (Ordinal), Unordered Categorical (Nominal) and Count Outcomes

| Specification                                           | Value          |
|---------------------------------------------------------|----------------|
| Number of M step iterations                            | 1              |
| M step convergence criterion                           | 0.100D-02      |
| Basis for M step termination                           | ITERATION      |
| Maximum value for logit thresholds                      | 15             |
| Minimum value for logit thresholds                      | -15            |
| Minimum expected cell size for chi-square               | 0.100D-01      |
| Maximum number of iterations for H1                     | 2000           |
| Convergence criterion for H1                            | 0.100D-03      |
| Optimization algorithm                                 | EMA            |

Integration Specifications

| Specification                 | Value          |
|------------------------------|----------------|
| Type                         | STANDARD       |
| Number of integration points | 15             |
| Dimensions of numerical integration | 1          |
| Adaptive quadrature          | ON             |
| Link                         | LOGIT          |

Specifications for Alignment Analysis

| Specification                        | Value          |
|--------------------------------------|----------------|
| Factor mean for reference group      | FIXED          |
| Simplicity function                  | SQRT           |
| Factor variance metric               | Reference group|
| Reference group                      | 1              |
| Tolerance value                      | 0.100D-01      |
| Number of random starts              | 30             |
| Maximum number of iterations         | 5000           |
| Convergence criterion                | 0.100D-02      |
| Cholesky                              | OFF            |

Input data file(s)

15AgeGroupsCountrygroup1.dat

Input data format: FREE

SUMMARY OF DATA

| Summary                         | Value |
|---------------------------------|-------|
| Number of missing data patterns | 7     |
| Number of y missing data patterns | 0  |
| Number of u missing data patterns | 7   |

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value: 0.100
PROPORTION OF DATA PRESENT FOR U

Covariance Coverage

|       | PREDJ_R | LKRSP_R | TRTBD_R |
|-------|---------|---------|---------|
| PREDJ_R | 0.991   |         |         |
| LKRSP_R | 0.984   | 0.992   |         |
| TRTBD_R | 0.985   | 0.988   | 0.993   |

UNIVARIATE PROPORTIONS AND COUNTS FOR CATEGORICAL VARIABLES

PREDJ_R

| Category |  Proportion | Count      |
|----------|-------------|------------|
| Category 1 | 0.685       | 25086.000  |
| Category 2 | 0.147       | 5401.000   |
| Category 3 | 0.168       | 6159.000   |

LKRSP_R

| Category |  Proportion | Count      |
|----------|-------------|------------|
| Category 1 | 0.638       | 23385.000  |
| Category 2 | 0.178       | 6525.000   |
| Category 3 | 0.184       | 6755.000   |

TRTBD_R

| Category |  Proportion | Count      |
|----------|-------------|------------|
| Category 1 | 0.714       | 26227.000  |
| Category 2 | 0.160       | 5884.000   |
| Category 3 | 0.126       | 4614.000   |

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 149

Loglikelihood

H0 Value -168491.700

Information Criteria

Akaike (AIC) 337281.400
Bayesian (BIC) 338550.558
Sample-Size Adjusted BIC 338077.036
\[ (n^* = (n + 2) / 24) \]

Chi-Square Test of Model Fit for the Binary and Ordered Categorical (Ordinal) Outcomes

Pearson Chi-Square

Value 4389.016
Degrees of Freedom 255
P-Value 0.0000

Likelihood Ratio Chi-Square

Value 2709.507
Degrees of Freedom 255
P-Value 0.0000

Chi-Square Test for MCAR under the Unrestricted Latent Class Indicator Model

Pearson Chi-Square

Value 895.204
Degrees of Freedom 436
P-Value 0.0000

Likelihood Ratio Chi-Square

Value 686.572
Degrees of Freedom 436
P-Value 0.0000

FINAL CLASS COUNTS AND PROPORTIONS FOR THE LATENT CLASSES BASED ON THE ESTIMATED MODEL

| Latent Classes | 1  | 1031.00000 | 0.02789 |
|----------------|----|------------|---------|
|                | 2  | 2693.00000 | 0.07284 |
|                | 3  | 3032.00000 | 0.08201 |
|                | 4  | 2410.00000 | 0.06519 |
5  2811.00000  0.07604
6  2975.00000  0.08047
7  2138.00000  0.05783
8  1662.00000  0.04496
9  2125.00000  0.05748
10  445.00000  0.01204
11  3242.00000  0.08770
12  3031.00000  0.08199
13  3107.00000  0.08404
14  3147.00000  0.08513
15  3120.00000  0.08440

MODEL RESULTS

| Two-Tailed | Estimate | S.E. | Est./S.E. | P-Value |
|------------|----------|------|-----------|---------|
| Latent Class 1 (14) | | | | |
| DISCRIM BY | | | | |
| PREDJ_R  | 2.498 | 0.168 | 14.893 | 0.000 |
| LKRSP_R  | 5.740 | 0.861 | 6.664 | 0.000 |
| TRTBD_R  | 4.864 | 0.626 | 7.766 | 0.000 |
| Means | | | | |
| DISCRIM | -0.650 | 0.088 | -7.381 | 0.000 |
| Thresholds | | | | |
| PREDJ_R$1 | 0.118 | 0.127 | 0.927 | 0.354 |
| PREDJ_R$2 | 1.757 | 0.135 | 12.980 | 0.000 |
| LKRSP_R$1 | -0.624 | 0.312 | -1.998 | 0.046 |
| LKRSP_R$2 | 2.911 | 0.435 | 6.691 | 0.000 |
| TRTBD_R$1 | 0.588 | 0.223 | 2.636 | 0.008 |
| TRTBD_R$2 | 4.139 | 0.435 | 9.517 | 0.000 |
| Variances | | | | |
| DISCRIM | 1.810 | 0.287 | 6.311 | 0.000 |
| Latent Class 2 (2) | | | | |
| DISCRIM BY | | | | |
| PREDJ_R  | 2.514 | 0.139 | 18.109 | 0.000 |
| LKRSP_R  | 6.266 | 0.699 | 8.960 | 0.000 |
| TRTBD_R  | 3.487 | 0.287 | 12.131 | 0.000 |

112
| Means          | DISCRIM | -0.151 | 0.050   | -3.009 | 0.003 |
|---------------|---------|--------|---------|--------|-------|
| Thresholds    | PREDJ_R$1 | 0.175 | 0.104   | 1.689  | 0.091 |
|               | PREDJ_R$2 | 1.747 | 0.111   | 15.718 | 0.000 |
|               | LKRSP_R$1 | -0.459| 0.271   | -1.698 | 0.089 |
|               | LKRSP_R$2 | 3.237 | 0.355   | 9.112  | 0.000 |
|               | TRTBD_R$1 | 0.755 | 0.160   | 4.705  | 0.000 |
|               | TRTBD_R$2 | 3.070 | 0.209   | 14.694 | 0.000 |
| Variances     | DISCRIM  | 1.170  | 0.149   | 7.864  | 0.000 |

Latent Class 3 (7)

| DISCRIM BY    | PREDJ_R  | 2.485  | 0.131   | 18.933 | 0.000 |
|               | LKRSP_R  | 4.756  | 0.454   | 10.475 | 0.000 |
|               | TRTBD_R  | 5.656  | 0.577   | 9.801  | 0.000 |
| Means         | DISCRIM  | -0.734 | 0.076   | -9.676 | 0.000 |
| Thresholds    | PREDJ_R$1 | 0.289 | 0.102   | 2.838  | 0.005 |
|               | PREDJ_R$2 | 1.781 | 0.107   | 16.597 | 0.000 |
|               | LKRSP_R$1 | -0.522| 0.198   | -2.637 | 0.008 |
|               | LKRSP_R$2 | 2.386 | 0.232   | 10.288 | 0.000 |
|               | TRTBD_R$1 | 0.474 | 0.214   | 2.210  | 0.027 |
|               | TRTBD_R$2 | 3.913 | 0.317   | 12.328 | 0.000 |
| Variances     | DISCRIM  | 1.135  | 0.155   | 7.335  | 0.000 |

Latent Class 4 (11)

| DISCRIM BY    | PREDJ_R  | 2.501  | 0.135   | 18.553 | 0.000 |
|               | LKRSP_R  | 5.285  | 0.538   | 9.814  | 0.000 |
|               | TRTBD_R  | 5.220  | 0.516   | 10.124 | 0.000 |
| Means         | DISCRIM  | -0.625 | 0.072   | -8.740 | 0.000 |
Thresholds

| Variable      | PREDJ_R$1 | PREDJ_R$2 | LKRSP_R$1 | LKRSP_R$2 | TRTBD_R$1 | TRTBD_R$2 |
|---------------|-----------|-----------|-----------|-----------|-----------|-----------|
|               | 0.185     | 1.813     | -0.757    | 2.653     | 0.607     | 3.999     |
|               | 0.107     | 0.112     | 0.233     | 0.286     | 0.206     | 0.318     |
|               | 1.722     | 16.121    | -3.255    | 9.260     | 2.951     | 12.590    |
|               | 0.085     | 0.000     | 0.001     | 0.000     | 0.003     | 0.000     |

Variances

| DISCRIM | 1.347 | 0.179 | 7.523 | 0.000 |

Latent Class 5 (10)

DISCRIM BY

| DISCRIM | PREDJ_R | LKRSP_R | TRTBD_R |
|---------|---------|---------|---------|
|         | 2.422   | 7.894   | 4.139   |
|         | 0.129   | 1.299   | 0.335   |
|         | 18.796  | 6.078   | 12.344  |
|         | 0.000   | 0.000   | 0.000   |

Means

| DISCRIM | -0.688 | 0.076 | -9.015 | 0.000 |

Thresholds

| Variable      | PREDJ_R$1 | PREDJ_R$2 | LKRSP_R$1 | LKRSP_R$2 | TRTBD_R$1 | TRTBD_R$2 |
|---------------|-----------|-----------|-----------|-----------|-----------|-----------|
|               | 0.192     | 1.773     | -0.726    | 4.156     | 0.430     | 3.465     |
|               | 0.099     | 0.105     | 0.308     | 0.612     | 0.171     | 0.230     |
|               | 1.934     | 16.816    | -2.356    | 6.794     | 2.522     | 15.045    |
|               | 0.053     | 0.000     | 0.018     | 0.000     | 0.012     | 0.000     |

Variances

| DISCRIM | 1.584 | 0.222 | 7.144 | 0.000 |

Latent Class 6 (9)

DISCRIM BY

| DISCRIM | PREDJ_R | LKRSP_R | TRTBD_R |
|---------|---------|---------|---------|
|         | 2.384   | 5.756   | 5.473   |
|         | 0.147   | 0.503   | 0.552   |
|         | 16.199  | 11.434  | 9.909   |
|         | 0.000   | 0.000   | 0.000   |

Means

| DISCRIM | -0.707 | 0.074 | -9.594 | 0.000 |

Thresholds

| PREDJ_R$1 | 0.129 | 0.100 | 1.285 | 0.199 |
| Variable      | Value1       | Value2       | Value3       | Value4       |
|---------------|--------------|--------------|--------------|--------------|
| PREDJ_R$2     | 1.722        | 0.105        | 16.463       | 0.000        |
| LKRSP_R$1     | -0.719       | 0.242        | -2.967       | 0.003        |
| LKRSP_R$2     | 2.970        | 0.300        | 9.913        | 0.000        |
| TRTBD_R$1     | 0.553        | 0.207        | 2.675        | 0.007        |
| TRTBD_R$2     | 4.348        | 0.336        | 12.925       | 0.000        |

**Variances**

| Variable      | Value1       | Value2       | Value3       | Value4       |
|---------------|--------------|--------------|--------------|--------------|
| DISCRIM       | 1.452        | 0.190        | 7.658        | 0.000        |

**Latent Class 7 (12)**

**DISCRIM BY**

| Variable      | Value1       | Value2       | Value3       | Value4       |
|---------------|--------------|--------------|--------------|--------------|
| PREDJ_R       | 2.560        | 0.156        | 16.413       | 0.000        |
| LKRSP_R       | 5.720        | 0.603        | 9.491        | 0.000        |
| TRTBD_R       | 4.330        | 0.428        | 10.127       | 0.000        |

**Means**

| Variable      | Value1       | Value2       | Value3       | Value4       |
|---------------|--------------|--------------|--------------|--------------|
| DISCRIM       | -0.663       | 0.078        | -8.533       | 0.000        |

**Thresholds**

| Variable      | Value1       | Value2       | Value3       | Value4       |
|---------------|--------------|--------------|--------------|--------------|
| PREDJ_R$1     | 0.189        | 0.109        | 1.731        | 0.084        |
| PREDJ_R$2     | 1.896        | 0.120        | 15.744       | 0.000        |
| LKRSP_R$1     | -0.658       | 0.264        | -2.494       | 0.013        |
| LKRSP_R$2     | 2.952        | 0.333        | 8.872        | 0.000        |
| TRTBD_R$1     | 0.504        | 0.187        | 2.692        | 0.007        |
| TRTBD_R$2     | 3.528        | 0.273        | 12.929       | 0.000        |

**Variances**

| Variable      | Value1       | Value2       | Value3       | Value4       |
|---------------|--------------|--------------|--------------|--------------|
| DISCRIM       | 1.727        | 0.237        | 7.295        | 0.000        |

**Latent Class 8 (13)**

**DISCRIM BY**

| Variable      | Value1       | Value2       | Value3       | Value4       |
|---------------|--------------|--------------|--------------|--------------|
| PREDJ_R       | 2.630        | 0.149        | 17.614       | 0.000        |
| LKRSP_R       | 5.065        | 0.609        | 8.323        | 0.000        |
| TRTBD_R       | 4.581        | 0.445        | 10.306       | 0.000        |

**Means**

| Variable      | Value1       | Value2       | Value3       | Value4       |
|---------------|--------------|--------------|--------------|--------------|
| DISCRIM       | -0.740       | 0.086        | -8.633       | 0.000        |

**Thresholds**

| Variable      | Value1       | Value2       | Value3       | Value4       |
|---------------|--------------|--------------|--------------|--------------|
| PREDJ_R$1     | 0.193        | 0.118        | 1.641        | 0.101        |
| PREDJ_R$2     | 1.863        | 0.126        | 14.746       | 0.000        |
| LKRSP_R$1     | -0.615       | 0.243        | -2.529       | 0.011        |
| LKRSP_R$2     | 2.766        | 0.321        | 8.608        | 0.000        |
TRTBD_R$1 0.609 0.203 3.003 0.003
TRTBD_R$2 3.553 0.304 11.683 0.000

Variances
DISCRIM 1.773 0.255 6.950 0.000

Latent Class 9 (1)

DISCRIM BY
PREDJ_R 2.441 0.156 15.663 0.000
LKRSP_R 18.686 16.804 1.112 0.266
TRTBD_R 3.311 0.227 14.602 0.000

Means
DISCRIM 0.000 0.000 999.000 999.000

Thresholds
PREDJ_R$1 0.398 0.093 4.297 0.000
PREDJ_R$2 1.733 0.112 15.494 0.000
LKRSP_R$1 1.615 1.387 1.165 0.244
LKRSP_R$2 10.862 9.564 1.136 0.256
TRTBD_R$1 1.055 0.130 8.103 0.000
TRTBD_R$2 3.223 0.197 16.354 0.000

Variances
DISCRIM 1.000 0.000 999.000 999.000

Latent Class 10 (15)

DISCRIM BY
PREDJ_R 2.650 0.211 12.558 0.000
LKRSP_R 5.367 1.078 4.979 0.000
TRTBD_R 4.556 0.810 5.622 0.000

Means
DISCRIM -0.782 0.122 -6.412 0.000

Thresholds
PREDJ_R$1 0.147 0.157 0.938 0.348
PREDJ_R$2 1.957 0.190 10.301 0.000
LKRSP_R$1 -0.645 0.380 -1.697 0.090
LKRSP_R$2 2.901 0.545 5.319 0.000
TRTBD_R$1 0.302 0.285 1.061 0.289
TRTBD_R$2 3.910 0.589 6.643 0.000
| Latent Class 11 (5) |
|--------------------|
| **DISCRIM** |
| PREDJ_R 2.465 0.143 17.222 0.000 |
| LKRSP_R 5.820 0.571 10.190 0.000 |
| TRTBD_R 4.832 0.421 11.472 0.000 |

| Means |
|-------|
| DISCRIM -0.763 0.075 -10.137 0.000 |

| Latent Class 12 (8) |
|--------------------|
| **DISCRIM** |
| PREDJ_R 2.505 0.143 17.528 0.000 |
| LKRSP_R 5.694 0.544 10.466 0.000 |
| TRTBD_R 4.736 0.415 11.411 0.000 |

| Means |
|-------|
| DISCRIM -0.730 0.075 -9.798 0.000 |

| Thresholds |
|------------|
| PREDJ_R$1 0.344 0.102 3.374 0.001 |
| PREDJ_R$2 1.967 0.110 17.931 0.000 |
| LKRSP_R$1 -0.954 0.248 -3.846 0.000 |
| LKRSP_R$2 2.744 0.303 9.061 0.000 |
| TRTBD_R$1 0.442 0.191 2.319 0.020 |
| TRTBD_R$2 3.517 0.238 14.775 0.000 |

| Variances |
|-----------|
| DISCRIM 1.154 0.147 7.846 0.000 |

| Variances |
|-----------|
| DISCRIM 1.264 0.161 7.858 0.000 |
Latent Class 13 (3)

DISCRIM BY
   PREDJ_R  2.501  0.133  18.811  0.000
   LKRSP_R  6.471  0.825   7.846  0.000
   TRTBD_R  3.272  0.253  12.935  0.000

Means
   DISCRIM -0.400  0.060  -6.681  0.000

Thresholds
   PREDJ_R$1  0.277  0.102   2.720  0.007
   PREDJ_R$2  1.831  0.107  17.041  0.000
   LKRSP_R$1 -0.769  0.288  -2.669  0.008
   LKRSP_R$2  3.126  0.388   8.057  0.000
   TRTBD_R$1  0.623  0.146   4.264  0.000
   TRTBD_R$2  3.046  0.190  16.007  0.000

Variances
   DISCRIM  1.333  0.169   7.901  0.000

Latent Class 14 (4)

DISCRIM BY
   PREDJ_R  2.563  0.155  16.513  0.000
   LKRSP_R  5.828  0.567  10.284  0.000
   TRTBD_R  3.965  0.343  11.552  0.000

Means
   DISCRIM -0.668  0.073  -9.186  0.000

Thresholds
   PREDJ_R$1  0.321  0.106   3.035  0.002
   PREDJ_R$2  2.037  0.115  17.732  0.000
   LKRSP_R$1 -0.917  0.260  -3.523  0.000
   LKRSP_R$2  3.126  0.314   8.800  0.000
   TRTBD_R$1  0.510  0.168   3.043  0.002
   TRTBD_R$2  3.128  0.204  15.362  0.000

Variances
   DISCRIM  1.175  0.155   7.585  0.000

Latent Class 15 (6)

DISCRIM BY
| Variable   | Mean   | Std Err | t-Value | p-Value |
|------------|--------|---------|---------|---------|
| DISCRIM    | -0.784 | 0.076   | -10.297 | 0.000   |

Thresholds

| Variable   | Threshold 1 | Threshold 2 |
|------------|-------------|-------------|
| PREDJ_R$1  | 0.233       | 1.755       |
| LKRSP_R$1  | -0.599      | 2.314       |
| TRTBD_R$1  | 0.399       | 4.759       |

Variances

| DISCRIM | 1.151 | 0.160 | 7.194 | 0.000 |

Categorical Latent Variables

| Category  | Mean   | Std Err | t-Value | p-Value |
|-----------|--------|---------|---------|---------|
| C#1       | -1.107 | 0.036   | -30.824 | 0.000   |
| C#2       | -0.147 | 0.026   | -5.595  | 0.000   |
| C#3       | -0.029 | 0.026   | -1.122  | 0.262   |
| C#4       | -0.258 | 0.027   | -9.521  | 0.000   |
| C#5       | -0.104 | 0.026   | -4.009  | 0.000   |
| C#6       | -0.048 | 0.026   | -1.857  | 0.063   |
| C#7       | -0.378 | 0.028   | -13.462 | 0.000   |
| C#8       | -0.630 | 0.030   | -20.739 | 0.000   |
| C#9       | -0.384 | 0.029   | -13.362 | 0.000   |
| C#10      | -1.948 | 0.051   | -38.433 | 0.000   |
| C#11      | 0.038  | 0.025   | 1.529   | 0.126   |
| C#12      | -0.029 | 0.026   | -1.135  | 0.256   |
| C#13      | -0.004 | 0.025   | -0.165  | 0.869   |
| C#14      | 0.009  | 0.025   | 0.341   | 0.733   |

Approximate Measurement Invariance (Noninvariance) for Groups

Intercepts/Thresholds

| Variable   | Groups |
|------------|--------|
| PREDJ_R$1  | 14 2 7 11 10 9 12 13 1 15 5 8 3 4 6 |
| PREDJ_R$2  | 14 2 7 11 10 9 12 13 1 15 5 8 3 4 6 |
| LKRSP_R$1  | 14 2 7 11 10 9 12 13 1 15 5 8 3 4 6 |
| LKRSP_R$2  | 14 2 7 11 10 9 12 13 1 15 5 8 3 4 6 |
Loadings for DISCRIM

| Latent Group Factor | TRTBD_R$1 | TRTBD_R$2 |
|---------------------|-----------|-----------|
| Latent Group Factor | 14 2 7 11 10 9 12 13 (1) 15 5 8 3 4 6 | 14 (2) 7 11 10 9 12 13 (1) 15 5 8 (3) (4) 6 |

FACTOR MEAN COMPARISON AT THE 5% SIGNIFICANCE LEVEL IN DESCENDING ORDER

Results for Factor DISCRIM

| Ranking | Class | Value | Mean | Groups With Significantly Smaller Factor Mean |
|---------|-------|-------|------|---------------------------------------------|
| 1       | 9     | 1     | 0.000| 2 3 11 14 12 4 10 9 8 7 13 5 15 6           |
| 2       | 2     | 2     | -0.151| 3 11 14 12 4 10 9 8 7 13 5 15 6             |
| 3       | 13    | 3     | -0.400| 11 14 12 4 10 9 8 7 13 5 15 6               |
| 4       | 4     | 11    | -0.625| 8 7 5 6                                     |
| 5       | 1     | 14    | -0.650|                                              |
| 6       | 7     | 12    | -0.663|                                              |
| 7       | 14    | 4     | -0.668| 6                                             |
| 8       | 5     | 10    | -0.688|                                              |
| 9       | 6     | 9     | -0.707|                                              |
| 10      | 12    | 8     | -0.730|                                              |
| 11      | 3     | 7     | -0.734|                                              |
| 12      | 8     | 13    | -0.740|                                              |
| 13      | 11    | 5     | -0.763|                                              |
| 14      | 10    | 15    | -0.782|                                              |
| 15      | 15    | 6     | -0.784|                                              |

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.828E-06 (ratio of smallest to largest eigenvalue)

[Parts of the output omitted.]
ALIGNMENT RESULTS FOR DISCRIM

FIT FUNCTION VALUES FOR ALIGNMENT SIMPLICITY FUNCTION USING DIFFERENT STARTING VALUES
IN ORDER OF BEST TO WORST.

| VALUE       | DRAW |
|-------------|------|
| -517.9749   | 2    |
| -517.9749   | 21   |
| -517.9749   | 24   |
| -517.9749   | 30   |
| -517.9749   | 3    |
| -517.9749   | 1    |
| -517.9749   | 29   |
| -517.9749   | 23   |
| -517.9749   | 17   |
| -517.9749   | 11   |
| -517.9749   | 28   |
| -519.2393   | 19   |
| -519.2393   | 22   |
| -519.2393   | 5    |
| -519.2393   | 25   |
| -519.2393   | 4    |
| -519.2393   | 27   |
| -519.2393   | 8    |
| -519.2393   | 7    |
| -519.2393   | 13   |
| -519.2393   | 16   |
| -519.2393   | 6    |
| -519.2393   | 20   |
| -519.2393   | 10   |
| -519.2393   | 12   |
| -519.2393   | 14   |
| -519.2393   | 18   |
| -519.2393   | 15   |
| -519.2393   | 9    |
| -519.2393   | 26   |

[Parts of the output omitted.]
TITLE:
Approximate measurement invariance across age, Country Group 2;
DATA:
FILE = "15AgeGroupsCountrygroup2.dat";

VARIABLE:
NAMES = predj_r lkrsp_r trtbd_r age_group;
    missing=.;
    usevariables = predj_r lkrsp_r trtbd_r age_group;
    categorical = predj_r lkrsp_r trtbd_r;
    classes=c(15);
    knownclass=c(age_group);

ANALYSIS:
    type=mixture;
    estimator=mlf;
    algorithm=integration;
    alignment = fixed(1);

MODEL:
    %overall%
    discrim BY predj_r lkrsp_r trtbd_r;

OUTPUT:
    tech1 tech8 cinterval;

*** WARNING
Data set contains unknown or missing values for variable AGE_GROUP.
This variable is used to determine the KNOWNCLASS specification.
Number of such cases: 63

*** WARNING
Data set contains cases with missing on all variables.
These cases were not included in the analysis.
Number of cases with missing on all variables: 63
2 WARNING(S) FOUND IN THE INPUT INSTRUCTIONS
e01 Countries, traditional measurement invariance;

SUMMARY OF ANALYSIS

Number of groups 1
Number of observations 19146
Number of dependent variables 3
Number of independent variables 0
Number of continuous latent variables 1
Number of categorical latent variables 1

Observed dependent variables

   Binary and ordered categorical (ordinal)
     PREDJ_R  LKRSP_R  TRTBD_R

Continuous latent variables
   DISCRIM

Categorical latent variables
   C

Knownclass  C

Estimator MLF
Information matrix OBSERVED

Optimization Specifications for the Quasi-Newton Algorithm for Continuous Outcomes
   Maximum number of iterations 100
   Convergence criterion 0.100D-05

Optimization Specifications for the EM Algorithm
   Maximum number of iterations 500
   Convergence criteria
     Loglikelihood change 0.100D-02
     Relative loglikelihood change 0.100D-05
     Derivative 0.100D-02

Optimization Specifications for the M step of the EM Algorithm for Categorical Latent variables
   Number of M step iterations 1
   M step convergence criterion 0.100D-02
   Basis for M step termination ITERATION

Optimization Specifications for the M step of the EM Algorithm for
Censored, Binary or Ordered Categorical (Ordinal), Unordered Categorical (Nominal) and Count Outcomes

Number of M step iterations 1
M step convergence criterion 0.100D-02
Basis for M step termination ITERATION
Maximum value for logit thresholds 15
Minimum value for logit thresholds -15
Minimum expected cell size for chi-square 0.100D-01
Maximum number of iterations for H1 2000
Convergence criterion for H1 0.100D-03
Optimization algorithm EMA

Integration Specifications
Type STANDARD
Number of integration points 15
Dimensions of numerical integration 1
Adaptive quadrature ON
Link LOGIT

Specifications for Alignment Analysis
Factor mean for reference group FIXED
Simplicity function SQRT
Factor variance metric Reference group Reference group
Reference group 1
Tolerance value 0.100D-01
Number of random starts 30
Maximum number of iterations 5000
Convergence criterion 0.100D-02

Cholesky OFF

Input data file(s)
15AgeGroupsCountrygroup2.dat
Input data format FREE

SUMMARY OF DATA

Number of missing data patterns 7
Number of y missing data patterns 0
Number of u missing data patterns 7

COVARIANCE COVERAGE OF DATA

Minimum covariance coverage value 0.100
PROPORTION OF DATA PRESENT FOR U

Covariance Coverage

|       | PREDJ_R | LKRSP_R | TRTBD_R |
|-------|---------|---------|---------|
| PREDJ_R | 0.996   | -------- | -------- |
| LKRSP_R | 0.991   | 0.995   | -------- |
| TRTBD_R | 0.990   | 0.991   | 0.994   |

UNIVARIATE PROPORTIONS AND COUNTS FOR CATEGORICAL VARIABLES

PREDJ_R

| Category | Proportion | Count     |
|----------|------------|-----------|
| Category 1 | 0.628      | 11968.000 |
| Category 2 | 0.193      | 3682.000  |
| Category 3 | 0.179      | 3418.000  |

LKRSP_R

| Category | Proportion | Count     |
|----------|------------|-----------|
| Category 1 | 0.629      | 11982.000 |
| Category 2 | 0.203      | 3867.000  |
| Category 3 | 0.168      | 3198.000  |

TRTBD_R

| Category | Proportion | Count     |
|----------|------------|-----------|
| Category 1 | 0.734      | 13975.000 |
| Category 2 | 0.166      | 3152.000  |
| Category 3 | 0.100      | 1910.000  |

THE MODEL ESTIMATION TERMINATED NORMALLY

MODEL FIT INFORMATION

Number of Free Parameters 149

Loglikelihood

| H0 Value |
|----------|
| -90400.627 |

Information Criteria

| Method             | Value       |
|--------------------|-------------|
| Akaike (AIC)       | 181099.254  |
| Bayesian (BIC)     | 182270.371  |
| Sample-Size Adjusted BIC | 181796.857 |
(n* = (n + 2) / 24)

Chi-Square Test of Model Fit for the Binary and Ordered Categorical (Ordinal) Outcomes

Pearson Chi-Square

Value 1733.106
Degrees of Freedom 255
P-Value 0.0000

Likelihood Ratio Chi-Square

Value 1451.191
Degrees of Freedom 255
P-Value 0.0000

Chi-Square Test for MCAR under the Unrestricted Latent Class Indicator Model

Pearson Chi-Square

Value 737.522
Degrees of Freedom 436
P-Value 0.0000

Likelihood Ratio Chi-Square

Value 411.443
Degrees of Freedom 436
P-Value 0.7953

FINAL CLASS COUNTS AND PROPORTIONS FOR THE LATENT CLASSES BASED ON THE ESTIMATED MODEL

Latent Classes

|   |   |   |
|---|---|---|
| 1 | 1701.00000 | 0.08884 |
| 2 | 1251.00000 | 0.06534 |
| 3 | 1741.00000 | 0.09093 |
| 4 | 1350.00000 | 0.07051 |
| 5 | 1409.00000 | 0.07359 |
| 6 | 1602.00000 | 0.08367 |
### MODEL RESULTS

| Latent Class 1 (6) | DISCRIM BY |
|-------------------|------------|
|                   | PREDJ_R    | 1.768 | 0.146 | 12.101 | 0.000 |
|                   | LKRSP_R    | 4.912 | 0.922 | 5.327  | 0.000 |
|                   | TRTBD_R    | 3.398 | 0.403 | 8.440  | 0.000 |

#### Means

- DISCRIM: -1.156, 0.165, -7.018, 0.000

#### Thresholds

- PREDJ_R$1: -0.608, 0.231, -2.638, 0.008
- PREDJ_R$2: 1.001, 0.229, 4.369, 0.000
- LKRSP_R$1: -2.255, 0.706, -3.193, 0.001
- LKRSP_R$2: 0.947, 0.607, 1.561, 0.119
- TRTBD_R$1: -0.582, 0.433, -1.343, 0.179
- TRTBD_R$2: 1.934, 0.433, 4.469, 0.000

#### Variances

- DISCRIM: 0.937, 0.180, 5.220, 0.000

### Latent Class 2 (2)

#### DISCRIM BY

- PREDJ_R: 1.736, 0.162, 10.684, 0.000
- LKRSP_R: 7.215, 2.435, 2.963, 0.003
- TRTBD_R: 2.275, 0.278, 8.173, 0.000

#### Means

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| Latent Class 3 (8) | Latent Class 4 (3) |
|-------------------|-------------------|
| **DISCRIM**       | **DISCRIM**       |
| -0.193            | 1.858             |
| 0.147             | 0.140             |
| -1.319            | 13.255            |
| 0.187             | 0.000             |

**Thresholds**

| PREDJ_R$1   | -0.838 | 0.248 | -3.378 | 0.001 |
| PREDJ_R$2   | 0.765  | 0.247 | 3.098  | 0.002 |
| LKRSP_R$1   | -3.456 | 1.510 | -2.289 | 0.022 |
| LKRSP_R$2   | 2.277  | 1.266 | 1.799  | 0.072 |
| TRTBD_R$1   | 0.121  | 0.328 | 0.369  | 0.712 |
| TRTBD_R$2   | 2.356  | 0.344 | 6.853  | 0.000 |

**Variances**

| DISCRIM   | 1.223 | 0.235 | 5.213 | 0.000 |
| DISCRIM   | 13.706 | 56.357 | 0.243 | 0.808 |

**Latent Class 4 (3)**

| DISCRIM   | 1.858 | 0.140 | 13.255 | 0.000 |
| DISCRIM   | 4.888 | 0.937 | 5.219  | 0.000 |
| DISCRIM   | 2.668 | 0.311 | 8.589  | 0.000 |

**Means**

| DISCRIM   | -0.420 | 0.132 | -3.173 | 0.002 |

**Thresholds**

| PREDJ_R$1  | -0.723 | 0.307 | -2.352 | 0.019 |
| PREDJ_R$2  | 0.755  | 0.337 | 2.236  | 0.025 |
| LKRSP_R$1  | -12.819 | 27.774 | -0.462 | 0.644 |
| LKRSP_R$2  | 1.894  | 2.039 | 0.929  | 0.353 |
| TRTBD_R$1  | -0.585 | 0.630 | -0.929 | 0.353 |
| TRTBD_R$2  | 1.781  | 0.677 | 2.629  | 0.009 |
| Variable       | Estimate 1 | SE 1  | Estimate 2 | SE 2  | p-value |
|----------------|------------|-------|------------|-------|---------|
| PREDJ_R$1     | -0.784     | 0.233 | -3.365     | 0.001 |
| PREDJ_R$2     | 0.741      | 0.234 | 3.161      | 0.002 |
| LKRSP_R$1     | -2.556     | 0.731 | -3.496     | 0.000 |
| LKRSP_R$2     | 1.333      | 0.635 | 2.101      | 0.036 |
| TRTBD_R$1     | 0.189      | 0.339 | 0.556      | 0.578 |
| TRTBD_R$2     | 2.531      | 0.358 | 7.068      | 0.000 |

**Variances**

| Variable       | Estimate 1 | SE 1  | p-value |
|----------------|------------|-------|---------|
| DISCRIM        | 1.258      | 0.231 |         |

**Latent Class 5 (11)**

**DISCRIM BY**

| Variable       | Estimate 1 | SE 1  | p-value |
|----------------|------------|-------|---------|
| PREDJ_R        | 1.870      | 0.141 |         |
| LKRSP_R        | 3.399      | 0.491 |         |
| TRTBD_R        | 3.269      | 0.390 |         |

**Means**

| Variable       | Estimate 1 | SE 1  | p-value |
|----------------|------------|-------|---------|
| DISCRIM        | -1.209     | 0.176 |         |

**Thresholds**

| Variable       | Estimate 1 | SE 1  | p-value |
|----------------|------------|-------|---------|
| PREDJ_R$1      | -0.764     | 0.250 |         |
| PREDJ_R$2      | 1.021      | 0.254 |         |
| LKRSP_R$1      | -1.966     | 0.507 |         |
| LKRSP_R$2      | 1.139      | 0.462 |         |
| TRTBD_R$1      | -0.679     | 0.445 |         |
| TRTBD_R$2      | 2.121      | 0.456 |         |

**Variances**

| Variable       | Estimate 1 | SE 1  | p-value |
|----------------|------------|-------|---------|
| DISCRIM        | 1.936      | 0.361 |         |

**Latent Class 6 (5)**

**DISCRIM BY**

| Variable       | Estimate 1 | SE 1  | p-value |
|----------------|------------|-------|---------|
| PREDJ_R        | 1.715      | 0.131 |         |
| LKRSP_R        | 4.417      | 0.636 |         |
| TRTBD_R        | 4.488      | 0.707 |         |

**Means**

| Variable       | Estimate 1 | SE 1  | p-value |
|----------------|------------|-------|---------|
| DISCRIM        | -0.995     | 0.138 |         |

**Thresholds**

| Variable       | Estimate 1 | SE 1  | p-value |
|----------------|------------|-------|---------|
| PREDJ_R$1      | -0.499     | 0.206 |         |
| PREDJ_R$2      | 1.112      | 0.206 |         |
| LKRSP_R$1      | -2.236     | 0.546 |         |
| LKRSP_R$2 | 0.818 | 0.480 | 1.703 | 0.089 |
| TRTBD_R$1 | -0.976 | 0.515 | -1.894 | 0.058 |
| TRTBD_R$2 | 2.075 | 0.485 | 4.283 | 0.000 |

Variances

| DISCRIM | 0.806 | 0.156 | 5.157 | 0.000 |

Latent Class 7 (4)

**DISCRIM BY**

| PREDJ_R | 1.763 | 0.176 | 9.998 | 0.000 |
| LKRSP_R | 6.784 | 1.957 | 3.466 | 0.001 |
| TRTBD_R | 2.804 | 0.371 | 7.552 | 0.000 |

Means

| DISCRIM | -0.841 | 0.166 | -5.066 | 0.000 |

Thresholds

| PREDJ_R$1 | -0.638 | 0.214 | -2.981 | 0.003 |
| PREDJ_R$2 | 0.884 | 0.214 | 4.137 | 0.000 |
| LKRSP_R$1 | -3.766 | 1.305 | -2.886 | 0.004 |
| LKRSP_R$2 | 1.304 | 0.820 | 1.590 | 0.112 |
| TRTBD_R$1 | -0.240 | 0.339 | -0.708 | 0.479 |
| TRTBD_R$2 | 2.278 | 0.351 | 6.493 | 0.000 |

Variances

| DISCRIM | 0.977 | 0.218 | 4.488 | 0.000 |

Latent Class 8 (7)

**DISCRIM BY**

| PREDJ_R | 1.869 | 0.135 | 13.864 | 0.000 |
| LKRSP_R | 4.232 | 0.668 | 6.336 | 0.000 |
| TRTBD_R | 2.995 | 0.338 | 8.862 | 0.000 |

Means

| DISCRIM | -1.129 | 0.160 | -7.059 | 0.000 |

Thresholds

| PREDJ_R$1 | -0.768 | 0.244 | -3.148 | 0.002 |
| PREDJ_R$2 | 0.935 | 0.245 | 3.819 | 0.000 |
| LKRSP_R$1 | -1.947 | 0.634 | -3.072 | 0.002 |
| LKRSP_R$2 | 1.166 | 0.553 | 2.106 | 0.035 |
| TRTBD_R$1 | -0.309 | 0.397 | -0.780 | 0.435 |
| TRTBD_R$2 | 1.958 | 0.403 | 4.863 | 0.000 |
### Latent Class 9 (14)

**DISCRIM**
- **PREDJ_R**
  - DISCRIM: 1.771
  - PREDJ_R$: 1.771
- **LKRSP_R**
  - DISCRIM: 3.219
  - LKRSP_R$: -1.849
- **TRTBD_R**
  - DISCRIM: 4.905
  - TRTBD_R$: -0.990

**Means**
- DISCRIM: -1.249

**Thresholds**
- **PREDJ_R$:**
  - PREDJ_R$:1: -0.690
  - PREDJ_R$:2: 0.838
- **LKRSP_R$:**
  - LKRSP_R$:1: -1.849
  - LKRSP_R$:2: 0.774
- **TRTBD_R$:**
  - TRTBD_R$:1: -0.990
  - TRTBD_R$:2: 2.654

**Variances**
- DISCRIM: 1.978

### Latent Class 10 (15)

**DISCRIM**
- **PREDJ_R**
  - DISCRIM: 1.780
  - PREDJ_R$: 0.838
- **LKRSP_R**
  - DISCRIM: 3.710
  - LKRSP_R$: -1.822
- **TRTBD_R**
  - DISCRIM: 9.543
  - TRTBD_R$: -4.191

**Means**
- DISCRIM: -1.218

**Thresholds**
- **PREDJ_R$:**
  - PREDJ_R$:1: -0.654
  - PREDJ_R$:2: 0.547
- **LKRSP_R$:**
  - LKRSP_R$:1: -1.822
  - LKRSP_R$:2: -0.141
- **TRTBD_R$:**
  - TRTBD_R$:1: -4.191
  - TRTBD_R$:2: 2.670

**Variances**
- DISCRIM: 1.588
Latent Class 11 (10)

DISCRIM BY
  PREDJ_R  1.505  0.362  4.156  0.000
  LKRSP_R  6.827  1.830  3.731  0.000
  TRTBD_R  3.457  0.869  3.977  0.000

Means
  DISCRIM  -1.114  0.305  -3.648  0.000

Thresholds
  PREDJ_R$1  -0.492  0.199  -2.476  0.013
  PREDJ_R$2   0.885  0.199   4.444  0.000
  LKRSP_R$1  -3.345  1.292  -2.588  0.010
  LKRSP_R$2   1.509  0.874   1.726  0.084
  TRTBD_R$1  -0.562  0.431  -1.304  0.192
  TRTBD_R$2   2.025  0.447   4.535  0.000

Variances
  DISCRIM   1.528  0.684   2.234  0.025

Latent Class 12 (12)

DISCRIM BY
  PREDJ_R  1.790  0.135  13.273  0.000
  LKRSP_R  3.803  0.524   7.263  0.000
  TRTBD_R  3.634  0.492   7.393  0.000

Means
  DISCRIM  -1.193  0.170  -7.006  0.000

Thresholds
  PREDJ_R$1  -0.676  0.235  -2.881  0.004
  PREDJ_R$2   1.274  0.250   5.099  0.000
  LKRSP_R$1  -2.296  0.549  -4.181  0.000
  LKRSP_R$2   0.926  0.502   1.844  0.065
  TRTBD_R$1  -1.012  0.500  -2.022  0.043
  TRTBD_R$2   2.136  0.474   4.503  0.000

Variances
  DISCRIM   1.927  0.347   5.559  0.000

Latent Class 13 (9)
### DISCRIM BY

|       |       |       |       |
|-------|-------|-------|-------|
| PREDJ_R | 1.721 | 0.147 | 11.682 | 0.000 |
| LKRSP_R | 5.183 | 0.920 | 5.637  | 0.000 |
| TRTBD_R | 3.518 | 0.393 | 8.955  | 0.000 |

**Means**

|       |       |       |       |
|-------|-------|-------|-------|
| DISCRIM | -1.061 | 0.164 | -6.473 | 0.000 |

**Thresholds**

|       |       |       |       |
|-------|-------|-------|-------|
| PREDJ_R$1 | -0.857 | 0.227 | -3.779 | 0.000 |
| PREDJ_R$2 | 0.793  | 0.225 | 3.521  | 0.000 |
| LKRSP_R$1 | -2.268 | 0.736 | -3.083 | 0.002 |
| LKRSP_R$2 | 1.797  | 0.695 | 2.584  | 0.010 |
| TRTBD_R$1 | -0.571 | 0.461 | -1.240 | 0.215 |
| TRTBD_R$2 | 2.372  | 0.466 | 5.087  | 0.000 |

**Variances**

|       |       |       |       |
|-------|-------|-------|-------|
| DISCRIM | 1.287 | 0.244 | 5.268  | 0.000 |

**Latent Class 14 (13)**

|       |       |       |       |
|-------|-------|-------|-------|
| PREDJ_R | 1.791 | 0.139 | 12.878 | 0.000 |
| LKRSP_R | 5.796 | 1.939 | 2.990  | 0.003 |
| TRTBD_R | 3.140 | 0.407 | 7.722  | 0.000 |

**Means**

|       |       |       |       |
|-------|-------|-------|-------|
| DISCRIM | -1.098 | 0.178 | -6.172 | 0.000 |

**Thresholds**

|       |       |       |       |
|-------|-------|-------|-------|
| PREDJ_R$1 | -0.646 | 0.244 | -2.655 | 0.008 |
| PREDJ_R$2 | 1.108  | 0.250 | 4.422  | 0.000 |
| LKRSP_R$1 | -2.935 | 1.175 | -2.497 | 0.013 |
| LKRSP_R$2 | 1.361  | 0.768 | 1.771  | 0.077 |
| TRTBD_R$1 | -0.577 | 0.416 | -1.387 | 0.166 |
| TRTBD_R$2 | 1.816  | 0.438 | 4.148  | 0.000 |

**Variances**

|       |       |       |       |
|-------|-------|-------|-------|
| DISCRIM | 1.656 | 0.379 | 4.371  | 0.000 |

**Latent Class 15 (1)**

|       |       |       |       |
|-------|-------|-------|-------|
| PREDJ_R | 1.967 | 0.152 | 12.984 | 0.000 |
| LKRSP_R | 3.860 | 0.515 | 7.500  | 0.000 |
TRTBD_R  2.282  0.200  11.416  0.000

Means
DISCRIM  0.000  0.000  999.000  999.000

Thresholds
PREDJ_R$1  -1.111  0.108  -10.292  0.000
PREDJ_R$2  0.525  0.103   5.091  0.000
LKRSP_R$1  -1.511  0.224  -6.750  0.000
LKRSP_R$2  1.452  0.225   6.467  0.000
TRTBD_R$1  0.303  0.115   2.640  0.008
TRTBD_R$2  2.392  0.176  13.580  0.000

Variances
DISCRIM  1.000  0.000  999.000  999.000

Categorical Latent Variables

Means
C#1  0.464  0.039  11.901  0.000
C#2  0.157  0.042   3.775  0.000
C#3  0.488  0.039  12.475  0.000
C#4  0.233  0.041   5.700  0.000
C#5  0.276  0.041   6.808  0.000
C#6  0.405  0.039  10.243  0.000
C#7  0.275  0.041   6.771  0.000
C#8  0.496  0.039  12.794  0.000
C#9  -0.736  0.054  -13.697  0.000
C#10 -1.618  0.075  -21.518  0.000
C#11  0.370  0.040   9.308  0.000
C#12  0.059  0.043   1.385  0.166
C#13  0.457  0.039  11.703  0.000
C#14 -0.335  0.047  -7.065  0.000

APPROXIMATE MEASUREMENT INVARIANCE (NONINVARIANCE) FOR GROUPS

Intercepts/Thresholds
PREDJ_R$1  6  2  8  3  11  5  4  7  14  15  10  12  9  13  1
PREDJ_R$2  6  2  8  3  11  5  4  7  14  15  10  (12)  9  13  1
LKRSP_R$1  6  2  8  3  11  5  4  7  14  15  10  12  9  13  1
LKRSP_R$2  6  2  8  3  11  5  4  7  14  15  10  12  9  13  1
TRTBD_R$1  6 (2)  8 (3)  11  5  4  7  14  15  10  12  9  13  1
TRTBD_R$2  6  2  8  3  11  5  4  7  14  15  10  12  9  13  1

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Loadings for DISCRIM

| Predictor     | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---------------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|
| PREDJ_R       | 6 | 2 | 8 | 3 | 11| 5 | 4 | 7 | 14| 15 | 10 | 12 | 9  | 13 | 1  |
| LKRSP_R       | 6 | 2 | 8 | 3 | 11| 5 | 4 | 7 | 14| 15 | 10 | 12 | 9  | 13 | 1  |
| TRTBD_R       | 6 | 2 | 8 | 3 | 11| 5 | 4 | 7 | 14| 15 | 10 | 12 | 9  | 13 | 1  |

FACTOR MEAN COMPARISON AT THE 5% SIGNIFICANCE LEVEL IN DESCENDING ORDER

Results for Factor DISCRIM

| Ranking | Latent Class | Group Value | Mean Factor | Groups With Significantly Smaller Factor Mean |
|---------|--------------|-------------|-------------|---------------------------------------------|
| 1       | 15           | 1           | 0.000       | 3 4 5 9 13 10 7 6 12 11 15 14               |
| 2       | 2            | 2           | -0.193      | 3 4 5 9 13 10 7 6 12 11 15 14               |
| 3       | 4            | 3           | -0.420      | 4 5 9 13 10 7 6 12 11 15 14 14             |
| 4       | 7            | 4           | -0.841      | 9 13 7 6 12 11 14                          |
| 5       | 6            | 5           | -0.995      |                                             |
| 6       | 13           | 9           | -1.061      |                                             |
| 7       | 14           | 13          | -1.098      |                                             |
| 8       | 11           | 10          | -1.114      |                                             |
| 9       | 8            | 7           | -1.129      |                                             |
| 10      | 1            | 6           | -1.156      |                                             |
| 11      | 12           | 12          | -1.193      |                                             |
| 12      | 5            | 11          | -1.209      |                                             |
| 13      | 10           | 15          | -1.218      |                                             |
| 14      | 9            | 14          | -1.249      |                                             |
| 15      | 3            | 8           | -4.005      |                                             |

QUALITY OF NUMERICAL RESULTS

Condition Number for the Information Matrix 0.117E-06
(ratio of smallest to largest eigenvalue)

[Parts of the output omitted.]

ALIGNMENT RESULTS FOR DISCRIM
FIT FUNCTION VALUES FOR ALIGNMENT SIMPLICITY FUNCTION USING DIFFERENT STARTING VALUES
IN ORDER OF BEST TO WORST.

| VALUE   | DRAW |
|---------|------|
| -586.5920 | 6    |
| -586.5920 | 5    |
| -586.5920 | 21   |
| -586.5920 | 29   |
| -586.5920 | 30   |
| -586.5920 | 9    |
| -586.5920 | 27   |
| -586.5920 | 24   |
| -586.5920 | 13   |
| -586.5920 | 20   |
| -586.5920 | 2    |
| -589.0512 | 15   |
| -589.0512 | 10   |
| -589.0512 | 16   |
| -589.0512 | 26   |
| -589.0512 | 22   |
| -589.0512 | 19   |
| -589.0512 | 12   |
| -589.6308 | 7    |
| -589.6308 | 14   |
| -589.6308 | 8    |
| -589.6308 | 28   |
| -589.6308 | 17   |
| -589.6308 | 3    |
| -589.6308 | 11   |
| -589.6308 | 18   |
| -589.6308 | 4    |
| -592.0900 | 25   |
| -592.0900 | 1    |
| -592.0900 | 23   |

[Parts of the output omitted.]
Statistical Software Used

Analyses were conducted with Mplus (version 7.4) and with R. We used knitr to develop this supplemental material. Below are details on the R software and R packages used.

```r
## R version 3.3.2 (2016-10-31)
## Platform: x86_64-apple-darwin13.4.0 (64-bit)
## Running under: macOS Sierra 10.12.4
##
## locale:
## [1] en_GB.UTF-8/en_GB.UTF-8/en_GB.UTF-8/C/en_GB.UTF-8/en_GB.UTF-8

## attached base packages:
## [1] stats graphics grDevices utils datasets methods base

## other attached packages:
## [1] readr_1.0.0 gridExtra_2.2.1 ggplot2_2.2.1
## [4] foreign_0.8-67 reshape_0.8.6 MplusAutomation_0.6-4
## [7] car_2.1-4 lattice_0.20-34 haven_1.0.0
## [10] knitr_1.15.1

## loaded via a namespace (and not attached):
## [1] Rcpp_0.12.10 nloptr_1.0.4 plyr_1.8.4
## [4] tools_3.3.2 boot_1.3-18 digest_0.6.12
## [7] lme4_1.1-12 gtable_0.2.0 evaluate_0.10
## [10] tibble_1.2 nlme_3.1-131 mgcv_1.8-17
## [13] texreg_1.36.23 Matrix_1.2-8 psych_1.6.12
## [16] yaml_2.1.14 parallel_3.3.2 SparseM_1.74
## [19] proto_1.0.0 codah_0.19-1 stringr_1.2.0
## [22] MatrixModels_0.4-1 rprojroot_1.2 grid_3.3.2
## [25] nnet_7.3-12 tcltk_3.3.2 rmarkdown_1.5
## [28] gsubfn_0.6-6 minqa_1.2.4 pander_0.6.0
## [31] magrittr_1.5 scales_0.4.1 backports_1.0.5
## [34] codetools_0.2-15 htmltools_0.3.6 MASS_7.3-45
## [37] splines_3.3.2 assertthat_0.1 pbkrtest_0.4-6
## [40] mnormt_1.5-5 colorspace_1.3-2 xtable_1.8-2
## [43] labeling_0.3 quantreg_5.29 stringi_1.1.2
## [46] lazyeval_0.2.0 munsell_0.4.3
```

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