**Supplementary Materials – Simulation Code**

require(MASS)

require(lavaan)

require(GenOrd)

library(distr)

library(truncdist)

library(GenOrd)

library(corpcor)

options(scipen=999)

pr<-function(data, cor = FALSE){

p <- dim(data)[2]

n <-length(data[,1])

re <- array(1,dim=c(p,p))

for(i in 1:p){

tem=i+1

if(tem<=p){

for(j in tem:p){

diff<-(data[,i]-mean(data[,i]))\*(data[,j]-mean(data[,j]))

tcount<- length(as.integer(which(diff>0)))+length(as.integer(which(diff==0)))/2

re[i,j] <- tcount/n

}}}

ator <- function(a){return(sin(pi\*(a-0.5)))}

f <- function(m) {

m[lower.tri(m)] <- t(m)[lower.tri(m)]

m

}

re <- ator(re)

re <- f(re)

if(cor==FALSE){

for(i in 1:p){

re[i,i] <- var(data[,i])

tem=i+1

if(tem<=p){

for(j in tem:p){

re[i,j] <- re[i,j]\*sd(data[,i])\*sd(data[,j])

}}}

re <- f(re)}

label <- colnames(data)

colnames(re) <- label

rownames(re) <- label

return(data.matrix(re))}

dir <- "C://" #directory for saving the output

#Simulation conditions

cond <- 1

set.seed(33883838)

replications <- 1000

rep <- 1

locpos <- c(3,4,5,9,17,18,19,20,22,23,26)

locpos2 <- c(6,7,8,25,32,33,34,35,37,44,47)

sdy <- sqrt(12)/2

k <- 20 #no. of items

mu <- rep(0,k)

rtoa <- function(r){return(asin(r)/pi+0.5)}

ator <- function(a){return(sin(pi\*(a-0.5)))}

vb <- c(-2,-3,-5,-7,0,1,2,3,5,7) #-2 to -7: 2 point to 7 point linear-SEM, 0 = normal original, 1 = continuous uniform # 2 – 7 = PS-based 2 3 5 7 points

vn <- c(400,800,1200,1600) #sample size

vir <- c(.3) #factor correlation

vfload <- c(.7) #factor loading

tcond <- length(vb)\*length(vn)\*length(vir)\*length(vfload)

cond.save <- array(0,dim=c(tcond,4))

cond.row <- character(length = tcond)

# Save results

fit.rep <- array(0, dim = c(tcond, (77\*2)))

# pbm, ml,MLR, cont: decision chisqu p, cfi > .9, cfi > .95, rmsea <.08, rmesea < .05, rmsea p

dec.rep <- array(0, dim = c(tcond,(6\*7)))

# paramater estimates

para.rep <- array(0, dim =c(tcond, (26\*7\*2)))

parase.rep <- array(0, dim =c(tcond, (26\*7\*2)))

# % bias, root mean squared error, mean absolute bias

bias.rep <- array(0, dim =c(tcond, (26\*7\*3)))

#save true parameter values

truepara.rep <- array(0, dim = c(tcond,26))

# of restart in each replication

restart.rep <- array(0, dim = c(tcond,5))

for(b.pos in 1:length(vb)){

b <- vb[b.pos]

for(n.pos in 1:length(vn)){

n <- vn[n.pos]

for(ir.pos in 1:length(vir)){

tir <- vir[ir.pos]

for(fload.pos in 1:length(vfload)){

tfload <- vfload[fload.pos]

fload <- tfload^2

ir <- tir\*fload

cond.save[cond,] <- c(b,n,tir,tfload)

cond.row[cond] <- paste(as.character(cond.save[cond,]),collapse=", ")

true.para <- rep(c(rep(sqrt(fload),20),rep(ir/fload,6)),4)

truepara.rep[cond,] <- c(rep(sqrt(fload),20),rep(ir/fload,6))

#chisq. df. pvalue, cfi, logl, unrestricted.logl, aic, bic, bic2, rmsea, rmsea.pvalue

WLSpbm.fit <- array(NA, dim=c(replications,11))

MLpbm.fit <- array(NA, dim=c(replications,11))

ULSpbm.fit <- array(NA, dim=c(replications,11))

ML.fit <- array(NA, dim=c(replications,11))

MLR.fit <- array(NA, dim=c(replications,11))

ULS.fit<- array(NA, dim=c(replications,11))

WLS.fit <- array(NA, dim=c(replications,11))

all.fit <- array(NA, dim = c(replications, 77))

# save parameter estimates

WLSpbm.re <- array(NA, dim=c(replications,26))

MLpbm.re <- array(NA, dim=c(replications,26))

ULSpbm.re <- array(NA, dim=c(replications,26))

ML.re<- array(NA, dim=c(replications,26))

MLR.re<- array(NA, dim=c(replications,26))

ULS.re<- array(NA, dim=c(replications,26))

WLS.re<- array(NA, dim=c(replications,26))

all.re <- array(NA, dim = c(replications, (26\*7)))

WLSpbm.rese <- array(NA, dim=c(replications,26))

MLpbm.rese <- array(NA, dim=c(replications,26))

ULSpbm.rese <- array(NA, dim=c(replications,26))

ML.rese<- array(NA, dim=c(replications,26))

MLR.rese<- array(NA, dim=c(replications,26))

ULS.rese<- array(NA, dim=c(replications,26))

WLS.rese<- array(NA, dim=c(replications,26))

all.rese <- array(NA, dim = c(replications, (26\*7)))

tcov <- matrix(c(1,fload,fload,fload,fload,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,

fload,1,fload,fload,fload,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,

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ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,ir,fload,fload,fload,fload,1),k,k)

for(rep in 1:replications){

restart1 <- 1

while(restart1>0){

restart1 <- 0

if(b>=0){

rdat <- mvrnorm(n,mu,tcov)}else{

if(b==-2){

marginal <- rep(list(c(0.5)),20)

rdat <- ordsample(n,marginal,tcov)}

if(b==-3){

marginal <- rep(list(c(0.2,0.8)),20)

rdat <- ordsample(n,marginal,tcov)}

if(b==-5){

marginal <- rep(list(c(0.1,0.3,0.7,0.9)),20)

rdat <- ordsample(n,marginal,tcov)}

if(b==-7){

marginal <- rep(list(c(0.05,0.15,0.35,0.65,0.85,0.95)),20)

rdat <- ordsample(n,marginal,tcov)}

}#end of b < 0

pdat <- rdat

colnames(pdat) <- c("x1","x2","x3","x4","x5","x6","x7","x8","x9","x10","x11","x12","x13","x14","x15","x16","x17","x18","x19","x20")

colnames(rdat) <- c("x1","x2","x3","x4","x5","x6","x7","x8","x9","x10","x11","x12","x13","x14","x15","x16","x17","x18","x19","x20")

pdat <- data.frame(pdat)

rdat <- data.frame(rdat)

psign <- array(0, dim=c(n,k))

for(i in 1:k){

psign[which(rdat[,i]>mean(rdat[,i])),i] <- 1}

if(b==1){

for(i in 1:n){

for(j in 1:k){

if(psign[i,j]==1){pdat[i,j] <- runif(1,0,sdy)}else{pdat[i,j] <- runif(1,-sdy,0)}}}}

if(b>1){

m <- b/2+0.1

if(b>2){

for(i in 1:n){

for(j in 1:k){

if(psign[i,j]==1){pdat[i,j] <- sample(ceiling(m):b,1)}

else{pdat[i,j] <- sample(1:floor(m),1) }}}}

if(b==2){for(i in 1:n){

for(j in 1:k){

if(psign[i,j]==1){pdat[i,j] <- 1}

else{pdat[i,j] <- 0 }}}}}

samcov <- pr(pdat)

tsamcov <- pr(pdat,cor=TRUE)

colnames(samcov) <- c("x1","x2","x3","x4","x5","x6","x7","x8","x9","x10","x11","x12","x13","x14","x15","x16","x17","x18","x19","x20")

colnames(samcov) <- c("x1","x2","x3","x4","x5","x6","x7","x8","x9","x10","x11","x12","x13","x14","x15","x16","x17","x18","x19","x20")

HS.model <- ' F1 =~ x1 + x2 + x3 + x4 + x5

F2 =~ x6 + x7 + x8 + x9 + x10

F3 =~ x11 + x12 + x13 + x14 + x15

F4 =~ x16 + x17 + x18 + x19 + x20'

# check positive non definite covariance matrix

check1 <- tryCatch(cfa(HS.model, sample.cov = samcov, sample.nobs = n),

error=function(e) e,

warning=function(w) w)

if(class(check1)[[1]]=="simpleWarning"){restart1 <- 1

restart.rep[cond,1]<-restart.rep[cond,1]+1}

# Function to obtain the weighted matrix for PS-WLS

#trep <- 10

#tWLS.V <- array(0, dim=c(trep,210,210))

#for(i in 1:trep){

#wdat <- mvrnorm(n,mu,pr(pdat,cor=TRUE))

# tfit <- cfa(HS.model, data=wdat, std.lv=TRUE, estimator = "WLS")

# tWLS.V[i,,] <- inspect(tfit, "WLS.V")

#}

#weightmatrix <- apply(tWLS.V, c(2,3), function(x) mean(x))

omu <- array(0, dim=c(20))

for(j in 1:20){

omu[j] <- mean(pdat[,j])}

check4 <- is.positive.definite(samcov)

if(check4 == TRUE){

wdat <- mvrnorm(20000,mu,samcov)

tfit <- cfa(HS.model, data=wdat, estimator = "WLS")

weightmatrix <- inspect(tfit, "WLS.V")

}else{restart1 <- 1

restart.rep[cond,4]<-restart.rep[cond,4]+1}

# check positive non definite covariance matrix

check2 <- tryCatch(cfa(HS.model, estimator="WLS", WLS.V=weightmatrix, sample.cov = samcov, sample.nobs = n),

error=function(e) e,

warning=function(w) w)

if(class(check2)[[1]]=="simpleWarning"){restart1 <- 1

restart.rep[cond,2]<-restart.rep[cond,2]+1}

check3 <- tryCatch(cfa(HS.model, estimator = "WLS", data = pdat),

error=function(e) e,

warning=function(w) w)

if(class(check3)[[1]]=="simpleError"){restart1 <- 1

restart.rep[cond,3]<-restart.rep[cond,3]+1}

check5 <- tryCatch(cfa(HS.model, estimator="ULS", sample.cov = samcov, sample.nobs = n),

error=function(e) e,

warning=function(w) w)

if(class(check5)[[1]]=="simpleWarning"){restart1 <- 1

restart.rep[cond,5]<-restart.rep[cond,5]+1}

}

###################################################

tWLSpbm.fit <- cfa(HS.model, estimator="WLS", WLS.V=weightmatrix, sample.cov = samcov, sample.nobs = n)

WLSpbm.fit[rep,] <- fitMeasures(tWLSpbm.fit)[locpos]

tMLpbm.fit <- cfa(HS.model, estimator="ML", sample.cov = samcov, sample.nobs = n)

MLpbm.fit[rep,] <- fitMeasures(tMLpbm.fit)[locpos]

tULSpbm.fit <- cfa(HS.model, estimator="ULS", sample.cov = samcov, sample.nobs = n)

ULSpbm.fit[rep,] <- fitMeasures(tULSpbm.fit)[locpos]

tML.fit <- cfa(HS.model, data = pdat, estimator = "ML")

ML.fit[rep,] <- fitMeasures(tML.fit)[locpos]

tMLR.fit <- cfa(HS.model, estimator = "MLR", data = pdat)

MLR.fit[rep,] <- fitMeasures(tMLR.fit)[locpos2]

tULS.fit <- cfa(HS.model, estimator = "ULS", data = pdat)

ULS.fit[rep,] <- fitMeasures(tULS.fit)[locpos]

tWLS.fit <- cfa(HS.model, estimator = "WLS", data = pdat)

WLS.fit[rep,] <- fitMeasures(tWLS.fit)[locpos]

ULSpbm.fit[rep,3] <- 1

ULS.fit[rep,3] <- 1

#tcont.fit <- cfa(HS.model, data = rdat)

#cont.fit[rep,] <- fitMeasures(tcont.fit)[locpos]

all.fit[rep,] <- c(WLSpbm.fit[rep,],MLpbm.fit[rep,],ULSpbm.fit[rep,],

ML.fit[rep,],MLR.fit[rep,],WLS.fit[rep,],ULS.fit[rep,])

WLSpbm.re[rep,] <- c(standardizedSolution(tWLSpbm.fit)[[4]][1:20],standardizedSolution(tWLSpbm.fit)[[4]][45:50])

MLpbm.re[rep,] <- c(standardizedSolution(tMLpbm.fit)[[4]][1:20],standardizedSolution(tMLpbm.fit)[[4]][45:50])

ULSpbm.re[rep,] <- c(standardizedSolution(tULSpbm.fit)[[4]][1:20],standardizedSolution(tULSpbm.fit)[[4]][45:50])

ML.re[rep,] <- c(standardizedSolution(tML.fit)[[4]][1:20],standardizedSolution(tML.fit)[[4]][45:50])

MLR.re[rep,] <- c(standardizedSolution(tMLR.fit)[[4]][1:20],standardizedSolution(tMLR.fit)[[4]][45:50])

ULS.re[rep,] <- c(standardizedSolution(tULS.fit)[[4]][1:20],standardizedSolution(tULS.fit)[[4]][45:50])

WLS.re[rep,] <- c(standardizedSolution(tWLS.fit)[[4]][1:20],standardizedSolution(tWLS.fit)[[4]][45:50])

all.re[rep,] <- c(WLSpbm.re[rep,],MLpbm.re[rep,],ULSpbm.re[rep,],ML.re[rep,],MLR.re[rep,],ULS.re[rep,],WLS.re[rep,] )

WLSpbm.rese[rep,] <- c(standardizedSolution(tWLSpbm.fit)[[5]][1:20],standardizedSolution(tWLSpbm.fit)[[5]][45:50])

MLpbm.rese[rep,] <- c(standardizedSolution(tMLpbm.fit)[[5]][1:20],standardizedSolution(tMLpbm.fit)[[5]][45:50])

ULSpbm.rese[rep,] <- c(standardizedSolution(tULSpbm.fit)[[5]][1:20],standardizedSolution(tULSpbm.fit)[[5]][45:50])

ML.rese[rep,] <- c(standardizedSolution(tML.fit)[[5]][1:20],standardizedSolution(tML.fit)[[5]][45:50])

MLR.rese[rep,] <- c(standardizedSolution(tMLR.fit)[[5]][1:20],standardizedSolution(tMLR.fit)[[5]][45:50])

ULS.rese[rep,] <- c(standardizedSolution(tULS.fit)[[5]][1:20],standardizedSolution(tULS.fit)[[5]][45:50])

WLS.rese[rep,] <- c(standardizedSolution(tWLS.fit)[[5]][1:20],standardizedSolution(tWLS.fit)[[5]][45:50])

all.rese[rep,] <- c(WLSpbm.rese[rep,],MLpbm.rese[rep,],ULSpbm.rese[rep,],ML.rese[rep,],MLR.rese[rep,],ULS.rese[rep,],WLS.rese[rep,] )

# fit testing

#chisq. df. pvalue, cfi, logl, unrestricted.logl, aic, bic, bic2, rmsea, rmsea.pvalue

# pbm, ml, mlr, cont: decision chisqu p, cfi > .9, cfi > .95, rmsea <.08, rmesea < .05, rmsea p

if(WLSpbm.fit[rep,3]>.05){dec.rep[cond,1] <- dec.rep[cond,1]+1}

if(WLSpbm.fit[rep,4]>.9){dec.rep[cond,2] <- dec.rep[cond,2]+1}

if(WLSpbm.fit[rep,4]>.95){dec.rep[cond,3] <- dec.rep[cond,3]+1}

if(WLSpbm.fit[rep,10]<.08){dec.rep[cond,4] <- dec.rep[cond,4]+1}

if(WLSpbm.fit[rep,10]<.05){dec.rep[cond,5] <- dec.rep[cond,5]+1}

if(WLSpbm.fit[rep,11]>.05){dec.rep[cond,6] <- dec.rep[cond,6]+1}

if(MLpbm.re[rep,3]>.05){dec.rep[cond,7] <- dec.rep[cond,7]+1}

if(MLpbm.re[rep,4]>.9){dec.rep[cond,8] <- dec.rep[cond,8]+1}

if(MLpbm.re[rep,4]>.95){dec.rep[cond,9] <- dec.rep[cond,9]+1}

if(MLpbm.re[rep,10]<.08){dec.rep[cond,10] <- dec.rep[cond,10]+1}

if(MLpbm.re[rep,10]<.05){dec.rep[cond,11] <- dec.rep[cond,11]+1}

if(MLpbm.re[rep,11]>.05){dec.rep[cond,12] <- dec.rep[cond,12]+1}

if(ULSpbm.re[rep,3]>.05){dec.rep[cond,13] <- dec.rep[cond,13]+1}

if(ULSpbm.re[rep,4]>.9){dec.rep[cond,14] <- dec.rep[cond,14]+1}

if(ULSpbm.re[rep,4]>.95){dec.rep[cond,15] <- dec.rep[cond,15]+1}

if(ULSpbm.re[rep,10]<.08){dec.rep[cond,16] <- dec.rep[cond,16]+1}

if(ULSpbm.re[rep,10]<.05){dec.rep[cond,17] <- dec.rep[cond,17]+1}

if(ULSpbm.re[rep,11]>.05){dec.rep[cond,18] <- dec.rep[cond,18]+1}

if(ML.re[rep,3]>.05){dec.rep[cond,19] <- dec.rep[cond,19]+1}

if(ML.re[rep,4]>.9){dec.rep[cond,20] <- dec.rep[cond,20]+1}

if(ML.re[rep,4]>.95){dec.rep[cond,21] <- dec.rep[cond,21]+1}

if(ML.re[rep,10]<.08){dec.rep[cond,22] <- dec.rep[cond,22]+1}

if(ML.re[rep,10]<.05){dec.rep[cond,23] <- dec.rep[cond,23]+1}

if(ML.re[rep,11]>.05){dec.rep[cond,24] <- dec.rep[cond,24]+1}

if(MLR.re[rep,3]>.05){dec.rep[cond,25] <- dec.rep[cond,25]+1}

if(MLR.re[rep,4]>.9){dec.rep[cond,26] <- dec.rep[cond,26]+1}

if(MLR.re[rep,4]>.95){dec.rep[cond,27] <- dec.rep[cond,27]+1}

if(MLR.re[rep,10]<.08){dec.rep[cond,28] <- dec.rep[cond,28]+1}

if(MLR.re[rep,10]<.05){dec.rep[cond,29] <- dec.rep[cond,29]+1}

if(MLR.re[rep,11]>.05){dec.rep[cond,30] <- dec.rep[cond,30]+1}

if(ULS.re[rep,3]>.05){dec.rep[cond,31] <- dec.rep[cond,31]+1}

if(ULS.re[rep,4]>.9){dec.rep[cond,32] <- dec.rep[cond,32]+1}

if(ULS.re[rep,4]>.95){dec.rep[cond,33] <- dec.rep[cond,33]+1}

if(ULS.re[rep,10]<.08){dec.rep[cond,34] <- dec.rep[cond,34]+1}

if(ULS.re[rep,10]<.05){dec.rep[cond,35] <- dec.rep[cond,35]+1}

if(ULS.re[rep,11]>.05){dec.rep[cond,36] <- dec.rep[cond,36]+1}

if(WLS.re[rep,3]>.05){dec.rep[cond,37] <- dec.rep[cond,37]+1}

if(WLS.re[rep,4]>.9){dec.rep[cond,38] <- dec.rep[cond,38]+1}

if(WLS.re[rep,4]>.95){dec.rep[cond,39] <- dec.rep[cond,39]+1}

if(WLS.re[rep,10]<.08){dec.rep[cond,40] <- dec.rep[cond,40]+1}

if(WLS.re[rep,10]<.05){dec.rep[cond,41] <- dec.rep[cond,41]+1}

if(WLS.re[rep,11]>.05){dec.rep[cond,42] <- dec.rep[cond,42]+1}

} # end of replications

# mean and sd of fit indices

for(i in 1:77){

fit.rep[cond,i] <- mean(all.fit[,i])

fit.rep[cond,(i+77)] <- sd(all.fit[,i])}

# mean and sd of parameter estimates

for(i in 1:(26\*7)){

para.rep[cond,i] <-mean(all.re[,i])

para.rep[cond,(i+182)] <-sd(all.re[,i])

parase.rep[cond,i] <-mean(all.rese[,i])

parase.rep[cond,(i+182)] <-sd(all.rese[,i])

}

# % bias, root mean squared error, mean absolute bias

for(i in 1:182){

bias.rep[cond,i] <- (para.rep[cond,i]-true.para[i])/true.para[i]

bias.rep[cond,(i+182)] <- sqrt(sum((all.re[,i]-true.para[i])^2)/replications)

bias.rep[cond,(i+364)] <- sum(abs(all.re[,i]-true.para[i]))/replications}

#save intermediate output

if((cond/10)%%1==0){

write.table(fit.rep, paste(dir,"BUfit.csv",sep=""),col.names=NA,sep=",")

write.table(dec.rep, paste(dir,"BUdecision.csv",sep=""),col.names=NA,sep=",")

write.table(para.rep, paste(dir,"BUparameters.csv",sep=""),col.names=NA,sep=",")

write.table(bias.rep, paste(dir,"BUbias.csv",sep=""),col.names=NA,sep=",")

write.table(cond.save, paste(dir,"BUconditions.csv",sep=""),col.names=NA,sep=",")

write.table(truepara.rep, paste(dir,"BUtrueparameters.csv",sep=""),row.names=FALSE,col.names=FALSE,sep=",")

write.table(restart.rep, paste(dir,"BUrestart.csv",sep=""),col.names=NA,sep=",")

}

write.table(cond, paste(dir,"cond.csv",sep=""),col.names=NA,sep=",")

cond <- cond+1}}}} #end of conditions

#Export data

colnames(cond.save) <- c("b (no. of points)","n","ir","fload")

col1 <- c("mean WLSpb chisq", "mean WLSpb df", "mean WLSpb chi pvalue", "mean WLSpb cfi", "mean WLSpb logl", "mean WLSpb unrestricted.logl",

"mean WLSpb aic", "mean WLSpb bic", "mean WLSpb bic2", "mean WLSpb rmsea", "mean WLSpb rmsea.pvalue",

"mean MLpb chisq", "mean MLpb df", "mean MLpb chi pvalue", "mean MLpb cfi", "mean MLpb logl", "mean MLpb unrestricted.logl",

"mean MLpb aic", "mean MLpb bic", "mean MLpb bic2", "mean MLpb rmsea", "mean MLpb rmsea.pvalue",

"mean ULSpb chisq", "mean ULSpb df", "mean ULSpb chi pvalue", "mean ULSpb cfi", "mean ULSpb logl", "mean ULSpb unrestricted.logl",

"mean ULSpb aic", "mean ULSpb bic", "mean ULSpb bic2", "mean ULSpb rmsea", "mean ULSpb rmsea.pvalue",

"mean ML chisq", "mean ML df", "mean ML chi pvalue", "mean ML cfi", "mean ML logl", "mean ML unrestricted.logl",

"mean ML aic", "mean ML bic", "mean ML bic2", "mean ML rmsea", "mean ML rmsea.pvalue",

"mean MLR chisq", "mean MLR df", "mean MLR chi pvalue", "mean MLR cfi", "mean MLR logl", "mean MLR unrestricted.logl",

"mean MLR aic", "mean MLR bic", "mean MLR bic2", "mean MLR rmsea", "mean MLR rmsea.pvalue",

"mean ULS chisq", "mean ULS df", "mean ULS chi pvalue", "mean ULS cfi", "mean ULS logl", "mean ULS unrestricted.logl",

"mean ULS aic", "mean ULS bic", "mean ULS bic2", "mean ULS rmsea", "mean ULS rmsea.pvalue",

"mean WLS chisq", "mean WLS df", "mean WLS chi pvalue", "mean WLS cfi", "mean WLS logl", "mean WLS unrestricted.logl",

"mean WLS aic", "mean WLS bic", "mean WLS bic2", "mean WLS rmsea", "mean WLS rmsea.pvalue",

"sd WLSpb chisq", "sd WLSpb df", "sd WLSpb chi pvalue", "sd WLSpb cfi", "sd WLSpb logl", "sd WLSpb unrestricted.logl",

"sd WLSpb aic", "sd WLSpb bic", "sd WLSpb bic2", "sd WLSpb rmsea", "sd WLSpb rmsea.pvalue",

"sd MLpb chisq", "sd MLpb df", "sd MLpb chi pvalue", "sd MLpb cfi", "sd MLpb logl", "sd MLpb unrestricted.logl",

"sd MLpb aic", "sd MLpb bic", "sd MLpb bic2", "sd MLpb rmsea", "sd MLpb rmsea.pvalue",

"sd ULSpb chisq", "sd ULSpb df", "sd ULSpb chi pvalue", "sd ULSpb cfi", "sd ULSpb logl", "sd ULSpb unrestricted.logl",

"sd ULSpb aic", "sd ULSpb bic", "sd ULSpb bic2", "sd ULSpb rmsea", "sd ULSpb rmsea.pvalue",

"sd ML chisq", "sd ML df", "sd ML chi pvalue", "sd ML cfi", "sd ML logl", "sd ML unrestricted.logl",

"sd ML aic", "sd ML bic", "sd ML bic2", "sd ML rmsea", "sd ML rmsea.pvalue",

"sd MLR chisq", "sd MLR df", "sd MLR chi pvalue", "sd MLR cfi", "sd MLR logl", "sd MLR unrestricted.logl",

"sd MLR aic", "sd MLR bic", "sd MLR bic2", "sd MLR rmsea", "sd MLR rmsea.pvalue",

"sd ULS chisq", "sd ULS df", "sd ULS chi pvalue", "sd ULS cfi", "sd ULS logl", "sd ULS unrestricted.logl",

"sd ULS aic", "sd ULS bic", "sd ULS bic2", "sd ULS rmsea", "sd ULS rmsea.pvalue",

"sd WLS chisq", "sd WLS df", "sd WLS chi pvalue", "sd WLS cfi", "sd WLS logl", "sd WLS unrestricted.logl",

"sd WLS aic", "sd WLS bic", "sd WLS bic2", "sd WLS rmsea", "sd WLS rmsea.pvalue")

colnames(fit.rep) <- col1

col2 <- c("WLSpb chisqu p", "WLSpb cfi .9", "WLSpb cfi .95", "WLSpb rmsea .08", "WLSpb rmsea .05", "WLSpb rmsea p",

"MLpb chisqu p", "MLpb cfi .9", "MLpb cfi .95", "MLpb rmsea .08", "MLpb rmsea .05", "MLpb rmsea p",

"ULSpb chisqu p", "ULSpb cfi .9", "ULSpb cfi .95", "ULSpb rmsea .08", "ULSpb rmsea .05", "ULSpb rmsea p",

"ML chisqu p", "ML cfi .9", "ML cfi .95", "ML rmsea .08", "ML rmsea .05", "ML rmsea p",

"MLR chisqu p", "MLR cfi .9", "MLR cfi .95", "MLR rmsea .08", "MLR rmsea .05", "MLR rmsea p",

"ULS chisqu p", "ULS cfi .9", "ULS cfi .95", "ULS rmsea .08", "ULS rmsea .05", "ULS rmsea p",

"WLS chisqu p", "WLS cfi .9", "WLS cfi .95", "WLS rmsea .08", "WLS rmsea .05", "WLS rmsea p")

colnames(dec.rep) <- col2

col4 <- c("mean WLSpb y1","mean WLSpb y2","mean WLSpb y3","mean WLSpb y4","mean WLSpb y5",

"mean WLSpb y6","mean WLSpb y7","mean WLSpb y8","mean WLSpb y9","mean WLSpb y10",

"mean WLSpb y11","mean WLSpb y12","mean WLSpb y13","mean WLSpb y14","mean WLSpb y15",

"mean WLSpb y16","mean WLSpb y17","mean WLSpb 18","mean WLSpb y19","mean WLSpb y20",

"mean WLSpb f12","mean WLSpb f13","mean WLSpb f14","mean WLSpb f23","mean WLSpb f24","mean WLSpb f34",

"mean MLpb y1","mean MLpb y2","mean MLpb y3","mean MLpb y4","mean MLpb y5",

"mean MLpb y6","mean MLpb y7","mean MLpb y8","mean MLpb y9","mean MLpb y10",

"mean MLpb y11","mean MLpb y12","mean MLpb y13","mean MLpb y14","mean MLpb y15",

"mean MLpb y16","mean MLpb y17","mean MLpb 18","mean MLpb y19","mean MLpb y20",

"mean MLpb f12","mean MLpb f13","mean MLpb f14","mean MLpb f23","mean MLpb f24","mean MLpb f34",

"mean ULSpb y1","mean ULSpb y2","mean ULSpb y3","mean ULSpb y4","mean ULSpb y5",

"mean ULSpb y6","mean ULSpb y7","mean ULSpb y8","mean ULSpb y9","mean ULSpb y10",

"mean ULSpb y11","mean ULSpb y12","mean ULSpb y13","mean ULSpb y14","mean ULSpb y15",

"mean ULSpb y16","mean ULSpb y17","mean ULSpb 18","mean ULSpb y19","mean ULSpb y20",

"mean ULSpb f12","mean ULSpb f13","mean ULSpb f14","mean ULSpb f23","mean ULSpb f24","mean ULSpb f34",

"mean ML y1","mean ML y2","mean ML y3","mean ML y4","mean ML y5",

"mean ML y6","mean ML y7","mean ML y8","mean ML y9","mean ML y10",

"mean ML y11","mean ML y12","mean ML y13","mean ML y14","mean ML y15",

"mean ML y16","mean ML y17","mean ML 18","mean ML y19","mean ML y20",

"mean ML f12","mean ML f13","mean ML f14","mean ML f23","mean ML f24","mean ML f34",

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"mean MLR y6","mean MLR y7","mean MLR y8","mean MLR y9","mean MLR y10",

"mean MLR y11","mean MLR y12","mean MLR y13","mean MLR y14","mean MLR y15",

"mean MLR y16","mean MLR y17","mean MLR 18","mean MLR y19","mean MLR y20",

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"mean ULS y6","mean ULS y7","mean ULS y8","mean ULS y9","mean ULS y10",

"mean ULS y11","mean ULS y12","mean ULS y13","mean ULS y14","mean ULS y15",

"mean ULS y16","mean ULS y17","mean ULS 18","mean ULS y19","mean ULS y20",

"mean ULS f12","mean ULS f13","mean ULS f14","mean ULS f23","mean ULS f24","mean ULS f34",

"mean WLS y1","mean WLS y2","mean WLS y3","mean WLS y4","mean WLS y5",

"mean WLS y6","mean WLS y7","mean WLS y8","mean WLS y9","mean WLS y10",

"mean WLS y11","mean WLS y12","mean WLS y13","mean WLS y14","mean WLS y15",

"mean WLS y16","mean WLS y17","mean WLS 18","mean WLS y19","mean WLS y20",

"mean WLS f12","mean WLS f13","mean WLS f14","mean WLS f23","mean WLS f24","mean WLS f34",

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"sd WLSpb y6","sd WLSpb y7","sd WLSpb y8","sd WLSpb y9","sd WLSpb y10",

"sd WLSpb y11","sd WLSpb y12","sd WLSpb y13","sd WLSpb y14","sd WLSpb y15",

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"sd ULS y6","sd ULS y7","sd ULS y8","sd ULS y9","sd ULS y10",

"sd ULS y11","sd ULS y12","sd ULS y13","sd ULS y14","sd ULS y15",

"sd ULS y16","sd ULS y17","sd ULS 18","sd ULS y19","sd ULS y20",

"sd ULS f12","sd ULS f13","sd ULS f14","sd ULS f23","sd ULS f24","sd ULS f34",

"sd WLS y1","sd WLS y2","sd WLS y3","sd WLS y4","sd WLS y5",

"sd WLS y6","sd WLS y7","sd WLS y8","sd WLS y9","sd WLS y10",

"sd WLS y11","sd WLS y12","sd WLS y13","sd WLS y14","sd WLS y15",

"sd WLS y16","sd WLS y17","sd WLS 18","sd WLS y19","sd WLS y20",

"sd WLS f12","sd WLS f13","sd WLS f14","sd WLS f23","sd WLS f24","sd WLS f34")

colnames(para.rep) <- col4

colnames(parase.rep) <- col4

col5 <- c("% bias WLSpb y1","% bias WLSpb y2","% bias WLSpb y3","% bias WLSpb y4","% bias WLSpb y5",

"% bias WLSpb y6","% bias WLSpb y7","% bias WLSpb y8","% bias WLSpb y9","% bias WLSpb y10",

"% bias WLSpb y11","% bias WLSpb y12","% bias WLSpb y13","% bias WLSpb y14","% bias WLSpb y15",

"% bias WLSpb y16","% bias WLSpb y17","% bias WLSpb 18","% bias WLSpb y19","% bias WLSpb y20",

"% bias WLSpb f12","% bias WLSpb f13","% bias WLSpb f14","% bias WLSpb f23","% bias WLSpb f24","% bias WLSpb f34",

"% bias MLpb y1","% bias MLpb y2","% bias MLpb y3","% bias MLpb y4","% bias MLpb y5",

"% bias MLpb y6","% bias MLpb y7","% bias MLpb y8","% bias MLpb y9","% bias MLpb y10",

"% bias MLpb y11","% bias MLpb y12","% bias MLpb y13","% bias MLpb y14","% bias MLpb y15",

"% bias MLpb y16","% bias MLpb y17","% bias MLpb 18","% bias MLpb y19","% bias MLpb y20",

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"% bias ULSpb y1","% bias ULSpb y2","% bias ULSpb y3","% bias ULSpb y4","% bias ULSpb y5",

"% bias ULSpb y6","% bias ULSpb y7","% bias ULSpb y8","% bias ULSpb y9","% bias ULSpb y10",

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"% bias MLR y16","% bias MLR y17","% bias MLR 18","% bias MLR y19","% bias MLR y20",

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"RMSR ULSpb y6","RMSR ULSpb y7","RMSR ULSpb y8","RMSR ULSpb y9","RMSR ULSpb y10",

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"MeanAbs WLSpb f12","MeanAbs WLSpb f13","MeanAbs WLSpb f14","MeanAbs WLSpb f23","MeanAbs WLSpb f24","MeanAbs WLSpb f34",

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"MeanAbs ULSpb y6","MeanAbs ULSpb y7","MeanAbs ULSpb y8","MeanAbs ULSpb y9","MeanAbs ULSpb y10",

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"MeanAbs ML y16","MeanAbs ML y17","MeanAbs ML 18","MeanAbs ML y19","MeanAbs ML y20",

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"MeanAbs ULS y6","MeanAbs ULS y7","MeanAbs ULS y8","MeanAbs ULS y9","MeanAbs ULS y10",

"MeanAbs ULS y11","MeanAbs ULS y12","MeanAbs ULS y13","MeanAbs ULS y14","MeanAbs ULS y15",

"MeanAbs ULS y16","MeanAbs ULS y17","MeanAbs ULS 18","MeanAbs ULS y19","MeanAbs ULS y20",

"MeanAbs ULS f12","MeanAbs ULS f13","MeanAbs ULS f14","MeanAbs ULS f23","MeanAbs ULS f24","MeanAbs ULS f34",

"MeanAbs WLS y1","MeanAbs WLS y2","MeanAbs WLS y3","MeanAbs WLS y4","MeanAbs WLS y5",

"MeanAbs WLS y6","MeanAbs WLS y7","MeanAbs WLS y8","MeanAbs WLS y9","MeanAbs WLS y10",

"MeanAbs WLS y11","MeanAbs WLS y12","MeanAbs WLS y13","MeanAbs WLS y14","MeanAbs WLS y15",

"MeanAbs WLS y16","MeanAbs WLS y17","MeanAbs WLS 18","MeanAbs WLS y19","MeanAbs WLS y20",

"MeanAbs WLS f12","MeanAbs WLS f13","MeanAbs WLS f14","MeanAbs WLS f23","MeanAbs WLS f24","MeanAbs WLS f34"

)

colnames(bias.rep) <- col5

rownames(fit.rep) <- cond.row

rownames(dec.rep) <- cond.row

rownames(para.rep) <- cond.row

rownames(bias.rep) <- cond.row

write.table(fit.rep, paste(dir,"fit.csv",sep=""),col.names=NA,sep=",")

write.table(dec.rep, paste(dir,"decision.csv",sep=""),col.names=NA,sep=",")

write.table(para.rep, paste(dir,"parameters.csv",sep=""),col.names=NA,sep=",")

write.table(parase.rep, paste(dir,"parametersSE.csv",sep=""),col.names=NA,sep=",")

write.table(bias.rep, paste(dir,"bias.csv",sep=""),col.names=NA,sep=",")

write.table(cond.save, paste(dir,"conditions.csv",sep=""),col.names=NA,sep=",")

write.table(truepara.rep, paste(dir,"trueparameters.csv",sep=""),row.names=FALSE,col.names=FALSE,sep=",")

write.table(restart.rep, paste(dir,"restart.csv",sep=""),col.names=NA,sep=",")