**Mplus Syntax: MALE PARTICIPANTS**

**Unconditional LCA at pre-pandemic:**

Data:

File is malewide2.dta.dat; # File name

Variable:

Names are

idauniq SexTV0 emails0 calls0 health0 enter0 news0 market0

social0 transa0 SexTV1 emails1 calls1 health1 enter1 news1

market1 social1 transa1 mediumed highed highocc mediumocc

quint2 quint3 quint4 quint5 indager\_cons sex\_cons; # Variable names

usevariables are emails0 calls0 health0 enter0 news0 market0 social0

transa0; # Subset of variables to use

categorical are emails0 calls0 health0 enter0 news0 market0 social0

transa0; # Specifies which variables are categorical

IDvariable is idauniq; # Indicates name of participant ID variable

classes=c(1); # Indicates the number of classes (i.e., 1-class model in this example)\*

Missing are all (-9999); # Indicates the value assigned to missing variables in the dataset

Analysis:

Type = mixture; # Calls the mixture model algorithm

Starts = 200 50; # Specifies the number of random sets of starting values followed by the number of final optimisations

Output:

TECH1 TECH11 TECH14; # Requests additional output

Plot:

Type is PLOT3; # Requests graphical displays

Savedata:

File is malewide\_Class1T0.txt; # Saves the posterior probabilities to a new text file

Save = CPROBABILITIES;

\* This model was also run with 2, 3, 4, 5, and 6 classes.

**Unconditional LCA at intra-pandemic:**

Data:

File is malewide2.dta.dat; # File name

Variable:

Names are

idauniq SexTV0 emails0 calls0 health0 enter0 news0 market0

social0 transa0 SexTV1 emails1 calls1 health1 enter1 news1

market1 social1 transa1 mediumed highed highocc mediumocc

quint2 quint3 quint4 quint5 indager\_cons sex\_cons; # Variable names

usevariables are emails1 calls1 health1 enter1 news1 market1 social1

transa1; # Subset of variables to use

categorical are emails1 calls1 health1 enter1 news1 market1 social1

transa1; # Specifies which variables are categorical

IDvariable is idauniq; # Indicates name of participant ID variable

classes=c(1); # Indicates the number of classes (i.e., 1-class model in this example)\*

Missing are all (-9999); # Indicates the value assigned to missing variables in the dataset

Analysis:

Type = mixture; # Calls the mixture model algorithm

Starts = 200 50; # Specifies the number of random sets of starting values followed by the number of final optimisations

Output:

TECH1 TECH11 TECH14; # Requests additional output

Plot:

Type is PLOT3; # Requests graphical displays

Savedata:

File is malewide\_Class1T1.txt; # Saves the posterior probabilities to a new text file

Save = CPROBABILITIES;

\* This model was also run with 2, 3, 4, 5, and 6 classes.

**Conditional LCA at pre-pandemic:**

Data:

File is malewide2.dta.dat; # File name

Variable:

Names are

idauniq SexTV0 emails0 calls0 health0 enter0 news0 market0

social0 transa0 SexTV1 emails1 calls1 health1 enter1 news1

market1 social1 transa1 mediumed highed highocc mediumocc

quint2 quint3 quint4 quint5 indager\_cons sex\_cons; # Variable names

usevariables are indager\_cons mediumed highed mediumocc highocc

quint2 quint3 quint4 quint5 emails0 calls0 health0 enter0 news0

market0 social0 transa0; # Subset of variables to use

categorical are emails0 calls0 health0 enter0 news0 market0 social0

transa0; # Specifies which variables are categorical

IDvariable is idauniq; # Indicates name of participant ID variable

classes=c(3); # Indicates the number of classes (i.e., 3-class model)

Missing are all (-9999); # Indicates the value assigned to missing variables in the dataset

Analysis:

Type = mixture; # Calls the mixture model algorithm

Starts = 200 50; # Specifies the number of random sets of starting values followed by the number of final optimisations

Model:

%OVERALL%

# Multinomial logistic regression of the latent class variable (c) on covariates

c ON indager\_cons mediumed highed mediumocc highocc quint2 quint3 quint4 quint5;

%c#1%

[emails0$1@-6.631] # Assigns fixed class-specific item probabilities using values from the unconditional 3-class LCA model at pre-pandemic

[calls0$1@-0.218]

[health0$1@-3.663]

[enter0$1@-2.001]

[news0$1@-1.710]

[market0$1@-3.438]

[social0$1@-0.531]

[transa0$1@-2.434]

%c#2%

[emails0$1@-3.846]

[calls0$1@1.566]

[health0$1@-1.613]

[enter0$1@0.450]

[news0$1@0.113]

[market0$1@-1.659]

[social0$1@0.606]

[transa0$1@-0.834]

%c#3%

[emails0$1@-0.377]

[calls0$1@1.908]

[health0$1@-0.358]

[enter0$1@1.195]

[news0$1@1.047]

[market0$1@0.739]

[social0$1@1.609]

[transa0$1@1.468]

Output:

TECH1 TECH11 TECH14; # Requests additional output

Plot:

Type is PLOT3; # Requests graphical displays

Savedata:

File is malewide\_Class3covitemprobT0.txt; # Saves the posterior probabilities to a new text file

Save = CPROBABILITIES;

**Conditional LCA at intra-pandemic:**

Data:

File is malewide2.dta.dat; # File name

Variable:

Names are

idauniq SexTV0 emails0 calls0 health0 enter0 news0 market0

social0 transa0 SexTV1 emails1 calls1 health1 enter1 news1

market1 social1 transa1 mediumed highed highocc mediumocc

quint2 quint3 quint4 quint5 indager\_cons sex\_cons; # Variable names

usevariables are indager\_cons mediumed highed mediumocc highocc

quint2 quint3 quint4 quint5 emails1 calls1 health1 enter1 news1

market1 social1 transa1; # Subset of variables to use

categorical are emails1 calls1 health1 enter1 news1 market1 social1

transa1; # Specifies which variables are categorical

IDvariable is idauniq; # Indicates name of participant ID variable

classes=c(3); # Indicates the number of classes (i.e., 3-class model)

Missing are all (-9999); # Indicates the value assigned to missing variables in the dataset

Analysis:

Type = mixture; # Calls the mixture model algorithm

Starts = 200 50; # Specifies the number of random sets of starting values followed by the number of final optimisations

Model:

%OVERALL%

# Multinomial logistic regression of the latent class variable (c) on covariates

c ON indager\_cons mediumed highed mediumocc highocc quint2 quint3 quint4 quint5;

%c#1%

[emails1$1@-4.617] # Assigns fixed class-specific item probabilities using values from the unconditional 3-class LCA model at intra-pandemic

[calls1$1@-2.018]

[health1$1@-0.774]

[enter1$1@-1.744]

[news1$1@-1.889]

[market1$1@-2.688]

[social1$1@-0.711]

[transa1$1@-2.082]

%c#2%

[emails1$1@-0.294]

[calls1$1@1.260]

[health1$1@1.125]

[enter1$1@1.272]

[news1$1@0.205]

[market1$1@0.629]

[social1$1@1.506]

[transa1$1@1.464]

%c#3%

[emails1$1@-3.739]

[calls1$1@0.025]

[health1$1@0.939]

[enter1$1@0.884]

[news1$1@0.191]

[market1$1@-1.334]

[social1$1@0.962]

[transa1$1@-0.653]

Output:

TECH1 TECH11 TECH14; # Requests additional output

Plot:

Type is PLOT3; # Requests graphical displays

Savedata:

File is malewide\_Class3covitemprobT1.txt; # Saves the posterior probabilities to a new text file

Save = CPROBABILITIES;

**Full measurement invariance model:**

Data:

File is malewide2.dta.dat; # File name

Variable:

Names are

idauniq SexTV0 emails0 calls0 health0 enter0 news0 market0

social0 transa0 SexTV1 emails1 calls1 health1 enter1 news1

market1 social1 transa1 mediumed highed highocc mediumocc

quint2 quint3 quint4 quint5 indager\_cons sex\_cons; # Variable names

usevariables are emails0 calls0 health0 enter0 news0 market0 social0 transa0

emails1 calls1 health1 enter1 news1 market1 social1 transa1; # Subset of variables to use

categorical are emails0 calls0 health0 enter0 news0 market0 social0 transa0

emails1 calls1 health1 enter1 news1 market1 social1 transa1; # Specifies which variables are categorical

IDvariable is idauniq; # Indicates name of participant ID variable

classes = x(3) y(3); # Indicates the number of classes at pre- (x) and intra-pandemic (y)

Missing are all (-9999); # Indicates the value assigned to missing variables in the dataset

Analysis:

Type = mixture; # Calls the mixture model algorithm

Starts = 200 50; # Specifies the number of random sets of starting values followed by the number of final optimisations

Stiterations = 20; # Specifies the maximum number of iterations allowed in the initial stage

Model:

%OVERALL%

MODEL x:

%x#1%

[emails0$1-transa0$1] (1-8); # Thresholds are constrained to be the same for the latent class indicators in x1 and y1

%x#2%

[emails0$1-transa0$1] (9-16); # Thresholds are constrained to be the same for the latent class indicators in x2 and y2

%x#3%

[emails0$1-transa0$1] (17-24); # Thresholds are constrained to be the same for the latent class indicators in x3 and y3

MODEL y:

%y#1%

[emails1$1-transa1$1] (1-8);

%y#2%

[emails1$1-transa1$1] (9-16);

%y#3%

[emails1$1-transa1$1] (17-24);

Output:

TECH1; # Requests additional output

Plot:

Type is PLOT3; # Requests graphical displays

Savedata:

File is malewide\_Class3fullinvariance.txt; # Saves the posterior probabilities to a new text file

Save = CPROBABILITIES;

**Full measurement non-invariance model:**

Data:

File is malewide2.dta.dat; # File name

Variable:

Names are

idauniq SexTV0 emails0 calls0 health0 enter0 news0 market0

social0 transa0 SexTV1 emails1 calls1 health1 enter1 news1

market1 social1 transa1 mediumed highed highocc mediumocc

quint2 quint3 quint4 quint5 indager\_cons sex\_cons; # Variable names

usevariables are emails0 calls0 health0 enter0 news0 market0 social0 transa0

emails1 calls1 health1 enter1 news1 market1 social1 transa1; # Subset of variables to use

categorical are emails0 calls0 health0 enter0 news0 market0 social0 transa0

emails1 calls1 health1 enter1 news1 market1 social1 transa1; # Specifies which variables are categorical

IDvariable is idauniq; # Indicates name of participant ID variable

classes = x(3) y(3); # Indicates the number of classes at pre- (x) and intra-pandemic (y)

Missing are all (-9999); # Indicates the value assigned to missing variables in the dataset

Analysis:

Type = mixture; # Calls the mixture model algorithm

Starts = 200 50; # Specifies the number of random sets of starting values followed by the number of final optimisations

Stiterations = 20; # Specifies the maximum number of iterations allowed in the initial stage

Model:

%OVERALL%

MODEL x:

%x#1%

[emails0$1-transa0$1]; # No constraints on thresholds (freely estimated)

%x#2%

[emails0$1-transa0$1];

%x#3%

[emails0$1-transa0$1];

MODEL y:

%y#1%

[emails1$1-transa1$1];

%y#2%

[emails1$1-transa1$1];

%y#3%

[emails1$1-transa1$1];

Output:

TECH1; # Requests additional output

Plot:

Type is PLOT3; # Requests graphical displays

Savedata:

File is malewide\_Class3noninvariance.txt; # Saves the posterior probabilities to a new text file

Save = CPROBABILITIES;

**Unconditional LTA:**

Data:

File is malewide2.dta.dat; # File name

Variable:

Names are

idauniq SexTV0 emails0 calls0 health0 enter0 news0 market0

social0 transa0 SexTV1 emails1 calls1 health1 enter1 news1

market1 social1 transa1 mediumed highed highocc mediumocc

quint2 quint3 quint4 quint5 indager\_cons sex\_cons; # Variable names

usevariables are emails0 calls0 health0 enter0 news0 market0 social0 transa0

emails1 calls1 health1 enter1 news1 market1 social1 transa1; # Subset of variables to use

categorical are emails0 calls0 health0 enter0 news0 market0 social0 transa0

emails1 calls1 health1 enter1 news1 market1 social1 transa1; # Specifies which variables are categorical

IDvariable is idauniq; # Indicates name of participant ID variable

classes = x(3) y(3); # Indicates the number of classes at pre- (x) and intra-pandemic (y)

Missing are all (-9999); # Indicates the value assigned to missing variables in the dataset

Analysis:

Type = mixture; # Calls the mixture model algorithm

Starts = 1000 250; # Specifies the number of random sets of starting values followed by the number of final optimisations

Stiterations = 20; # Specifies the maximum number of iterations allowed in the initial stage

Model:

%OVERALL%

y ON x # Multinomial logistic regression of y on x

MODEL x:

%x#1%

[emails0$1-transa0$1]; # No constraints on thresholds (freely estimated)

%x#2%

[emails0$1-transa0$1];

%x#3%

[emails0$1-transa0$1];

MODEL y:

%y#1%

[emails1$1-transa1$1];

%y#2%

[emails1$1-transa1$1];

%y#3%

[emails1$1-transa1$1];

Output:

TECH1 TECH8 TECH15; # Requests additional output

Plot:

Type is PLOT3; # Requests graphical displays

Savedata:

File is malewide\_Class3LTAMNI.txt; # Saves the posterior probabilities to a new text file

Save = CPROBABILITIES;

**Conditional LTA:**

Data:

File is malewide2.dta.dat; # File name

Variable:

Names are

idauniq SexTV0 emails0 calls0 health0 enter0 news0 market0

social0 transa0 SexTV1 emails1 calls1 health1 enter1 news1

market1 social1 transa1 mediumed highed highocc mediumocc

quint2 quint3 quint4 quint5 indager\_cons sex\_cons; # Variable names

usevariables are emails0 calls0 health0 enter0 news0 market0 social0 transa0

indager\_cons mediumed highed mediumocc highocc quint2 quint3 quint4 quint5

emails1 calls1 health1 enter1 news1 market1 social1 transa1; # Subset of variables to use

categorical are emails0 calls0 health0 enter0 news0 market0 social0 transa0

emails1 calls1 health1 enter1 news1 market1 social1 transa1; # Specifies which variables are categorical

IDvariable is idauniq; # Indicates name of participant ID variable

classes = x(3) y(3); # Indicates the number of classes at pre- (x) and intra-pandemic (y)

Missing are all (-9999); # Indicates the value assigned to missing variables in the dataset

Analysis:

Type = mixture; # Calls the mixture model algorithm

Starts = 1000 250; # Specifies the number of random sets of starting values followed by the number of final optimisations

Stiterations = 20; # Specifies the maximum number of iterations allowed in the initial stage

Model:

%OVERALL%

# Multinomial logistic regression of the pre-pandemic latent class variable (x) on covariates

x ON indager\_cons mediumed highed mediumocc highocc quint2 quint3 quint4 quint5;

y ON x; # Multinomial logistic regression of y on x

MODEL x:

%x#1%

[emails0$1-transa0$1]; # No constraints on thresholds (freely estimated)

%x#2%

[emails0$1-transa0$1];

%x#3%

[emails0$1-transa0$1];

MODEL y:

%y#1%

[emails1$1-transa1$1];

%y#2%

[emails1$1-transa1$1];

%y#3%

[emails1$1-transa1$1];

Output:

TECH1 TECH8 TECH15 SVALUES; # Requests additional output

Plot:

Type is PLOT3; # Requests graphical displays

Savedata:

File is malewide\_LTAcovMNIsvalues.txt; # Saves the posterior probabilities to a new text file

Save = CPROBABILITIES;