**# exam 1 - narrative - occurrence 1**

> lmerdf1naoc1item3 <- lmer(`SUM...13` ~ `Item3` + `Item5...6` + `Item11...7`

+ + `Item14` + `Item17` + `Item25` + `Item26` + `Item29`

+ + (1 + `Stu1ent I1`|`Item3`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc1item3)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item3 + Item5...6 + Item11...7 + Item14 + Item17 +

Item25 + Item26 + Item29 + (1 + `Stu1ent I1` | Item3)

Data: df1

REML criterion at convergence: 483.8

Scaled residuals:

Min 1Q Median 3Q Max

-1.9801 -0.6970 0.0732 0.4164 7.6803

Random effects:

Groups Name Variance Std.Dev. Corr

Item3 (Intercept) 1.215e+00 1.102e+00

`Stu1ent I1` 8.233e-20 2.869e-10 1.00

Residual 1.215e+00 1.102e+00

Number of obs: 159, groups: Item3, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.8876 1.1141 0.797

Item3 1.0694 1.5731 0.680

Item5...61 1.5035 0.2117 7.104

Item5...6D 1.0616 1.1399 0.931

Item11...7 1.4647 0.2206 6.640

Item14 1.3361 0.2158 6.193

Item17 0.9623 0.2063 4.664

Item25 1.6449 0.2457 6.695

Item26 1.0508 0.2415 4.352

Item29 0.8366 0.2419 3.458

Correlation of Fixed Effects:

(Intr) Item3 I5...61 I5...6D I11... Item14 Item17 Item25 Item26

Item3 -0.696

Item5...61 -0.042 -0.053

Item5...6D -0.020 0.003 0.076

Item11...7 -0.010 0.003 0.016 0.053

Item14 -0.039 -0.015 -0.161 0.026 -0.359

Item17 -0.039 -0.018 0.047 0.056 -0.138 -0.049

Item25 -0.003 -0.007 0.011 0.070 -0.039 -0.043 -0.177

Item26 0.000 -0.002 -0.165 -0.212 -0.202 0.058 -0.085 -0.319

Item29 0.006 -0.003 -0.054 0.032 -0.084 -0.133 -0.136 -0.298 -0.182

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1naoc1item5 <- lmer(`SUM...13` ~ `Item3` + `Item5...6` + `Item11...7`

+ + `Item14` + `Item17` + `Item25` + `Item26` + `Item29`

+ + (1 + `Stu1ent I1`|`Item5...6`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc1item5)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item3 + Item5...6 + Item11...7 + Item14 + Item17 +

Item25 + Item26 + Item29 + (1 + `Stu1ent I1` | Item5...6)

Data: df1

REML criterion at convergence: 483.8

Scaled residuals:

Min 1Q Median 3Q Max

-1.9801 -0.6970 0.0732 0.4164 7.6803

Random effects:

Groups Name Variance Std.Dev. Corr

Item5...6 (Intercept) 1.215e+00 1.102e+00

`Stu1ent I1` 3.761e-19 6.133e-10 1.00

Residual 1.215e+00 1.102e+00

Number of obs: 159, groups: Item5...6, 3

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.8876 1.1141 0.797

Item3 1.0694 0.2086 5.127

Item5...61 1.5035 1.5735 0.956

Item5...6D 1.0616 1.9314 0.550

Item11...7 1.4647 0.2206 6.640

Item14 1.3361 0.2158 6.193

Item17 0.9623 0.2063 4.664

Item25 1.6449 0.2457 6.695

Item26 1.0508 0.2415 4.352

Item29 0.8366 0.2419 3.458

Correlation of Fixed Effects:

(Intr) Item3 I5...61 I5...6D I11... Item14 Item17 Item25 Item26

Item3 -0.019

Item5...61 -0.699 -0.053

Item5...6D -0.577 0.013 0.406

Item11...7 -0.010 0.020 0.002 0.031

Item14 -0.039 -0.112 -0.022 0.015 -0.359

Item17 -0.039 -0.135 0.006 0.033 -0.138 -0.049

Item25 -0.003 -0.052 0.002 0.041 -0.039 -0.043 -0.177

Item26 0.000 -0.014 -0.022 -0.125 -0.202 0.058 -0.085 -0.319

Item29 0.006 -0.026 -0.007 0.019 -0.084 -0.133 -0.136 -0.298 -0.182

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1naoc1item11 <- lmer(`SUM...13` ~ `Item3` + `Item5...6` + `Item11...7`

+ + `Item14` + `Item17` + `Item25` + `Item26` + `Item29`

+ + (1 + `Stu1ent I1`|`Item11...7`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc1item11)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item3 + Item5...6 + Item11...7 + Item14 + Item17 +

Item25 + Item26 + Item29 + (1 + `Stu1ent I1` | Item11...7)

Data: df1

REML criterion at convergence: 483.8

Scaled residuals:

Min 1Q Median 3Q Max

-1.9801 -0.6970 0.0732 0.4164 7.6803

Random effects:

Groups Name Variance Std.Dev. Corr

Item11...7 (Intercept) 1.215e+00 1.102e+00

`Stu1ent I1` 6.312e-20 2.512e-10 -1.00

Residual 1.215e+00 1.102e+00

Number of obs: 159, groups: Item11...7, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.8876 1.1141 0.797

Item3 1.0694 0.2086 5.127

Item5...61 1.5035 0.2117 7.104

Item5...6D 1.0616 1.1399 0.931

Item11...7 1.4647 1.5747 0.930

Item14 1.3361 0.2158 6.193

Item17 0.9623 0.2063 4.664

Item25 1.6449 0.2457 6.695

Item26 1.0508 0.2415 4.352

Item29 0.8366 0.2419 3.458

Correlation of Fixed Effects:

(Intr) Item3 I5...61 I5...6D I11... Item14 Item17 Item25 Item26

Item3 -0.019

Item5...61 -0.042 -0.397

Item5...6D -0.020 0.021 0.076

Item11...7 -0.694 0.003 0.002 0.007

Item14 -0.039 -0.112 -0.161 0.026 -0.050

Item17 -0.039 -0.135 0.047 0.056 -0.019 -0.049

Item25 -0.003 -0.052 0.011 0.070 -0.005 -0.043 -0.177

Item26 0.000 -0.014 -0.165 -0.212 -0.028 0.058 -0.085 -0.319

Item29 0.006 -0.026 -0.054 0.032 -0.012 -0.133 -0.136 -0.298 -0.182

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1naoc1item14 <- lmer(`SUM...13` ~ `Item3` + `Item5...6` + `Item11...7`

+ + `Item14` + `Item17` + `Item25` + `Item26` + `Item29`

+ + (1 + `Stu1ent I1`|`Item14`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc1item14)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item3 + Item5...6 + Item11...7 + Item14 + Item17 +

Item25 + Item26 + Item29 + (1 + `Stu1ent I1` | Item14)

Data: df1

REML criterion at convergence: 483.8

Scaled residuals:

Min 1Q Median 3Q Max

-1.9801 -0.6970 0.0732 0.4164 7.6803

Random effects:

Groups Name Variance Std.Dev. Corr

Item14 (Intercept) 1.215e+00 1.102e+00

`Stu1ent I1` 8.732e-20 2.955e-10 1.00

Residual 1.215e+00 1.102e+00

Number of obs: 159, groups: Item14, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.8876 1.1141 0.797

Item3 1.0694 0.2086 5.127

Item5...61 1.5035 0.2117 7.104

Item5...6D 1.0616 1.1399 0.931

Item11...7 1.4647 0.2206 6.640

Item14 1.3361 1.5740 0.849

Item17 0.9623 0.2063 4.664

Item25 1.6449 0.2457 6.695

Item26 1.0508 0.2415 4.352

Item29 0.8366 0.2419 3.458

Correlation of Fixed Effects:

(Intr) Item3 I5...61 I5...6D I11... Item14 Item17 Item25 Item26

Item3 -0.019

Item5...61 -0.042 -0.397

Item5...6D -0.020 0.021 0.076

Item11...7 -0.010 0.020 0.016 0.053

Item14 -0.699 -0.015 -0.022 0.004 -0.049

Item17 -0.039 -0.135 0.047 0.056 -0.138 -0.007

Item25 -0.003 -0.052 0.011 0.070 -0.039 -0.006 -0.177

Item26 0.000 -0.014 -0.165 -0.212 -0.202 0.008 -0.085 -0.319

Item29 0.006 -0.026 -0.054 0.032 -0.084 -0.018 -0.136 -0.298 -0.182

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1naoc1item17 <- lmer(`SUM...13` ~ `Item3` + `Item5...6` + `Item11...7`

+ + `Item14` + `Item17` + `Item25` + `Item26` + `Item29`

+ + (1 + `Stu1ent I1`|`Item17`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc1item17)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item3 + Item5...6 + Item11...7 + Item14 + Item17 +

Item25 + Item26 + Item29 + (1 + `Stu1ent I1` | Item17)

Data: df1

REML criterion at convergence: 483.8

Scaled residuals:

Min 1Q Median 3Q Max

-1.9801 -0.6970 0.0732 0.4164 7.6803

Random effects:

Groups Name Variance Std.Dev. Corr

Item17 (Intercept) 1.215e+00 1.102e+00

`Stu1ent I1` 9.539e-20 3.089e-10 -1.00

Residual 1.215e+00 1.102e+00

Number of obs: 159, groups: Item17, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.8876 1.1141 0.797

Item3 1.0694 0.2086 5.127

Item5...61 1.5035 0.2117 7.104

Item5...6D 1.0616 1.1399 0.931

Item11...7 1.4647 0.2206 6.640

Item14 1.3361 0.2158 6.193

Item17 0.9623 1.5728 0.612

Item25 1.6449 0.2457 6.695

Item26 1.0508 0.2415 4.352

Item29 0.8366 0.2419 3.458

Correlation of Fixed Effects:

(Intr) Item3 I5...61 I5...6D I11... Item14 Item17 Item25 Item26

Item3 -0.019

Item5...61 -0.042 -0.397

Item5...6D -0.020 0.021 0.076

Item11...7 -0.010 0.020 0.016 0.053

Item14 -0.039 -0.112 -0.161 0.026 -0.359

Item17 -0.699 -0.018 0.006 0.007 -0.018 -0.006

Item25 -0.003 -0.052 0.011 0.070 -0.039 -0.043 -0.023

Item26 0.000 -0.014 -0.165 -0.212 -0.202 0.058 -0.011 -0.319

Item29 0.006 -0.026 -0.054 0.032 -0.084 -0.133 -0.018 -0.298 -0.182

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1naoc1item25 <- lmer(`SUM...13` ~ `Item3` + `Item5...6` + `Item11...7`

+ + `Item14` + `Item17` + `Item25` + `Item26` + `Item29`

+ + (1 + `Stu1ent I1`|`Item25`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc1item25)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item3 + Item5...6 + Item11...7 + Item14 + Item17 +

Item25 + Item26 + Item29 + (1 + `Stu1ent I1` | Item25)

Data: df1

REML criterion at convergence: 483.6

Scaled residuals:

Min 1Q Median 3Q Max

-1.9749 -0.6977 0.0755 0.3755 7.6654

Random effects:

Groups Name Variance Std.Dev. Corr

Item25 (Intercept) 9.243e-01 0.9614049

`Stu1ent I1` 3.845e-07 0.0006201 -0.99

Residual 1.208e+00 1.0991553

Number of obs: 159, groups: Item25, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.8733 0.2054 4.251

Item3 1.0900 0.2093 5.208

Item5...61 1.5036 0.2112 7.120

Item5...6D 1.1403 1.1406 1.000

Item11...7 1.4556 0.2220 6.556

Item14 1.3305 0.2152 6.183

Item17 0.9788 0.2069 4.730

Item25 1.6528 0.3045 5.427

Item26 1.0634 0.2412 4.409

Item29 0.8218 0.2420 3.395

Correlation of Fixed Effects:

(Intr) Item3 I5...61 I5...6D I11... Item14 Item17 Item25 Item26

Item3 -0.107

Item5...61 -0.226 -0.396

Item5...6D -0.114 0.031 0.074

Item11...7 -0.054 0.009 0.021 0.043

Item14 -0.211 -0.114 -0.161 0.024 -0.354

Item17 -0.216 -0.121 0.044 0.065 -0.149 -0.051

Item25 -0.275 -0.039 0.009 0.058 -0.033 -0.035 -0.139

Item26 -0.006 -0.010 -0.164 -0.208 -0.198 0.056 -0.082 -0.255

Item29 0.039 -0.035 -0.051 0.025 -0.074 -0.131 -0.143 -0.241 -0.183

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1naoc1item26 <- lmer(`SUM...13` ~ `Item3` + `Item5...6` + `Item11...7`

+ + `Item14` + `Item17` + `Item25` + `Item26` + `Item29`

+ + (1 + `Stu1ent I1`|`Item26`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc1item26)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item3 + Item5...6 + Item11...7 + Item14 + Item17 +

Item25 + Item26 + Item29 + (1 + `Stu1ent I1` | Item26)

Data: df1

REML criterion at convergence: 483.8

Scaled residuals:

Min 1Q Median 3Q Max

-1.9801 -0.6970 0.0732 0.4164 7.6803

Random effects:

Groups Name Variance Std.Dev. Corr

Item26 (Intercept) 1.215e+00 1.102e+00

`Stu1ent I1` 5.233e-22 2.288e-11 1.00

Residual 1.215e+00 1.102e+00

Number of obs: 159, groups: Item26, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.8876 1.1141 0.797

Item3 1.0694 0.2086 5.127

Item5...61 1.5035 0.2117 7.104

Item5...6D 1.0616 1.1399 0.931

Item11...7 1.4647 0.2206 6.640

Item14 1.3361 0.2158 6.193

Item17 0.9623 0.2063 4.664

Item25 1.6449 0.2457 6.695

Item26 1.0508 1.5777 0.666

Item29 0.8366 0.2419 3.458

Correlation of Fixed Effects:

(Intr) Item3 I5...61 I5...6D I11... Item14 Item17 Item25 Item26

Item3 -0.019

Item5...61 -0.042 -0.397

Item5...6D -0.020 0.021 0.076

Item11...7 -0.010 0.020 0.016 0.053

Item14 -0.039 -0.112 -0.161 0.026 -0.359

Item17 -0.039 -0.135 0.047 0.056 -0.138 -0.049

Item25 -0.003 -0.052 0.011 0.070 -0.039 -0.043 -0.177

Item26 -0.692 -0.002 -0.025 -0.032 -0.031 0.009 -0.013 -0.049

Item29 0.006 -0.026 -0.054 0.032 -0.084 -0.133 -0.136 -0.298 -0.028

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1naoc1item29 <- lmer(`SUM...13` ~ `Item3` + `Item5...6` + `Item11...7`

+ + `Item14` + `Item17` + `Item25` + `Item26` + `Item29`

+ + (1 + `Stu1ent I1`|`Item29`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc1item29)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item3 + Item5...6 + Item11...7 + Item14 + Item17 +

Item25 + Item26 + Item29 + (1 + `Stu1ent I1` | Item29)

Data: df1

REML criterion at convergence: 483.8

Scaled residuals:

Min 1Q Median 3Q Max

-1.9801 -0.6970 0.0732 0.4164 7.6803

Random effects:

Groups Name Variance Std.Dev. Corr

Item29 (Intercept) 1.215e+00 1.102e+00

`Stu1ent I1` 2.446e-20 1.564e-10 1.00

Residual 1.215e+00 1.102e+00

Number of obs: 159, groups: Item29, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.8876 1.1141 0.797

Item3 1.0694 0.2086 5.127

Item5...61 1.5035 0.2117 7.104

Item5...6D 1.0616 1.1399 0.931

Item11...7 1.4647 0.2206 6.640

Item14 1.3361 0.2158 6.193

Item17 0.9623 0.2063 4.664

Item25 1.6449 0.2457 6.695

Item26 1.0508 0.2415 4.352

Item29 0.8366 1.5778 0.530

Correlation of Fixed Effects:

(Intr) Item3 I5...61 I5...6D I11... Item14 Item17 Item25 Item26

Item3 -0.019

Item5...61 -0.042 -0.397

Item5...6D -0.020 0.021 0.076

Item11...7 -0.010 0.020 0.016 0.053

Item14 -0.039 -0.112 -0.161 0.026 -0.359

Item17 -0.039 -0.135 0.047 0.056 -0.138 -0.049

Item25 -0.003 -0.052 0.011 0.070 -0.039 -0.043 -0.177

Item26 0.000 -0.014 -0.165 -0.212 -0.202 0.058 -0.085 -0.319

Item29 -0.690 -0.004 -0.008 0.005 -0.013 -0.020 -0.021 -0.046 -0.028

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

**# exam 1 - narrative - occurrence 2**

> lmerdf1naoc2item1 <- lmer(`SUM...13` ~ `Item1` + `Item9...3` + `Item33...4`

+ + (1 + `Stu1ent I1`|`Item1`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc2item1)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item1 + Item9...3 + Item33...4 + (1 + `Stu1ent I1` | Item1)

Data: df1

REML criterion at convergence: 688.8

Scaled residuals:

Min 1Q Median 3Q Max

-2.5277 -0.6265 -0.1548 0.7727 3.6171

Random effects:

Groups Name Variance Std.Dev. Corr

Item1 (Intercept) 5.693e+00 2.386e+00

`Stu1ent I1` 3.235e-18 1.799e-09 1.00

Residual 4.498e+00 2.121e+00

Number of obs: 159, groups: Item1, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 1.1021 2.4071 0.458

Item1 2.0324 3.3925 0.599

Item9...3 3.0005 0.3790 7.917

Item33...4 2.2262 0.3695 6.025

Correlation of Fixed Effects:

(Intr) Item1 I9...3

Item1 -0.702

Item9...3 -0.059 -0.016

Item33...4 -0.041 -0.017 -0.333

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1naoc2item9 <- lmer(`SUM...13` ~ `Item1` + `Item9...3` + `Item33...4`

+ + (1 + `Stu1ent I1`|`Item9...3`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc2item9)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item1 + Item9...3 + Item33...4 + (1 + `Stu1ent I1` | Item9...3)

Data: df1

REML criterion at convergence: 688.8

Scaled residuals:

Min 1Q Median 3Q Max

-2.5277 -0.6265 -0.1548 0.7727 3.6171

Random effects:

Groups Name Variance Std.Dev. Corr

Item9...3 (Intercept) 4.498e+00 2.121e+00

`Stu1ent I1` 6.393e-19 7.996e-10 1.00

Residual 4.498e+00 2.121e+00

Number of obs: 159, groups: Item9...3, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 1.1021 2.1446 0.514

Item1 2.0324 0.3502 5.803

Item9...3 3.0005 3.0233 0.992

Item33...4 2.2262 0.3695 6.025

Correlation of Fixed Effects:

(Intr) Item1 I9...3

Item1 -0.049

Item9...3 -0.702 -0.019

Item33...4 -0.046 -0.166 -0.042

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1naoc2item33 <- lmer(`SUM...13` ~ `Item1` + `Item9...3` + `Item33...4`

+ + (1 + `Stu1ent I1`|`Item33...4` ), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc2item33)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item1 + Item9...3 + Item33...4 + (1 + `Stu1ent I1` | Item33...4)

Data: df1

REML criterion at convergence: 688.8

Scaled residuals:

Min 1Q Median 3Q Max

-2.5277 -0.6265 -0.1548 0.7727 3.6171

Random effects:

Groups Name Variance Std.Dev. Corr

Item33...4 (Intercept) 4.498e+00 2.121e+00

`Stu1ent I1` 1.170e-18 1.081e-09 1.00

Residual 4.498e+00 2.121e+00

Number of obs: 159, groups: Item33...4, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 1.1021 2.1446 0.514

Item1 2.0324 0.3502 5.803

Item9...3 3.0005 0.3790 7.917

Item33...4 2.2262 3.0221 0.737

Correlation of Fixed Effects:

(Intr) Item1 I9...3

Item1 -0.049

Item9...3 -0.066 -0.155

Item33...4 -0.700 -0.020 -0.041

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

**# exam 1 - expository - occurrence 1**

> # exam 1 - expository - occurrence 1

> lmerdf1exoc1item6 <- lmer(`SUM...27` ~ `Item6...19` + `Item10` + `Item12`

+ + `Item15...22` + `Item18` + `Item24` + `Item30` + `Item32`

+ + (1 + `Student ID...15`|`Item6...19`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1exoc1item6)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item6...19 + Item10 + Item12 + Item15...22 + Item18 +

Item24 + Item30 + Item32 + (1 + `Student ID...15` | Item6...19)

Data: df1

REML criterion at convergence: 399.5

Scaled residuals:

Min 1Q Median 3Q Max

-3.1292 -0.6721 0.1624 0.5409 2.5939

Random effects:

Groups Name Variance Std.Dev. Corr

Item6...19 (Intercept) 6.797e-01 8.244e-01

`Student ID...15` 1.683e-19 4.103e-10 -1.00

Residual 6.797e-01 8.244e-01

Number of obs: 159, groups: Item6...19, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.5541 0.8337 0.665

Item6...19 1.0187 1.1777 0.865

Item10 1.5133 0.1758 8.610

Item12 1.3843 0.1678 8.251

Item15...22 1.4322 0.1577 9.079

Item18 1.1839 0.1809 6.543

Item24 1.0719 0.1719 6.235

Item30 1.2355 0.1563 7.905

Item32 1.3885 0.1644 8.447

Correlation of Fixed Effects:

(Intr) I6...1 Item10 Item12 I15... Item18 Item24 Item30

Item6...19 -0.695

Item10 -0.005 -0.042

Item12 -0.005 -0.013 -0.215

Item15...22 -0.028 0.002 -0.131 -0.246

Item18 0.008 -0.036 -0.136 -0.023 -0.085

Item24 -0.038 -0.002 -0.067 -0.259 -0.058 -0.143

Item30 -0.058 -0.008 0.063 -0.074 -0.099 0.037 -0.278

Item32 -0.003 0.012 -0.174 0.008 -0.143 -0.257 -0.132 -0.175

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1exoc1item10 <- lmer(`SUM...27` ~ `Item6...19` + `Item10` + `Item12`

+ + `Item15...22` + `Item18` + `Item24` + `Item30` + `Item32`

+ + (1 + `Student ID...15`|`Item10`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1exoc1item10)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item6...19 + Item10 + Item12 + Item15...22 + Item18 +

Item24 + Item30 + Item32 + (1 + `Student ID...15` | Item10)

Data: df1

REML criterion at convergence: 399.5

Scaled residuals:

Min 1Q Median 3Q Max

-3.1292 -0.6721 0.1624 0.5409 2.5939

Random effects:

Groups Name Variance Std.Dev. Corr

Item10 (Intercept) 6.797e-01 8.244e-01

`Student ID...15` 7.190e-21 8.479e-11 1.00

Residual 6.797e-01 8.244e-01

Number of obs: 159, groups: Item10, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.5541 0.8337 0.665

Item6...19 1.0187 0.1661 6.133

Item10 1.5133 1.1791 1.283

Item12 1.3843 0.1678 8.251

Item15...22 1.4322 0.1577 9.079

Item18 1.1839 0.1809 6.543

Item24 1.0719 0.1719 6.235

Item30 1.2355 0.1563 7.905

Item32 1.3885 0.1644 8.447

Correlation of Fixed Effects:

(Intr) I6...1 Item10 Item12 I15... Item18 Item24 Item30

Item6...19 -0.016

Item10 -0.692 -0.044

Item12 -0.005 -0.089 -0.032

Item15...22 -0.028 0.012 -0.020 -0.246

Item18 0.008 -0.257 -0.020 -0.023 -0.085

Item24 -0.038 -0.011 -0.010 -0.259 -0.058 -0.143

Item30 -0.058 -0.056 0.009 -0.074 -0.099 0.037 -0.278

Item32 -0.003 0.085 -0.026 0.008 -0.143 -0.257 -0.132 -0.175

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1exoc1item12 <- lmer(`SUM...27` ~ `Item6...19` + `Item10` + `Item12`

+ + `Item15...22` + `Item18` + `Item24` + `Item30` + `Item32`

+ + (1 + `Student ID...15`|`Item12`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1exoc1item12)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item6...19 + Item10 + Item12 + Item15...22 + Item18 +

Item24 + Item30 + Item32 + (1 + `Student ID...15` | Item12)

Data: df1

REML criterion at convergence: 399.5

Scaled residuals:

Min 1Q Median 3Q Max

-3.1292 -0.6721 0.1624 0.5409 2.5939

Random effects:

Groups Name Variance Std.Dev. Corr

Item12 (Intercept) 6.797e-01 8.244e-01

`Student ID...15` 5.044e-21 7.102e-11 -1.00

Residual 6.797e-01 8.244e-01

Number of obs: 159, groups: Item12, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.5541 0.8337 0.665

Item6...19 1.0187 0.1661 6.133

Item10 1.5133 0.1758 8.610

Item12 1.3843 1.1779 1.175

Item15...22 1.4322 0.1577 9.079

Item18 1.1839 0.1809 6.543

Item24 1.0719 0.1719 6.235

Item30 1.2355 0.1563 7.905

Item32 1.3885 0.1644 8.447

Correlation of Fixed Effects:

(Intr) I6...1 Item10 Item12 I15... Item18 Item24 Item30

Item6...19 -0.016

Item10 -0.005 -0.294

Item12 -0.693 -0.013 -0.031

Item15...22 -0.028 0.012 -0.131 -0.035

Item18 0.008 -0.257 -0.136 -0.003 -0.085

Item24 -0.038 -0.011 -0.067 -0.037 -0.058 -0.143

Item30 -0.058 -0.056 0.063 -0.011 -0.099 0.037 -0.278

Item32 -0.003 0.085 -0.174 0.001 -0.143 -0.257 -0.132 -0.175

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1exoc1item15 <- lmer(`SUM...27` ~ `Item6...19` + `Item10` + `Item12`

+ + `Item15...22` + `Item18` + `Item24` + `Item30` + `Item32`

+ + (1 + `Student ID...15`|`Item15...22`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1exoc1item15)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item6...19 + Item10 + Item12 + Item15...22 + Item18 +

Item24 + Item30 + Item32 + (1 + `Student ID...15` | Item15...22)

Data: df1

REML criterion at convergence: 399.5

Scaled residuals:

Min 1Q Median 3Q Max

-3.1292 -0.6721 0.1624 0.5409 2.5939

Random effects:

Groups Name Variance Std.Dev. Corr

Item15...22 (Intercept) 6.797e-01 8.244e-01

`Student ID...15` 2.481e-20 1.575e-10 -1.00

Residual 6.797e-01 8.244e-01

Number of obs: 159, groups: Item15...22, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.5541 0.8337 0.665

Item6...19 1.0187 0.1661 6.133

Item10 1.5133 0.1758 8.610

Item12 1.3843 0.1678 8.251

Item15...22 1.4322 1.1766 1.217

Item18 1.1839 0.1809 6.543

Item24 1.0719 0.1719 6.235

Item30 1.2355 0.1563 7.905

Item32 1.3885 0.1644 8.447

Correlation of Fixed Effects:

(Intr) I6...1 Item10 Item12 I15... Item18 Item24 Item30

Item6...19 -0.016

Item10 -0.005 -0.294

Item12 -0.005 -0.089 -0.215

Item15...22 -0.697 0.002 -0.018 -0.033

Item18 0.008 -0.257 -0.136 -0.023 -0.011

Item24 -0.038 -0.011 -0.067 -0.259 -0.008 -0.143

Item30 -0.058 -0.056 0.063 -0.074 -0.013 0.037 -0.278

Item32 -0.003 0.085 -0.174 0.008 -0.019 -0.257 -0.132 -0.175

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1exoc1item18 <- lmer(`SUM...27` ~ `Item6...19` + `Item10` + `Item12`

+ + `Item15...22` + `Item18` + `Item24` + `Item30` + `Item32`

+ + (1 + `Student ID...15`|`Item18`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1exoc1item18)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item6...19 + Item10 + Item12 + Item15...22 + Item18 +

Item24 + Item30 + Item32 + (1 + `Student ID...15` | Item18)

Data: df1

REML criterion at convergence: 399.5

Scaled residuals:

Min 1Q Median 3Q Max

-3.1292 -0.6721 0.1624 0.5409 2.5939

Random effects:

Groups Name Variance Std.Dev. Corr

Item18 (Intercept) 6.797e-01 8.244e-01

`Student ID...15` 4.389e-19 6.625e-10 1.00

Residual 6.797e-01 8.244e-01

Number of obs: 159, groups: Item18, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.5541 0.8337 0.665

Item6...19 1.0187 0.1661 6.133

Item10 1.5133 0.1758 8.610

Item12 1.3843 0.1678 8.251

Item15...22 1.4322 0.1577 9.079

Item18 1.1839 1.1799 1.003

Item24 1.0719 0.1719 6.235

Item30 1.2355 0.1563 7.905

Item32 1.3885 0.1644 8.447

Correlation of Fixed Effects:

(Intr) I6...1 Item10 Item12 I15... Item18 Item24 Item30

Item6...19 -0.016

Item10 -0.005 -0.294

Item12 -0.005 -0.089 -0.215

Item15...22 -0.028 0.012 -0.131 -0.246

Item18 -0.690 -0.039 -0.021 -0.004 -0.013

Item24 -0.038 -0.011 -0.067 -0.259 -0.058 -0.022

Item30 -0.058 -0.056 0.063 -0.074 -0.099 0.006 -0.278

Item32 -0.003 0.085 -0.174 0.008 -0.143 -0.039 -0.132 -0.175

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1exoc1item24 <- lmer(`SUM...27` ~ `Item6...19` + `Item10` + `Item12`

+ + `Item15...22` + `Item18` + `Item24` + `Item30` + `Item32`

+ + (1 + `Student ID...15`|`Item24`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1exoc1item24)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item6...19 + Item10 + Item12 + Item15...22 + Item18 +

Item24 + Item30 + Item32 + (1 + `Student ID...15` | Item24)

Data: df1

REML criterion at convergence: 399.5

Scaled residuals:

Min 1Q Median 3Q Max

-3.1292 -0.6721 0.1624 0.5409 2.5939

Random effects:

Groups Name Variance Std.Dev. Corr

Item24 (Intercept) 6.797e-01 8.244e-01

`Student ID...15` 1.193e-20 1.092e-10 1.00

Residual 6.797e-01 8.244e-01

Number of obs: 159, groups: Item24, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.5541 0.8337 0.665

Item6...19 1.0187 0.1661 6.133

Item10 1.5133 0.1758 8.610

Item12 1.3843 0.1678 8.251

Item15...22 1.4322 0.1577 9.079

Item18 1.1839 0.1809 6.543

Item24 1.0719 1.1785 0.910

Item30 1.2355 0.1563 7.905

Item32 1.3885 0.1644 8.447

Correlation of Fixed Effects:

(Intr) I6...1 Item10 Item12 I15... Item18 Item24 Item30

Item6...19 -0.016

Item10 -0.005 -0.294

Item12 -0.005 -0.089 -0.215

Item15...22 -0.028 0.012 -0.131 -0.246

Item18 0.008 -0.257 -0.136 -0.023 -0.085

Item24 -0.697 -0.002 -0.010 -0.038 -0.009 -0.021

Item30 -0.058 -0.056 0.063 -0.074 -0.099 0.037 -0.041

Item32 -0.003 0.085 -0.174 0.008 -0.143 -0.257 -0.019 -0.175

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1exoc1item30 <- lmer(`SUM...27` ~ `Item6...19` + `Item10` + `Item12`

+ + `Item15...22` + `Item18` + `Item24` + `Item30` + `Item32`

+ + (1 + `Student ID...15`|`Item30`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1exoc1item30)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item6...19 + Item10 + Item12 + Item15...22 + Item18 +

Item24 + Item30 + Item32 + (1 + `Student ID...15` | Item30)

Data: df1

REML criterion at convergence: 399.5

Scaled residuals:

Min 1Q Median 3Q Max

-3.1292 -0.6721 0.1624 0.5409 2.5939

Random effects:

Groups Name Variance Std.Dev. Corr

Item30 (Intercept) 6.797e-01 8.244e-01

`Student ID...15` 8.917e-20 2.986e-10 1.00

Residual 6.797e-01 8.244e-01

Number of obs: 159, groups: Item30, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.5541 0.8337 0.665

Item6...19 1.0187 0.1661 6.133

Item10 1.5133 0.1758 8.610

Item12 1.3843 0.1678 8.251

Item15...22 1.4322 0.1577 9.079

Item18 1.1839 0.1809 6.543

Item24 1.0719 0.1719 6.235

Item30 1.2355 1.1764 1.050

Item32 1.3885 0.1644 8.447

Correlation of Fixed Effects:

(Intr) I6...1 Item10 Item12 I15... Item18 Item24 Item30

Item6...19 -0.016

Item10 -0.005 -0.294

Item12 -0.005 -0.089 -0.215

Item15...22 -0.028 0.012 -0.131 -0.246

Item18 0.008 -0.257 -0.136 -0.023 -0.085

Item24 -0.038 -0.011 -0.067 -0.259 -0.058 -0.143

Item30 -0.701 -0.007 0.008 -0.010 -0.013 0.005 -0.037

Item32 -0.003 0.085 -0.174 0.008 -0.143 -0.257 -0.132 -0.023

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1exoc1item32 <- lmer(`SUM...27` ~ `Item6...19` + `Item10` + `Item12`

+ + `Item15...22` + `Item18` + `Item24` + `Item30` + `Item32`

+ + (1 + `Student ID...15`|`Item32`), data = df1)

Warning messages:

1: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

unable to evaluate scaled gradient

2: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Model failed to converge: degenerate Hessian with 1 negative eigenvalues

> summary(lmerdf1exoc1item32)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item6...19 + Item10 + Item12 + Item15...22 + Item18 +

Item24 + Item30 + Item32 + (1 + `Student ID...15` | Item32)

Data: df1

REML criterion at convergence: 398.7

Scaled residuals:

Min 1Q Median 3Q Max

-3.14842 -0.68428 0.07796 0.62079 2.57381

Random effects:

Groups Name Variance Std.Dev. Corr

Item32 (Intercept) 6.661e-01 0.8161595

`Student ID...15` 7.676e-07 0.0008761 0.32

Residual 6.674e-01 0.8169693

Number of obs: 159, groups: Item32, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.1678 1.2091 0.139

Item6...19 1.0032 0.1663 6.031

Item10 1.5294 0.1750 8.740

Item12 1.3843 0.1682 8.230

Item15...22 1.4124 0.1568 9.008

Item18 1.1794 0.1794 6.575

Item24 1.0572 0.1733 6.101

Item30 1.2286 0.1550 7.929

Item32 3.4931 1.7898 1.952

Correlation of Fixed Effects:

(Intr) I6...1 Item10 Item12 I15... Item18 Item24 Item30

Item6...19 -0.098

Item10 0.044 -0.304

Item12 -0.116 -0.066 -0.223

Item15...22 0.003 0.015 -0.133 -0.244

Item18 -0.009 -0.250 -0.138 -0.019 -0.084

Item24 0.114 -0.031 -0.055 -0.278 -0.051 -0.143

Item30 -0.020 -0.056 0.062 -0.076 -0.096 0.037 -0.269

Item32 -0.664 0.013 -0.004 0.053 -0.071 -0.026 -0.108 -0.042

optimizer (nloptwrap) convergence code: 0 (OK)

unable to evaluate scaled gradient

Model failed to converge: degenerate Hessian with 1 negative eigenvalues

**# exam 1 - expository - occurrence 2**

> lmerdf1exoc2item7 <- lmer(`SUM...27` ~ `Item7` + `Item16` + `Item31...18`

+ + (1 + `Student ID...15`|`Item7`), data = df1)

Warning messages:

1: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

unable to evaluate scaled gradient

2: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Model failed to converge: degenerate Hessian with 1 negative eigenvalues

> summary(lmerdf1exoc2item7)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item7 + Item16 + Item31...18 + (1 + `Student ID...15` | Item7)

Data: df1

REML criterion at convergence: 657

Scaled residuals:

Min 1Q Median 3Q Max

-2.50230 -0.67782 -0.04638 0.73626 2.79022

Random effects:

Groups Name Variance Std.Dev. Corr

Item7 (Intercept) 3.645e+00 1.909154

`Student ID...15` 2.834e-06 0.001683 0.36

Residual 3.636e+00 1.906849

Number of obs: 159, groups: Item7, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.6044 2.7152 0.223

Item7 6.9253 4.0748 1.700

Item16 2.4038 0.3393 7.084

Item31...18 2.1993 0.3476 6.326

Correlation of Fixed Effects:

(Intr) Item7 Item16

Item7 -0.659

Item16 -0.051 -0.017

Item31...18 -0.033 -0.060 -0.264

optimizer (nloptwrap) convergence code: 0 (OK)

unable to evaluate scaled gradient

Model failed to converge: degenerate Hessian with 1 negative eigenvalues

> lmerdf1exoc2item16 <- lmer(`SUM...27` ~ `Item7` + `Item16` + `Item31...18`

+ + (1 + `Student ID...15`|`Item16`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1exoc2item16)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item7 + Item16 + Item31...18 + (1 + `Student ID...15` | Item16)

Data: df1

REML criterion at convergence: 657.3

Scaled residuals:

Min 1Q Median 3Q Max

-2.5923 -0.6808 0.0085 0.7169 2.7554

Random effects:

Groups Name Variance Std.Dev. Corr

Item16 (Intercept) 2.824e+00 1.6805101

`Student ID...15` 8.142e-08 0.0002853 1.00

Residual 3.677e+00 1.9174405

Number of obs: 159, groups: Item16, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 1.1735 2.1065 0.557

Item7 3.0466 0.3546 8.593

Item16 3.0509 2.9648 1.029

Item31...18 2.2196 0.3493 6.355

Correlation of Fixed Effects:

(Intr) Item7 Item16

Item7 -0.018

Item16 -0.704 -0.036

Item31...18 -0.045 -0.309 -0.049

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf1exoc2item31 <- lmer(`SUM...27` ~ `Item7` + `Item16` + `Item31...18`

+ + (1 + `Student ID...15`|`Item31...18`), data = df1)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1exoc2item31)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...27 ~ Item7 + Item16 + Item31...18 + (1 + `Student ID...15` | Item31...18)

Data: df1

REML criterion at convergence: 657.3

Scaled residuals:

Min 1Q Median 3Q Max

-2.59602 -0.68036 0.01107 0.72087 2.75887

Random effects:

Groups Name Variance Std.Dev. Corr

Item31...18 (Intercept) 3.678e+00 1.918e+00

`Student ID...15` 5.364e-19 7.324e-10 -1.00

Residual 3.678e+00 1.918e+00

Number of obs: 159, groups: Item31...18, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 1.3048 1.9372 0.674

Item7 3.0486 0.3545 8.600

Item16 2.4041 0.3413 7.044

Item31...18 2.2212 2.7346 0.812

Correlation of Fixed Effects:

(Intr) Item7 Item16

Item7 -0.008

Item16 -0.064 -0.219

Item31...18 -0.702 -0.040 -0.034

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

**> # exam 2 - narrative - occurrence 1**

> lmerdf2naoc1item4 <- lmer(`SUM...13` ~ `Item4` + `Item12` + `Item14`

+ + `Item16` + `Item18` + `Item23` + `Item26` + `Item27`

+ + (1 + `Stu1ent I1`|`Item4`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2naoc1item4)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item4 + Item12 + Item14 + Item16 + Item18 + Item23 +

Item26 + Item27 + (1 + `Stu1ent I1` | Item4)

Data: df2

REML criterion at convergence: 400.9

Scaled residuals:

Min 1Q Median 3Q Max

-2.5355 -0.7406 0.0143 0.4618 2.8667

Random effects:

Groups Name Variance Std.Dev. Corr

Item4 (Intercept) 5.258e-01 7.251e-01

`Stu1ent I1` 3.377e-19 5.811e-10 1.00

Residual 6.916e-01 8.316e-01

Number of obs: 159, groups: Item4, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.6159 0.7324 0.841

Item4 1.4145 1.0392 1.361

Item12 1.0919 0.1811 6.028

Item14 1.1549 0.1662 6.950

Item16 1.3674 0.1664 8.216

Item18 0.9573 0.1733 5.524

Item23 1.6135 0.2056 7.847

Item26 1.5559 0.1649 9.433

Item27 1.2168 0.2345 5.188

Correlation of Fixed Effects:

(Intr) Item4 Item12 Item14 Item16 Item18 Item23 Item26

Item4 -0.693

Item12 -0.006 -0.035

Item14 -0.043 -0.032 -0.055

Item16 -0.035 -0.005 -0.086 -0.089

Item18 -0.009 0.000 -0.067 -0.330 -0.172

Item23 0.012 -0.018 -0.168 -0.098 -0.162 -0.094

Item26 -0.023 -0.010 -0.099 -0.046 -0.251 -0.198 -0.073

Item27 0.009 -0.014 -0.121 -0.054 -0.079 0.003 -0.239 -0.060

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2naoc1item12 <- lmer(`SUM...13` ~ `Item4` + `Item12` + `Item14`

+ + `Item16` + `Item18` + `Item23` + `Item26` + `Item27`

+ + (1 + `Stu1ent I1`|`Item12`), data = df2)

Warning messages:

1: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

unable to evaluate scaled gradient

2: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Hessian is numerically singular: parameters are not uniquely determined

> summary(lmerdf2naoc1item4)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item4 + Item12 + Item14 + Item16 + Item18 + Item23 +

Item26 + Item27 + (1 + `Stu1ent I1` | Item4)

Data: df2

REML criterion at convergence: 400.9

Scaled residuals:

Min 1Q Median 3Q Max

-2.5355 -0.7406 0.0143 0.4618 2.8667

Random effects:

Groups Name Variance Std.Dev. Corr

Item4 (Intercept) 5.258e-01 7.251e-01

`Stu1ent I1` 3.377e-19 5.811e-10 1.00

Residual 6.916e-01 8.316e-01

Number of obs: 159, groups: Item4, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.6159 0.7324 0.841

Item4 1.4145 1.0392 1.361

Item12 1.0919 0.1811 6.028

Item14 1.1549 0.1662 6.950

Item16 1.3674 0.1664 8.216

Item18 0.9573 0.1733 5.524

Item23 1.6135 0.2056 7.847

Item26 1.5559 0.1649 9.433

Item27 1.2168 0.2345 5.188

Correlation of Fixed Effects:

(Intr) Item4 Item12 Item14 Item16 Item18 Item23 Item26

Item4 -0.693

Item12 -0.006 -0.035

Item14 -0.043 -0.032 -0.055

Item16 -0.035 -0.005 -0.086 -0.089

Item18 -0.009 0.000 -0.067 -0.330 -0.172

Item23 0.012 -0.018 -0.168 -0.098 -0.162 -0.094

Item26 -0.023 -0.010 -0.099 -0.046 -0.251 -0.198 -0.073

Item27 0.009 -0.014 -0.121 -0.054 -0.079 0.003 -0.239 -0.060

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2naoc1item14 <- lmer(`SUM...13` ~ `Item4` + `Item12` + `Item14`

+ + `Item16` + `Item18` + `Item23` + `Item26` + `Item27`

+ + (1 + `Stu1ent I1`|`Item14`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2naoc1item14)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item4 + Item12 + Item14 + Item16 + Item18 + Item23 +

Item26 + Item27 + (1 + `Stu1ent I1` | Item14)

Data: df2

REML criterion at convergence: 400.9

Scaled residuals:

Min 1Q Median 3Q Max

-2.5355 -0.7406 0.0143 0.4618 2.8667

Random effects:

Groups Name Variance Std.Dev. Corr

Item14 (Intercept) 6.916e-01 8.316e-01

`Stu1ent I1` 2.339e-19 4.836e-10 1.00

Residual 6.916e-01 8.316e-01

Number of obs: 159, groups: Item14, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.6159 0.8380 0.735

Item4 1.4145 0.1688 8.381

Item12 1.0919 0.1811 6.028

Item14 1.1549 1.1878 0.972

Item16 1.3674 0.1664 8.216

Item18 0.9573 0.1733 5.524

Item23 1.6135 0.2056 7.847

Item26 1.5559 0.1649 9.433

Item27 1.2168 0.2345 5.188

Correlation of Fixed Effects:

(Intr) Item4 Item12 Item14 Item16 Item18 Item23 Item26

Item4 -0.013

Item12 -0.005 -0.217

Item14 -0.700 -0.027 -0.008

Item16 -0.030 -0.032 -0.086 -0.012

Item18 -0.008 0.002 -0.067 -0.046 -0.172

Item23 0.010 -0.109 -0.168 -0.014 -0.162 -0.094

Item26 -0.020 -0.064 -0.099 -0.006 -0.251 -0.198 -0.073

Item27 0.008 -0.087 -0.121 -0.008 -0.079 0.003 -0.239 -0.060

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2naoc1item16 <- lmer(`SUM...13` ~ `Item4` + `Item12` + `Item14`

+ + `Item16` + `Item18` + `Item23` + `Item26` + `Item27`

+ + (1 + `Stu1ent I1`|`Item16`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2naoc1item16)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item4 + Item12 + Item14 + Item16 + Item18 + Item23 +

Item26 + Item27 + (1 + `Stu1ent I1` | Item16)

Data: df2

REML criterion at convergence: 400.9

Scaled residuals:

Min 1Q Median 3Q Max

-2.5355 -0.7406 0.0143 0.4618 2.8667

Random effects:

Groups Name Variance Std.Dev. Corr

Item16 (Intercept) 6.916e-01 8.316e-01

`Stu1ent I1` 1.492e-20 1.221e-10 -1.00

Residual 6.916e-01 8.316e-01

Number of obs: 159, groups: Item16, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.6159 0.8380 0.735

Item4 1.4145 0.1688 8.381

Item12 1.0919 0.1811 6.028

Item14 1.1549 0.1662 6.950

Item16 1.3674 1.1878 1.151

Item18 0.9573 0.1733 5.524

Item23 1.6135 0.2056 7.847

Item26 1.5559 0.1649 9.433

Item27 1.2168 0.2345 5.188

Correlation of Fixed Effects:

(Intr) Item4 Item12 Item14 Item16 Item18 Item23 Item26

Item4 -0.013

Item12 -0.005 -0.217

Item14 -0.038 -0.194 -0.055

Item16 -0.699 -0.004 -0.012 -0.012

Item18 -0.008 0.002 -0.067 -0.330 -0.024

Item23 0.010 -0.109 -0.168 -0.098 -0.023 -0.094

Item26 -0.020 -0.064 -0.099 -0.046 -0.035 -0.198 -0.073

Item27 0.008 -0.087 -0.121 -0.054 -0.011 0.003 -0.239 -0.060

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2naoc1item18 <- lmer(`SUM...13` ~ `Item4` + `Item12` + `Item14`

+ + `Item16` + `Item18` + `Item23` + `Item26` + `Item27`

+ + (1 + `Stu1ent I1`|`Item18`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2naoc1item18)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item4 + Item12 + Item14 + Item16 + Item18 + Item23 +

Item26 + Item27 + (1 + `Stu1ent I1` | Item18)

Data: df2

REML criterion at convergence: 400.9

Scaled residuals:

Min 1Q Median 3Q Max

-2.5355 -0.7406 0.0143 0.4618 2.8667

Random effects:

Groups Name Variance Std.Dev. Corr

Item18 (Intercept) 6.916e-01 8.316e-01

`Stu1ent I1` 1.901e-23 4.361e-12 -1.00

Residual 6.916e-01 8.316e-01

Number of obs: 159, groups: Item18, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.6159 0.8380 0.735

Item4 1.4145 0.1688 8.381

Item12 1.0919 0.1811 6.028

Item14 1.1549 0.1662 6.950

Item16 1.3674 0.1664 8.216

Item18 0.9573 1.1888 0.805

Item23 1.6135 0.2056 7.847

Item26 1.5559 0.1649 9.433

Item27 1.2168 0.2345 5.188

Correlation of Fixed Effects:

(Intr) Item4 Item12 Item14 Item16 Item18 Item23 Item26

Item4 -0.013

Item12 -0.005 -0.217

Item14 -0.038 -0.194 -0.055

Item16 -0.030 -0.032 -0.086 -0.089

Item18 -0.695 0.000 -0.010 -0.048 -0.025

Item23 0.010 -0.109 -0.168 -0.098 -0.162 -0.014

Item26 -0.020 -0.064 -0.099 -0.046 -0.251 -0.029 -0.073

Item27 0.008 -0.087 -0.121 -0.054 -0.079 0.000 -0.239 -0.060

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2naoc1item23 <- lmer(`SUM...13` ~ `Item4` + `Item12` + `Item14`

+ + `Item16` + `Item18` + `Item23` + `Item26` + `Item27`

+ + (1 + `Stu1ent I1`|`Item23`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2naoc1item23)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item4 + Item12 + Item14 + Item16 + Item18 + Item23 +

Item26 + Item27 + (1 + `Stu1ent I1` | Item23)

Data: df2

REML criterion at convergence: 400.9

Scaled residuals:

Min 1Q Median 3Q Max

-2.5355 -0.7406 0.0143 0.4618 2.8667

Random effects:

Groups Name Variance Std.Dev. Corr

Item23 (Intercept) 8.754e-01 9.356e-01

`Stu1ent I1` 5.834e-19 7.638e-10 1.00

Residual 6.916e-01 8.316e-01

Number of obs: 159, groups: Item23, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.6159 0.9413 0.654

Item4 1.4145 0.1688 8.381

Item12 1.0919 0.1811 6.028

Item14 1.1549 0.1662 6.950

Item16 1.3674 0.1664 8.216

Item18 0.9573 0.1733 5.524

Item23 1.6135 1.3390 1.205

Item26 1.5559 0.1649 9.433

Item27 1.2168 0.2345 5.188

Correlation of Fixed Effects:

(Intr) Item4 Item12 Item14 Item16 Item18 Item23 Item26

Item4 -0.012

Item12 -0.005 -0.217

Item14 -0.034 -0.194 -0.055

Item16 -0.027 -0.032 -0.086 -0.089

Item18 -0.007 0.002 -0.067 -0.330 -0.172

Item23 -0.693 -0.017 -0.026 -0.015 -0.025 -0.014

Item26 -0.018 -0.064 -0.099 -0.046 -0.251 -0.198 -0.011

Item27 0.007 -0.087 -0.121 -0.054 -0.079 0.003 -0.037 -0.060

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2naoc1item26 <- lmer(`SUM...13` ~ `Item4` + `Item12` + `Item14`

+ + `Item16` + `Item18` + `Item23` + `Item26` + `Item27`

+ + (1 + `Stu1ent I1`|`Item26`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2naoc1item26)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item4 + Item12 + Item14 + Item16 + Item18 + Item23 +

Item26 + Item27 + (1 + `Stu1ent I1` | Item26)

Data: df2

REML criterion at convergence: 400.3

Scaled residuals:

Min 1Q Median 3Q Max

-2.52029 -0.78486 0.03531 0.48120 2.77147

Random effects:

Groups Name Variance Std.Dev. Corr

Item26 (Intercept) 4.636e-02 0.2153106

`Stu1ent I1` 4.104e-07 0.0006407 -1.00

Residual 6.833e-01 0.8265971

Number of obs: 159, groups: Item26, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 1.2680 0.5227 2.426

Item4 1.4064 0.1689 8.328

Item12 1.0829 0.1802 6.010

Item14 1.1702 0.1662 7.043

Item16 1.3738 0.1658 8.288

Item18 0.9559 0.1727 5.536

Item23 1.6262 0.2054 7.916

Item26 0.6229 0.8198 0.760

Item27 1.2155 0.2352 5.167

Correlation of Fixed Effects:

(Intr) Item4 Item12 Item14 Item16 Item18 Item23 Item26

Item4 -0.091

Item12 -0.039 -0.215

Item14 0.032 -0.204 -0.057

Item16 -0.003 -0.039 -0.087 -0.081

Item18 -0.042 0.010 -0.068 -0.334 -0.175

Item23 0.028 -0.099 -0.170 -0.101 -0.164 -0.087

Item26 -0.607 -0.039 0.015 -0.023 -0.045 -0.071 -0.099

Item27 -0.037 -0.070 -0.121 -0.065 -0.086 0.013 -0.223 -0.077

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2naoc1item27 <- lmer(`SUM...13` ~ `Item4` + `Item12` + `Item14`

+ + `Item16` + `Item18` + `Item23` + `Item26` + `Item27`

+ + (1 + `Stu1ent I1`|`Item27`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2naoc1item27)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item4 + Item12 + Item14 + Item16 + Item18 + Item23 +

Item26 + Item27 + (1 + `Stu1ent I1` | Item27)

Data: df2

REML criterion at convergence: 400.9

Scaled residuals:

Min 1Q Median 3Q Max

-2.5355 -0.7406 0.0143 0.4618 2.8667

Random effects:

Groups Name Variance Std.Dev. Corr

Item27 (Intercept) 6.916e-01 8.316e-01

`Stu1ent I1` 3.478e-18 1.865e-09 -1.00

Residual 6.916e-01 8.316e-01

Number of obs: 159, groups: Item27, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.6159 0.8380 0.735

Item4 1.4145 0.1688 8.381

Item12 1.0919 0.1811 6.028

Item14 1.1549 0.1662 6.950

Item16 1.3674 0.1664 8.216

Item18 0.9573 0.1733 5.524

Item23 1.6135 0.2056 7.847

Item26 1.5559 0.1649 9.433

Item27 1.2168 1.1993 1.015

Correlation of Fixed Effects:

(Intr) Item4 Item12 Item14 Item16 Item18 Item23 Item26

Item4 -0.013

Item12 -0.005 -0.217

Item14 -0.038 -0.194 -0.055

Item16 -0.030 -0.032 -0.086 -0.089

Item18 -0.008 0.002 -0.067 -0.330 -0.172

Item23 0.010 -0.109 -0.168 -0.098 -0.162 -0.094

Item26 -0.020 -0.064 -0.099 -0.046 -0.251 -0.198 -0.073

Item27 -0.687 -0.017 -0.024 -0.011 -0.015 0.001 -0.047 -0.012

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

**> # exam 2 - narrative - occurrence 2**

> lmerdf2naoc2item1 <- lmer(`SUM...13` ~ `Item1` + `Item29` + `Item32`

+ + (1 + `Stu1ent I1`|`Item1`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf1naoc2item1)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item1 + Item9...3 + Item33...4 + (1 + `Stu1ent I1` | Item1)

Data: df1

REML criterion at convergence: 688.8

Scaled residuals:

Min 1Q Median 3Q Max

-2.5277 -0.6265 -0.1548 0.7727 3.6171

Random effects:

Groups Name Variance Std.Dev. Corr

Item1 (Intercept) 5.693e+00 2.386e+00

`Stu1ent I1` 3.235e-18 1.799e-09 1.00

Residual 4.498e+00 2.121e+00

Number of obs: 159, groups: Item1, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 1.1021 2.4071 0.458

Item1 2.0324 3.3925 0.599

Item9...3 3.0005 0.3790 7.917

Item33...4 2.2262 0.3695 6.025

Correlation of Fixed Effects:

(Intr) Item1 I9...3

Item1 -0.702

Item9...3 -0.059 -0.016

Item33...4 -0.041 -0.017 -0.333

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2naoc2item29 <- lmer(`SUM...13` ~ `Item1` + `Item29` + `Item32`

+ + (1 + `Stu1ent I1`|`Item29`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2naoc2item29)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item1 + Item29 + Item32 + (1 + `Stu1ent I1` | Item29)

Data: df2

REML criterion at convergence: 648.6

Scaled residuals:

Min 1Q Median 3Q Max

-2.9074 -0.5708 -0.1416 0.7419 1.9083

Random effects:

Groups Name Variance Std.Dev. Corr

Item29 (Intercept) 4.382e+00 2.093265

`Stu1ent I1` 5.312e-06 0.002305 -1.00

Residual 3.418e+00 1.848880

Number of obs: 159, groups: Item29, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) -0.1837 0.7698 -0.239

Item1 2.3351 0.3199 7.299

Item29 4.7125 1.1416 4.128

Item32 2.4550 0.3223 7.616

Correlation of Fixed Effects:

(Intr) Item1 Item29

Item1 -0.235

Item29 -0.595 -0.056

Item32 -0.087 -0.212 -0.099

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2naoc2item32 <- lmer(`SUM...13` ~ `Item1` + `Item29` + `Item32`

+ + (1 + `Stu1ent I1`|`Item32`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2naoc2item32)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...13 ~ Item1 + Item29 + Item32 + (1 + `Stu1ent I1` | Item32)

Data: df2

REML criterion at convergence: 650.1

Scaled residuals:

Min 1Q Median 3Q Max

-2.66274 -0.52930 -0.06809 0.62886 1.85980

Random effects:

Groups Name Variance Std.Dev. Corr

Item32 (Intercept) 3.507e+00 1.873e+00

`Stu1ent I1` 8.878e-19 9.422e-10 -1.00

Residual 3.507e+00 1.873e+00

Number of obs: 159, groups: Item32, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.6582 1.8878 0.349

Item1 2.3330 0.3211 7.265

Item29 2.5260 0.3316 7.618

Item32 2.4693 2.6684 0.925

Correlation of Fixed Effects:

(Intr) Item1 Item29

Item1 -0.054

Item29 -0.030 -0.241

Item32 -0.701 -0.026 -0.034

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

**# exam 2 - expository - occurrence 1**

> summary(lmerdf2exoc1item5)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...28 ~ Item5 + Item6 + Item9 + Item11 + Item13 + Item15 +

Item19 + Item22 + (1 + `Student ID` | Item5)

Data: df2

REML criterion at convergence: 364

Scaled residuals:

Min 1Q Median 3Q Max

-2.0958 -0.4750 -0.1054 0.5448 2.8855

Random effects:

Groups Name Variance Std.Dev. Corr

Item5 (Intercept) 5.824e-01 7.632e-01

`Student ID` 2.042e-20 1.429e-10 1.00

Residual 5.824e-01 7.632e-01

Number of obs: 159, groups: Item5, 3

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.25126 0.77025 0.326

Item51 1.54654 1.08947 1.420

Item5C 0.34791 1.21472 0.286

Item6 1.06038 0.16503 6.426

Item91 1.22171 0.16730 7.303

Item9C -0.25126 0.77025 -0.326

Item111 1.48907 0.14354 10.374

Item11C 0.11873 0.95536 0.124

Item13 1.35884 0.20833 6.523

Item151 1.16018 0.17840 6.503

Item15E -0.50858 0.79777 -0.638

Item191 0.91563 0.20725 4.418

Item19C -0.08799 0.80299 -0.110

Item22 1.59584 0.16096 9.914

Correlation matrix not shown by default, as p = 14 > 12.

Use print(x, correlation=TRUE) or

vcov(x) if you need it

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2exoc1item6 <- lmer(`SUM...28` ~ `Item5` + `Item6` + `Item9`

+ + `Item11` + `Item13` + `Item15` + `Item19` + `Item22`

+ + (1 + `Student ID`|`Item6`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2exoc1item6)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...28 ~ Item5 + Item6 + Item9 + Item11 + Item13 + Item15 +

Item19 + Item22 + (1 + `Student ID` | Item6)

Data: df2

REML criterion at convergence: 364

Scaled residuals:

Min 1Q Median 3Q Max

-2.0958 -0.4750 -0.1054 0.5448 2.8855

Random effects:

Groups Name Variance Std.Dev. Corr

Item6 (Intercept) 5.824e-01 7.632e-01

`Student ID` 3.919e-20 1.980e-10 1.00

Residual 5.824e-01 7.632e-01

Number of obs: 159, groups: Item6, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.25126 0.77025 0.326

Item51 1.54654 0.14850 10.415

Item5C 0.34791 0.55736 0.624

Item6 1.06038 1.09185 0.971

Item91 1.22171 0.16730 7.303

Item9C -0.25126 0.77025 -0.326

Item111 1.48907 0.14354 10.374

Item11C 0.11873 0.95536 0.124

Item13 1.35884 0.20833 6.523

Item151 1.16018 0.17840 6.503

Item15E -0.50858 0.79777 -0.638

Item191 0.91563 0.20725 4.418

Item19C -0.08799 0.80299 -0.110

Item22 1.59584 0.16096 9.914

Correlation matrix not shown by default, as p = 14 > 12.

Use print(x, correlation=TRUE) or

vcov(x) if you need it

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2exoc1item9 <- lmer(`SUM...28` ~ `Item5` + `Item6` + `Item9`

+ + `Item1` + `Item13` + `Item15` + `Item19` + `Item22`

+ + (1 + `Student ID`|`Item9`), data = df2)

Warning messages:

1: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Model failed to converge with max|grad| = 0.00502468 (tol = 0.002, component 1)

2: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Model is nearly unidentifiable: very large eigenvalue

- Rescale variables?;Model is nearly unidentifiable: large eigenvalue ratio

- Rescale variables?

> summary(lmerdf2exoc1item9)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...28 ~ Item5 + Item6 + Item9 + Item1 + Item13 + Item15 +

Item19 + Item22 + (1 + `Student ID` | Item9)

Data: df2

REML criterion at convergence: 441.2

Scaled residuals:

Min 1Q Median 3Q Max

-2.1538 -0.4929 -0.1036 0.6115 2.6362

Random effects:

Groups Name Variance Std.Dev. Corr

Item9 (Intercept) 9.678e-01 0.9837728

`Student ID` 3.236e-07 0.0005689 -0.29

Residual 9.650e-01 0.9823543

Number of obs: 159, groups: Item9, 3

Fixed effects:

Estimate Std. Error t value

(Intercept) -0.01458 1.05084 -0.014

Item51 1.59409 0.19295 8.262

Item5C 0.10762 0.59170 0.182

Item6 1.10360 0.21455 5.144

Item91 1.53802 1.51188 1.017

Item9C -0.42952 1.81892 -0.236

Item1 0.44410 0.18368 2.418

Item13 1.59249 0.26649 5.976

Item151 1.53392 0.22726 6.750

Item15E 0.29788 1.02601 0.290

Item191 1.04448 0.26698 3.912

Item19C 0.04946 1.03367 0.048

Item22 1.63407 0.20789 7.860

Correlation matrix not shown by default, as p = 13 > 12.

Use print(x, correlation=TRUE) or

vcov(x) if you need it

optimizer (nloptwrap) convergence code: 0 (OK)

Model failed to converge with max|grad| = 0.00502468 (tol = 0.002, component 1)

Model is nearly unidentifiable: very large eigenvalue

- Rescale variables?

Model is nearly unidentifiable: large eigenvalue ratio

- Rescale variables?

> lmerdf2exoc1item11 <- lmer(`SUM...28` ~ `Item5` + `Item6` + `Item9`

+ + `Item1` + `Item13` + `Item15` + `Item19` + `Item22`

+ + (1 + `Student ID`|`Item11`), data = df2)

Warning messages:

1: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Model failed to converge with max|grad| = 0.637328 (tol = 0.002, component 1)

2: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Model is nearly unidentifiable: very large eigenvalue

- Rescale variables?;Model is nearly unidentifiable: large eigenvalue ratio

- Rescale variables?

> summary(lmerdf2exoc1item11)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...28 ~ Item5 + Item6 + Item9 + Item1 + Item13 + Item15 +

Item19 + Item22 + (1 + `Student ID` | Item11)

Data: df2

REML criterion at convergence: 369.4

Scaled residuals:

Min 1Q Median 3Q Max

-2.0974 -0.5370 -0.2137 0.5782 3.0437

Random effects:

Groups Name Variance Std.Dev. Corr

Item11 (Intercept) 4.986e-02 0.2232949

`Student ID` 7.082e-07 0.0008416 -0.98

Residual 5.669e-01 0.7529058

Number of obs: 159, groups: Item11, 3

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.26956 0.45733 0.589

Item51 1.49391 0.14821 10.080

Item5C 0.30325 0.51185 0.592

Item6 0.99994 0.16496 6.062

Item91 1.16576 0.16720 6.972

Item9C -0.45023 0.76890 -0.586

Item1 0.23690 0.14340 1.652

Item13 1.32018 0.20629 6.400

Item151 1.24104 0.17736 6.997

Item15E -0.40516 0.78972 -0.513

Item191 0.94691 0.20468 4.626

Item19C -0.09386 0.79230 -0.118

Item22 1.62632 0.15954 10.194

Correlation matrix not shown by default, as p = 13 > 12.

Use print(x, correlation=TRUE) or

vcov(x) if you need it

optimizer (nloptwrap) convergence code: 0 (OK)

Model failed to converge with max|grad| = 0.637328 (tol = 0.002, component 1)

Model is nearly unidentifiable: very large eigenvalue

- Rescale variables?

Model is nearly unidentifiable: large eigenvalue ratio

- Rescale variables?

> lmerdf2exoc1item13 <- lmer(`SUM...28` ~ `Item5` + `Item6` + `Item9`

+ + `Item1` + `Item13` + `Item15` + `Item19` + `Item22`

+ + (1 + `Student ID`|`Item13`), data = df2)

Warning messages:

1: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

unable to evaluate scaled gradient

2: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Model failed to converge: degenerate Hessian with 1 negative eigenvalues

> summary(lmerdf2exoc1item13)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...28 ~ Item5 + Item6 + Item9 + Item1 + Item13 + Item15 +

Item19 + Item22 + (1 + `Student ID` | Item13)

Data: df2

REML criterion at convergence: 440.6

Scaled residuals:

Min 1Q Median 3Q Max

-2.18822 -0.53495 -0.08401 0.59648 2.64266

Random effects:

Groups Name Variance Std.Dev. Corr

Item13 (Intercept) 1.220e+00 1.1045578

`Student ID` 5.742e-07 0.0007577 -0.96

Residual 9.590e-01 0.9793008

Number of obs: 159, groups: Item13, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) 0.32587 0.34431 0.946

Item51 1.57481 0.19299 8.160

Item5C 0.10451 0.58986 0.177

Item6 1.10418 0.21395 5.161

Item91 1.25991 0.21675 5.813

Item9C -0.87620 0.99865 -0.877

Item1 0.46146 0.18362 2.513

Item13 1.66763 0.52054 3.204

Item151 1.55514 0.22765 6.831

Item15E 0.37458 1.02283 0.366

Item191 1.03120 0.26729 3.858

Item19C 0.05392 1.03037 0.052

Item22 1.64076 0.20724 7.917

Correlation matrix not shown by default, as p = 13 > 12.

Use print(x, correlation=TRUE) or

vcov(x) if you need it

optimizer (nloptwrap) convergence code: 0 (OK)

unable to evaluate scaled gradient

Model failed to converge: degenerate Hessian with 1 negative eigenvalues

> lmerdf2exoc1item15 <- lmer(`SUM...28` ~ `Item5` + `Item6` + `Item9`

+ + `Item1` + `Item13` + `Item15` + `Item19` + `Item22`

+ + (1 + `Student ID`|`Item15`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2exoc1item15)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...28 ~ Item5 + Item6 + Item9 + Item1 + Item13 + Item15 +

Item19 + Item22 + (1 + `Student ID` | Item15)

Data: df2

REML criterion at convergence: 441

Scaled residuals:

Min 1Q Median 3Q Max

-2.16643 -0.51466 -0.09343 0.60649 2.64193

Random effects:

Groups Name Variance Std.Dev. Corr

Item15 (Intercept) 9.622e-01 0.9809199

`Student ID` 4.329e-07 0.0006579 1.00

Residual 9.626e-01 0.9811139

Number of obs: 159, groups: Item15, 3

Fixed effects:

Estimate Std. Error t value

(Intercept) -1.23606 1.43698 -0.860

Item51 1.58751 0.19267 8.240

Item5C 0.11146 0.59107 0.189

Item6 1.10327 0.21430 5.148

Item91 1.27059 0.21693 5.857

Item9C -0.86040 1.00034 -0.860

Item1 0.45026 0.18352 2.453

Item13 1.59116 0.26616 5.978

Item151 2.83724 2.23473 1.270

Item15E 1.92770 2.59696 0.742

Item191 1.04390 0.26662 3.915

Item19C 0.06363 1.03239 0.062

Item22 1.63619 0.20763 7.880

Correlation matrix not shown by default, as p = 13 > 12.

Use print(x, correlation=TRUE) or

vcov(x) if you need it

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2exoc1item19 <- lmer(`SUM...28` ~ `Item5` + `Item6` + `Item9`

+ + `Item1` + `Item13` + `Item15` + `Item19` + `Item22`

+ + (1 + `Student ID`|`Item19`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2exoc1item19)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...28 ~ Item5 + Item6 + Item9 + Item1 + Item13 + Item15 +

Item19 + Item22 + (1 + `Student ID` | Item19)

Data: df2

REML criterion at convergence: 441.1

Scaled residuals:

Min 1Q Median 3Q Max

-2.16410 -0.49759 -0.09373 0.60502 2.63697

Random effects:

Groups Name Variance Std.Dev. Corr

Item19 (Intercept) 9.668e-01 0.9832450

`Student ID` 3.601e-07 0.0006001 0.99

Residual 9.645e-01 0.9821061

Number of obs: 159, groups: Item19, 3

Fixed effects:

Estimate Std. Error t value

(Intercept) -0.9798 1.4142 -0.693

Item51 1.5873 0.1930 8.224

Item5C 0.1097 0.5916 0.185

Item6 1.1012 0.2145 5.133

Item91 1.2675 0.2171 5.838

Item9C -0.8623 1.0014 -0.861

Item1 0.4504 0.1837 2.451

Item13 1.5827 0.2679 5.909

Item151 1.5344 0.2272 6.753

Item15E 0.3389 1.0252 0.331

Item191 1.9425 2.2335 0.870

Item19C 1.4564 2.5857 0.563

Item22 1.6423 0.2078 7.904

Correlation matrix not shown by default, as p = 13 > 12.

Use print(x, correlation=TRUE) or

vcov(x) if you need it

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

> lmerdf2exoc1item22 <- lmer(`SUM...28` ~ `Item5` + `Item6` + `Item9`

+ + `Item1` + `Item13` + `Item15` + `Item19` + `Item22`

+ + (1 + `Student ID`|`Item22`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf2exoc1item22)

Linear mixed model fit by REML ['lmerMod']

Formula: SUM...28 ~ Item5 + Item6 + Item9 + Item1 + Item13 + Item15 +

Item19 + Item22 + (1 + `Student ID` | Item22)

Data: df2

REML criterion at convergence: 440

Scaled residuals:

Min 1Q Median 3Q Max

-2.26264 -0.56834 -0.08053 0.59682 2.65018

Random effects:

Groups Name Variance Std.Dev. Corr

Item22 (Intercept) 7.038e-01 0.8389249

`Student ID` 8.675e-07 0.0009314 -1.00

Residual 9.526e-01 0.9760005

Number of obs: 159, groups: Item22, 2

Fixed effects:

Estimate Std. Error t value

(Intercept) -0.1514 0.3623 -0.418

Item51 1.5799 0.1918 8.238

Item5C 0.1229 0.5882 0.209

Item6 1.0946 0.2133 5.133

Item91 1.2422 0.2167 5.733

Item9C -0.8805 0.9952 -0.885

Item1 0.4634 0.1830 2.532

Item13 1.5662 0.2657 5.894

Item151 1.5413 0.2267 6.799

Item15E 0.4119 1.0201 0.404

Item191 1.0760 0.2653 4.057

Item19C 0.1035 1.0277 0.101

Item22 2.3073 0.5932 3.890

Correlation matrix not shown by default, as p = 13 > 12.

Use print(x, correlation=TRUE) or

vcov(x) if you need it

optimizer (nloptwrap) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

**> # exam 2 - expository - occurrence 2**

> lmerdf2exoc2item8 <- lmer(`SUM...28` ~ `Item8` + `Item31` + `Item33`

+ + (1 + `Student ID`|`Item8`), data = df2)

Warning messages:

1: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

unable to evaluate scaled gradient

2: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Model failed to converge: degenerate Hessian with 2 negative eigenvalues

> summary(lmerdf21exoc2item8)

Error in h(simpleError(msg, call)) :

error in evaluating the argument 'object' in selecting a method for function 'summary': object 'lmerdf21exoc2item8' not found

> lmerdf2exoc2item31 <- lmer(`SUM...28` ~ `Item8` + `Item31` + `Item33`

+ + (1 + `Student ID`|`Item31`), data = df2)

boundary (singular) fit: see help('isSingular')

> summary(lmerdf21exoc2item31)

Error in h(simpleError(msg, call)) :

error in evaluating the argument 'object' in selecting a method for function 'summary': object 'lmerdf21exoc2item31' not found

> lmerdf2exoc2item33 <- lmer(`SUM...28` ~ `Item8` + `Item31` + `Item33`

+ + (1 + `Student ID`|`Item33`), data = df2)

Warning messages:

1: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

unable to evaluate scaled gradient

2: In checkConv(attr(opt, "derivs"), opt$par, ctrl = control$checkConv, :

Model failed to converge: degenerate Hessian with 1 negative eigenvalues

> summary(lmerdf21exoc2item33)

Error in h(simpleError(msg, call)) :

error in evaluating the argument 'object' in selecting a method for function 'summary': object 'lmerdf21exoc2item33' not found