5 Class Model - Delinquency

Data Summary, Model Information, and Fit Statistics (EM Algorithm)

Number of subjects in dataset: 3000

Number of subjects in analysis: 3000

Number of measurement items per time: 6

Response categories per item: 2 2 2 2 2 2

Number of occasions (times): 2

Number of groups in the data: 1

Number of latent statuses: 5

Starting values were provided via a dataset.

Parameter restrictions: Rho (measurement) parameters were constrained to be equal across time.

The model converged in 349 iterations.

Maximum number of iterations: 5000

Convergence method: maximum absolute deviation (MAD)

Convergence criterion: 0.000001000

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Fit statistics:

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Log-likelihood: -19437.82

G-squared: 2276.57

AIC: 2384.57

BIC: 2708.91

Degrees of freedom: 4041

5 Class Model - Delinquency

Parameter Estimates

Delta estimates (status membership probabilities):

Status: 1 2 3 4 5

Time 1 : 0.0746 0.2081 0.3088 0.1788 0.2297

Time 2 : 0.2415 0.1990 0.2994 0.1220 0.1382

Tau estimates (transition probabilities):

Time 1 latent status (rows) by

Time 2 latent status (columns)

1 2 3 4 5

1 : 0.8569 0.0892 0.0411 0.0127 0.0000

2 : 0.1301 0.6390 0.0608 0.1190 0.0511

3 : 0.1691 0.0515 0.6593 0.0902 0.0298

4 : 0.4040 0.1564 0.0545 0.2935 0.0915

5 : 0.1134 0.0675 0.3060 0.0693 0.4439

Rho estimates (item-response probabilities):

(All times)

Response category: 1:

Status: 1 2 3 4 5

LIE1 : 0.8291 0.1136 0.3087 0.2485 0.1527

ROWDY1 : 0.8731 0.5985 0.2251 0.5104 0.1484

DAMAGE1 : 0.9522 0.9358 0.7200 0.9033 0.3286

STL\_STR1 : 0.9382 0.9632 0.9497 0.0610 0.0870

STL\_SM1 : 0.9421 0.9771 0.9167 0.2776 0.1706

FGHTGRP1 : 0.9640 0.9756 0.6050 0.8970 0.5113

Response category: 2:

Status: 1 2 3 4 5

LIE1 : 0.1709 0.8864 0.6913 0.7515 0.8473

ROWDY1 : 0.1269 0.4015 0.7749 0.4896 0.8516

DAMAGE1 : 0.0478 0.0642 0.2800 0.0967 0.6714

STL\_STR1 : 0.0618 0.0368 0.0503 0.9390 0.9130

STL\_SM1 : 0.0579 0.0229 0.0833 0.7224 0.8294

FGHTGRP1 : 0.0360 0.0244 0.3950 0.1030 0.4887

5 Class Model - Delinquency, Grouping Variable

Measurement Invariance

Data Summary, Model Information, and Fit Statistics (EM Algorithm)

Number of subjects in dataset: 3000

Number of subjects in analysis: 3000

Number of measurement items per time: 6

Response categories per item: 2 2 2 2 2 2

Number of occasions (times): 2

Number of groups in the data: 2

Number of latent statuses: 5

Starting values were provided via a dataset.

Parameter restrictions: Rho (measurement) parameters were constrained to be equal across

groups and time.

The model converged in 529 iterations.

Maximum number of iterations: 5000

Convergence method: maximum absolute deviation (MAD)

Convergence criterion: 0.000001000

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Fit statistics:

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Log-likelihood: -19290.90

G-squared: 3397.51

AIC: 3553.51

BIC: 4022.01

Degrees of freedom: 8113

5 Class Model - Delinquency, Grouping Variable

Measurement Invariance

Parameter Estimates

Delta estimates (status membership probabilities):

MALE :

Status: 1 2 3 4 5

Time 1 : 0.0487 0.2015 0.2232 0.1677 0.3589

Time 2 : 0.2691 0.1474 0.2736 0.1151 0.1948

FEMALE :

Status: 1 2 3 4 5

Time 1 : 0.0884 0.2272 0.3935 0.1786 0.1124

Time 2 : 0.1748 0.2898 0.3252 0.1206 0.0896

Tau estimates (transition probabilities):

MALE :

Time 1 latent status (rows) by

Time 2 latent status (columns)

1 2 3 4 5

1 : 0.8813 0.0000 0.1065 0.0121 0.0000

2 : 0.1663 0.5450 0.1013 0.1690 0.0184

3 : 0.3192 0.0001 0.6141 0.0247 0.0418

4 : 0.4604 0.0819 0.0358 0.3258 0.0962

5 : 0.1233 0.0664 0.2923 0.0565 0.4615

FEMALE :

Time 1 latent status (rows) by

Time 2 latent status (columns)

1 2 3 4 5

1 : 0.7487 0.2501 0.0001 0.0011 0.0000

2 : 0.1195 0.7031 0.0292 0.0671 0.0811

3 : 0.0552 0.1100 0.6862 0.1240 0.0244

4 : 0.2892 0.2940 0.0683 0.2527 0.0958

5 : 0.0715 0.1083 0.3237 0.1005 0.3959

Rho estimates (item-response probabilities):

(All groups)

(All times)

Response category: 1:

Status: 1 2 3 4 5

LIE1 : 0.8869 0.1143 0.3113 0.2439 0.1578

ROWDY1 : 0.8816 0.6145 0.2240 0.5175 0.1483

DAMAGE1 : 0.9484 0.9354 0.7276 0.9132 0.3295

STL\_STR1 : 0.9382 0.9577 0.9507 0.0541 0.0981

STL\_SM1 : 0.9371 0.9736 0.9236 0.2704 0.1760

FGHTGRP1 : 0.9619 0.9762 0.6087 0.8991 0.5143

Response category: 2:

Status: 1 2 3 4 5

LIE1 : 0.1131 0.8857 0.6887 0.7561 0.8422

ROWDY1 : 0.1184 0.3855 0.7760 0.4825 0.8517

DAMAGE1 : 0.0516 0.0646 0.2724 0.0868 0.6705

STL\_STR1 : 0.0618 0.0423 0.0493 0.9459 0.9019

STL\_SM1 : 0.0629 0.0264 0.0764 0.7296 0.8240

FGHTGRP1 : 0.0381 0.0238 0.3913 0.1009 0.4857

5 Class Model - Delinquency, Covariate Predicting Deltas

Data and Model Summary and Fit Statistics (EM Algorithm with Logistic Regression)

Number of subjects in dataset: 3000

Number of subjects in analysis: 3000

Number of measurement items per time: 6

Response categories per item: 2 2 2 2 2 2

Number of occasions (times): 2

Number of groups in the data: 1

Number of latent statuses: 5

Logistic model for time 1: multinomial

Number of covariates for time 1: 1

Reference status for time 1: 1

Starting values were provided via a dataset.

Parameter restrictions: Rho (measurement) parameters were constrained to be equal across time.

The model converged in 651 iterations.

Maximum number of iterations: 5000

Convergence method: maximum absolute deviation (MAD)

Convergence criterion: 0.000001000

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Fit statistics:

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Log-likelihood: -19384.54

5 Class Model - Delinquency, Covariate Predicting Deltas

Parameter Estimates

Delta estimates (status membership probabilities):

Status: 1 2 3 4 5

Time 1 : 0.0698 0.2163 0.3056 0.1763 0.2320

Time 2 : 0.2361 0.2064 0.2979 0.1207 0.1389

Tau estimates (transition probabilities):

Time 1 latent status (rows) by

Time 2 latent status (columns)

1 2 3 4 5

1 : 0.8940 0.0435 0.0523 0.0102 0.0000

2 : 0.1219 0.6559 0.0575 0.1158 0.0488

3 : 0.1668 0.0537 0.6616 0.0882 0.0297

4 : 0.4009 0.1633 0.0512 0.2960 0.0885

5 : 0.1104 0.0704 0.3041 0.0681 0.4469

Rho estimates (item-response probabilities):

(All times)

Response category: 1:

Status: 1 2 3 4 5

LIE1 : 0.8351 0.1318 0.3064 0.2468 0.1552

ROWDY1 : 0.8766 0.6018 0.2243 0.5106 0.1485

DAMAGE1 : 0.9512 0.9370 0.7209 0.8995 0.3317

STL\_STR1 : 0.9366 0.9572 0.9510 0.0597 0.0914

STL\_SM1 : 0.9404 0.9764 0.9188 0.2695 0.1736

FGHTGRP1 : 0.9632 0.9757 0.6042 0.8958 0.5120

Response category: 2:

Status: 1 2 3 4 5

LIE1 : 0.1649 0.8682 0.6936 0.7532 0.8448

ROWDY1 : 0.1234 0.3982 0.7757 0.4894 0.8515

DAMAGE1 : 0.0488 0.0630 0.2791 0.1005 0.6683

STL\_STR1 : 0.0634 0.0428 0.0490 0.9403 0.9086

STL\_SM1 : 0.0596 0.0236 0.0812 0.7305 0.8264

FGHTGRP1 : 0.0368 0.0243 0.3958 0.1042 0.4880

Beta estimates for Delta:

Status: 1 2 3 4 5

Intercept : Reference 1.0107 1.3429 0.6479 0.8272

ALC\_W1 : 1.0621 1.1381 1.7541 2.0467

Delta Odds Ratio estimates:

Status: 1 2 3 4 5

Intercept(odds): Reference 2.7474 3.8303 1.9115 2.2869

ALC\_W1 : 2.8925 3.1208 5.7781 7.7422

5 Class Model - Delinquency, Covariate Predicting Deltas

Significance Tests

Beta parameter test (Type III) for time 1 covariates (COVARIATES1): (based on

2\*log-likelihood)

Covariate Exclusion LL Change in 2\*LL deg freedom p-Value

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ALC\_W1 -19437.82452945 106.55950972 4 0.000000000

5 Class Model - Delinquency, Covariate Predicting Deltas and Taus

Data and Model Summary and Fit Statistics (EM Algorithm with Logistic Regression)

Number of subjects in dataset: 3000

Number of subjects in analysis: 3000

Number of measurement items per time: 6

Response categories per item: 2 2 2 2 2 2

Number of occasions (times): 2

Number of groups in the data: 1

Number of latent statuses: 5

Logistic model for time 1: multinomial

Number of covariates for time 1: 1

Reference status for time 1: 1

Logistic model for transitions: binary

Number of covariates for transitions: 1

Comparison statuses for time 1 to 2: 1 2 3 4 5

Starting values were provided via a dataset.

Parameter restrictions: Rho (measurement) parameters were constrained to be equal across time.

The model converged in 920 iterations.

Maximum number of iterations: 5000

Convergence method: maximum absolute deviation (MAD)

Convergence criterion: 0.000001000

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Fit statistics:

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Log-likelihood: -19381.34

5 Class Model - Delinquency, Covariate Predicting Deltas and Taus

Parameter Estimates

Delta estimates (status membership probabilities):

Status: 1 2 3 4 5

Time 1 : 0.0688 0.2184 0.3034 0.1783 0.2311

Time 2 : 0.2320 0.2138 0.2974 0.1217 0.1352

Tau estimates (transition probabilities):

Time 1 latent status (rows) by

Time 2 latent status (columns)

1 2 3 4 5

1 : 0.8639 0.0814 0.0547 0.0000 0.0000

2 : 0.1172 0.6671 0.0525 0.1188 0.0444

3 : 0.1660 0.0518 0.6628 0.0880 0.0314

4 : 0.3970 0.1654 0.0541 0.2924 0.0911

5 : 0.1118 0.0748 0.3089 0.0730 0.4315

Rho estimates (item-response probabilities):

(All times)

Response category: 1:

Status: 1 2 3 4 5

LIE1 : 0.8397 0.1347 0.3070 0.2473 0.1548

ROWDY1 : 0.8780 0.6008 0.2239 0.5092 0.1476

DAMAGE1 : 0.9512 0.9366 0.7202 0.8996 0.3286

STL\_STR1 : 0.9369 0.9574 0.9520 0.0626 0.0917

STL\_SM1 : 0.9401 0.9772 0.9190 0.2711 0.1738

FGHTGRP1 : 0.9636 0.9735 0.6034 0.8945 0.5108

Response category: 2:

Status: 1 2 3 4 5

LIE1 : 0.1603 0.8653 0.6930 0.7527 0.8452

ROWDY1 : 0.1220 0.3992 0.7761 0.4908 0.8524

DAMAGE1 : 0.0488 0.0634 0.2798 0.1004 0.6714

STL\_STR1 : 0.0631 0.0426 0.0480 0.9374 0.9083

STL\_SM1 : 0.0599 0.0228 0.0810 0.7289 0.8262

FGHTGRP1 : 0.0364 0.0265 0.3966 0.1055 0.4892

Beta estimates for Delta:

Status: 1 2 3 4 5

Intercept : Reference 1.0578 1.3594 0.6809 0.8585

ALC\_W1 : 0.8347 0.9900 1.6035 1.8554

Delta Odds Ratio estimates:

Status: 1 2 3 4 5

Intercept(odds): Reference 2.8800 3.8939 1.9757 2.3596

ALC\_W1 : 2.3041 2.6913 4.9702 6.3940

5 Class Model - Delinquency, Covariate Predicting Deltas and Taus

Parameter Estimates

Beta estimates for Tau:

Intercept:

Time 1 Time 2 Estimate

1 1 2.2302

2 2 0.5626

3 3 0.6965

4 4 -0.9275

5 5 -0.3727

ALC\_W1 :

Time 1 Time 2 Estimate

1 1 -1.2091

2 2 0.6244

3 3 -0.0887

4 4 0.1830

5 5 0.4094

Tau Odds Ratio estimates:

Intercept(odds):

Time 1 Time 2 Estimate

1 1 9.3017

2 2 1.7553

3 3 2.0067

4 4 0.3955

5 5 0.6889

ALC\_W1 :

Time 1 Time 2 Estimate

1 1 0.2985

2 2 1.8671

3 3 0.9151

4 4 1.2008

5 5 1.5059

5 Class Model - Delinquency, Covariate Predicting Deltas and Taus

Significance Tests

Beta parameter test (Type III) for time 1 covariates (COVARIATES1): (based on

2\*log-likelihood)

Covariate Exclusion LL Change in 2\*LL deg freedom p-Value

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ALC\_W1 -19431.94390134 101.21710324 4 0.000000000