\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ \_\_\_\_ (R)

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Notes:

. doedit F:\12\_ICPSR\ICPSR\_2012\_Download\STATA\STATA\_MLM\_Syntax\_Guide.do

. use "F:\12\_ICPSR\ICPSR\_2012\_Download\STATA\Example35.dta", clear

. do "C:\DOCUME~1\lesa\LOCALS~1\Temp\STD00000000.tmp"

. \* STATA code to center time for polynomial models (and make quadratic versions)

. gen c1sess = session - 1

. gen c6sess = session - 6

.

. \* calculate quadratic session variables

. gen c1sess2 = c1sess \* c1sess

. gen c6sess2 = c6sess \* c6sess

.

.

end of do-file

. do "C:\DOCUME~1\lesa\LOCALS~1\Temp\STD00000000.tmp"

. \* centering level-2 predictor variables for analysis

. gen age80 = age - 80

. gen reas22 = absreas - 22

. label variable age80 "age80: Age Centered (0=80 years)"

. label variable reas22 "reas22: Abstract Reasoning Centered (0=22)"

. \* make education a grouping variable for purpose of demonstration only

. gen educgrp=.

(606 missing values generated)

. replace educgrp=1 if (educyrs <= 12)

(126 real changes made)

. replace educgrp=2 if (educyrs > 12 & educyrs <= 16)

(336 real changes made)

. replace educgrp=3 if (educyrs > 16)

(144 real changes made)

. label variable educgrp "educgrp: Education Group (1=HS, 2=BA, 3=GRAD)"

. \* interaction variables needed for lincom statements

. gen age80c1sess = age80 \* c1sess

. gen age80c1sess2 = age80 \* c1sess2

. gen reas22c1sess = reas22 \* c1sess

. gen reas22c1sess2 = reas22 \* c1sess2

. \* create new variable to hold number of missing cases

. \* then drop cases with incomplete predictors

. egen nummiss = rowmiss(age80 reas22 educgrp)

. drop if nummiss>0

(0 observations deleted)

.

. \* STATA Model 3b: Random Quadratic Time Baseline in ML

. xtmixed nm3rt c.c1sess c.c1sess2, || id: c1sess c1sess2, ///

> variance ml covariance(un) residuals(independent,t(session)),

Note: t() not required for this residual structure; ignored

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = -4163.25

Iteration 1: log likelihood = -4161.2927

Iteration 2: log likelihood = -4160.8836

Iteration 3: log likelihood = -4160.8833

Computing standard errors:

Mixed-effects ML regression Number of obs = 606

Group variable: id Number of groups = 101

Obs per group: min = 6

avg = 6.0

max = 6

Wald chi2(2) = 72.45

Log likelihood = -4160.8833 Prob > chi2 = 0.0000

------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

c1sess | -120.8999 19.94803 -6.06 0.000 -159.9973 -81.80251

c1sess2 | 13.86561 3.398459 4.08 0.000 7.204756 20.52647

\_cons | 1945.85 53.58259 36.31 0.000 1840.83 2050.87

------------------------------------------------------------------------------

------------------------------------------------------------------------------

Random-effects Parameters | Estimate Std. Err. [95% Conf. Interval]

-----------------------------+------------------------------------------------

id: Unstructured |

var(c1sess) | 25437.86 5781.419 16293.81 39713.52

var(c1sess2) | 622.8 169.99 364.7687 1063.358

var(\_cons) | 273306.9 40831.76 203930.4 366285.1

cov(c1sess,c1sess2) | -3837.723 968.8047 -5736.545 -1938.9

cov(c1sess,\_cons) | -35261.67 11771.5 -58333.38 -12189.95

cov(c1sess2,\_cons) | 3845.378 1921.468 79.37031 7611.386

-----------------------------+------------------------------------------------

var(Residual) | 20298.2 1649.119 17310.2 23801.98

------------------------------------------------------------------------------

LR test vs. linear regression: chi2(6) = 891.99 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.

. estat ic, n(101),

-----------------------------------------------------------------------------

Model | Obs ll(null) ll(model) df AIC BIC

-------------+---------------------------------------------------------------

. | 101 . -4160.883 10 8341.767 8367.918

-----------------------------------------------------------------------------

Note: N=101 used in calculating BIC

. estat recovariance, level(id),

Random-effects covariance matrix for level id

| c1sess c1sess2 \_cons

-------------+---------------------------------

c1sess | 25437.86

c1sess2 | -3837.723 622.8

\_cons | -35261.67 3845.378 273306.9

. estimates store Baseline,

. predict predtime

(option xb assumed)

. corr nm3rt predtime

(obs=606)

| nm3rt predtime

-------------+------------------

nm3rt | 1.0000

predtime | 0.1917 1.0000

.

. \* STATA Model 4a: Age as Predictor of Intercept, Linear, and Quadratic

. xtmixed nm3rt c.c1sess c.c1sess2 c.age80 c.age80c1sess c.age80c1sess2, ///

> || id: c1sess c1sess2, ///

> variance ml covariance(un) residuals(independent,t(session)),

Note: t() not required for this residual structure; ignored

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = -4157.3926

Iteration 1: log likelihood = -4155.4835

Iteration 2: log likelihood = -4155.1012

Iteration 3: log likelihood = -4155.1009

Computing standard errors:

Mixed-effects ML regression Number of obs = 606

Group variable: id Number of groups = 101

Obs per group: min = 6

avg = 6.0

max = 6

Wald chi2(5) = 88.55

Log likelihood = -4155.1009 Prob > chi2 = 0.0000

------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

c1sess | -121.8325 19.66948 -6.19 0.000 -160.3839 -83.28099

c1sess2 | 13.97744 3.375686 4.14 0.000 7.361221 20.59367

age80 | 29.04954 8.377364 3.47 0.001 12.63021 45.46887

age80c1sess | -5.594634 3.251902 -1.72 0.085 -11.96824 .7789761

age80c1sess2 | .6709121 .558093 1.20 0.229 -.42293 1.764754

\_cons | 1950.692 50.67139 38.50 0.000 1851.378 2050.006

------------------------------------------------------------------------------

------------------------------------------------------------------------------

Random-effects Parameters | Estimate Std. Err. [95% Conf. Interval]

-----------------------------+------------------------------------------------

id: Unstructured |

var(c1sess) | 24293.61 5623.938 15432.63 38242.3

var(c1sess2) | 606.3449 167.7546 352.5508 1042.84

var(\_cons) | 242456.1 36492.27 180517 325647.9

cov(c1sess,c1sess2) | -3700.505 949.4035 -5561.301 -1839.708

cov(c1sess,\_cons) | -29320.18 10868.08 -50621.23 -8019.138

cov(c1sess2,\_cons) | 3132.874 1793.821 -382.9508 6648.698

-----------------------------+------------------------------------------------

var(Residual) | 20298.2 1649.119 17310.2 23801.98

------------------------------------------------------------------------------

LR test vs. linear regression: chi2(6) = 857.76 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.

. estat ic, n(101),

-----------------------------------------------------------------------------

Model | Obs ll(null) ll(model) df AIC BIC

-------------+---------------------------------------------------------------

. | 101 . -4155.101 13 8336.202 8370.198

-----------------------------------------------------------------------------

Note: N=101 used in calculating BIC

. estat recovariance, level(id),

Random-effects covariance matrix for level id

| c1sess c1sess2 \_cons

-------------+---------------------------------

c1sess | 24293.61

c1sess2 | -3700.505 606.3449

\_cons | -29320.18 3132.874 242456.1

. estimates store Age,

. lrtest Age Baseline,

Likelihood-ratio test LR chi2(3) = 11.56

(Assumption: Baseline nested in Age) Prob > chi2 = 0.0090

. predict predage

(option xb assumed)

. corr nm3rt predage

(obs=606)

| nm3rt predage

-------------+------------------

nm3rt | 1.0000

predage | 0.3269 1.0000

.

. \* STATA Model 5a: +Reasoning as Predictor of Intercept, Linear, and Quadratic

. xtmixed nm3rt c.c1sess c.c1sess2 c.age80 c.age80c1sess c.age80c1sess2 ///

> c.reas22 c.reas22c1sess c.reas22c1sess2, || id: c1sess c1sess2, ///

> variance ml covariance(un) residuals(independent,t(session)),

Note: t() not required for this residual structure; ignored

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = -4150.9215

Iteration 1: log likelihood = -4149.0581

Iteration 2: log likelihood = -4148.8647

Iteration 3: log likelihood = -4148.8645

Computing standard errors:

Mixed-effects ML regression Number of obs = 606

Group variable: id Number of groups = 101

Obs per group: min = 6

avg = 6.0

max = 6

Wald chi2(8) = 103.88

Log likelihood = -4148.8645 Prob > chi2 = 0.0000

-------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

--------------+----------------------------------------------------------------

c1sess | -119.7417 19.77414 -6.06 0.000 -158.4983 -80.98505

c1sess2 | 13.30362 3.36557 3.95 0.000 6.707229 19.90002

age80 | 22.27817 8.601751 2.59 0.010 5.419047 39.13729

age80c1sess | -6.492074 3.424732 -1.90 0.058 -13.20443 .2202773

age80c1sess2 | .9601368 .5828914 1.65 0.100 -.1823093 2.102583

reas22 | -27.10041 11.11411 -2.44 0.015 -48.88366 -5.317155

reas22c1sess | -3.591741 4.425011 -0.81 0.417 -12.2646 5.081121

reas22c1sess2 | 1.157537 .7531395 1.54 0.124 -.3185897 2.633663

\_cons | 1966.467 49.66585 39.59 0.000 1869.124 2063.811

-------------------------------------------------------------------------------

------------------------------------------------------------------------------

Random-effects Parameters | Estimate Std. Err. [95% Conf. Interval]

-----------------------------+------------------------------------------------

id: Unstructured |

var(c1sess) | 24040.63 5589.24 15242.24 37917.78

var(c1sess2) | 580.0651 164.1907 333.0729 1010.216

var(\_cons) | 228049.3 34467.24 169581.6 306675.4

cov(c1sess,c1sess2) | -3618.965 937.0759 -5455.6 -1782.33

cov(c1sess,\_cons) | -31229.47 10655.89 -52114.63 -10344.31

cov(c1sess2,\_cons) | 3748.206 1747.735 322.7086 7173.703

-----------------------------+------------------------------------------------

var(Residual) | 20298.18 1649.113 17310.18 23801.94

------------------------------------------------------------------------------

LR test vs. linear regression: chi2(6) = 832.43 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.

. estat ic, n(101),

-----------------------------------------------------------------------------

Model | Obs ll(null) ll(model) df AIC BIC

-------------+---------------------------------------------------------------

. | 101 . -4148.864 16 8329.729 8371.571

-----------------------------------------------------------------------------

Note: N=101 used in calculating BIC

. estat recovariance, level(id),

Random-effects covariance matrix for level id

| c1sess c1sess2 \_cons

-------------+---------------------------------

c1sess | 24040.63

c1sess2 | -3618.965 580.0651

\_cons | -31229.47 3748.206 228049.3

. estimates store Reas,

. lrtest Reas Age,

Likelihood-ratio test LR chi2(3) = 12.47

(Assumption: Age nested in Reas) Prob > chi2 = 0.0059

. predict predreas

(option xb assumed)

. corr nm3rt predreas

(obs=606)

| nm3rt predreas

-------------+------------------

nm3rt | 1.0000

predreas | 0.4011 1.0000

.

. \* STATA Model 5b: +Reasoning as Predictor of Intercept, Linear Time Slope Only

. xtmixed nm3rt c.c1sess c.c1sess2 c.age80 c.age80c1sess c.age80c1sess2 ///

> c.reas22 c.reas22c1sess, || id: c1sess c1sess2, ///

> variance ml covariance(un) residuals(independent,t(session)),

Note: t() not required for this residual structure; ignored

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = -4152.11

Iteration 1: log likelihood = -4150.2202

Iteration 2: log likelihood = -4150.0321

Iteration 3: log likelihood = -4150.032

Computing standard errors:

Mixed-effects ML regression Number of obs = 606

Group variable: id Number of groups = 101

Obs per group: min = 6

avg = 6.0

max = 6

Wald chi2(7) = 101.09

Log likelihood = -4150.032 Prob > chi2 = 0.0000

------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

c1sess | -123.5416 19.82897 -6.23 0.000 -162.4057 -84.67758

c1sess2 | 13.97744 3.375697 4.14 0.000 7.3612 20.59369

age80 | 20.84705 8.561395 2.44 0.015 4.067021 37.62707

age80c1sess | -4.860993 3.290742 -1.48 0.140 -11.31073 1.588743

age80c1sess2 | .6709121 .5580948 1.20 0.229 -.4229335 1.764758

reas22 | -32.82806 10.47071 -3.14 0.002 -53.35027 -12.30585

reas22c1sess | 2.93618 1.241355 2.37 0.018 .5031694 5.369191

\_cons | 1969.802 49.6827 39.65 0.000 1872.425 2067.178

------------------------------------------------------------------------------

------------------------------------------------------------------------------

Random-effects Parameters | Estimate Std. Err. [95% Conf. Interval]

-----------------------------+------------------------------------------------

id: Unstructured |

var(c1sess) | 24876.74 5713.191 15860.12 39019.38

var(c1sess2) | 606.3537 167.7563 352.5569 1042.853

var(\_cons) | 228693.2 34638.72 169952.3 307736.8

cov(c1sess,c1sess2) | -3767.222 957.785 -5644.447 -1889.998

cov(c1sess,\_cons) | -31963.11 10883.7 -53294.77 -10631.46

cov(c1sess2,\_cons) | 3878.292 1787.967 373.9411 7382.642

-----------------------------+------------------------------------------------

var(Residual) | 20298.14 1649.109 17310.16 23801.9

------------------------------------------------------------------------------

LR test vs. linear regression: chi2(6) = 830.58 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.

. estat ic, n(101),

-----------------------------------------------------------------------------

Model | Obs ll(null) ll(model) df AIC BIC

-------------+---------------------------------------------------------------

. | 101 . -4150.032 15 8330.064 8369.291

-----------------------------------------------------------------------------

Note: N=101 used in calculating BIC

. estat recovariance, level(id),

Random-effects covariance matrix for level id

| c1sess c1sess2 \_cons

-------------+---------------------------------

c1sess | 24876.74

c1sess2 | -3767.222 606.3537

\_cons | -31963.11 3878.292 228693.2

. estimates store Reas2,

. lrtest Reas2 Age,

Likelihood-ratio test LR chi2(2) = 10.14

(Assumption: Age nested in Reas2) Prob > chi2 = 0.0063

. lincom 1\*reas22 + 0\*reas22c1sess // reasoning effect at session 1

( 1) [nm3rt]reas22 = 0

------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

(1) | -32.82806 10.47071 -3.14 0.002 -53.35027 -12.30585

------------------------------------------------------------------------------

. lincom 1\*reas22 + 1\*reas22c1sess // reasoning effect at session 2

( 1) [nm3rt]reas22 + [nm3rt]reas22c1sess = 0

------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

(1) | -29.89188 9.961528 -3.00 0.003 -49.41612 -10.36764

------------------------------------------------------------------------------

. lincom 1\*reas22 + 2\*reas22c1sess // reasoning effect at session 3

( 1) [nm3rt]reas22 + 2\*[nm3rt]reas22c1sess = 0

------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

(1) | -26.9557 9.586986 -2.81 0.005 -45.74585 -8.165552

------------------------------------------------------------------------------

. lincom 1\*reas22 + 3\*reas22c1sess // reasoning effect at session 4

( 1) [nm3rt]reas22 + 3\*[nm3rt]reas22c1sess = 0

------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

(1) | -24.01952 9.363252 -2.57 0.010 -42.37116 -5.667884

------------------------------------------------------------------------------

. lincom 1\*reas22 + 4\*reas22c1sess // reasoning effect at session 5

( 1) [nm3rt]reas22 + 4\*[nm3rt]reas22c1sess = 0

------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

(1) | -21.08334 9.301214 -2.27 0.023 -39.31338 -2.853295

------------------------------------------------------------------------------

. lincom 1\*reas22 + 5\*reas22c1sess // reasoning effect at session 6

( 1) [nm3rt]reas22 + 5\*[nm3rt]reas22c1sess = 0

------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

(1) | -18.14716 9.404074 -1.93 0.054 -36.57881 .2844868

------------------------------------------------------------------------------

. predict predreas2

(option xb assumed)

. corr nm3rt predreas2

(obs=606)

| nm3rt predre~2

-------------+------------------

nm3rt | 1.0000

predreas2 | 0.4001 1.0000

.

.

. \* STATA Model 6a: +Education Group on Intercept, Linear, and Quadratic

. xtmixed nm3rt c.c1sess c.c1sess2 c.age80 c.age80c1sess c.age80c1sess2 ///

> c.reas22 c.reas22c1sess ib(last).educgrp ib(last).educgrp#c.c1sess ///

> ib(last).educgrp#c.c1sess2, || id: c1sess c1sess2, ///

> variance ml covariance(un) residuals(independent,t(session)),

Note: t() not required for this residual structure; ignored

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0: log likelihood = -4149.7164

Iteration 1: log likelihood = -4147.8316

Iteration 2: log likelihood = -4147.6831

Iteration 3: log likelihood = -4147.6829

Computing standard errors:

Mixed-effects ML regression Number of obs = 606

Group variable: id Number of groups = 101

Obs per group: min = 6

avg = 6.0

max = 6

Wald chi2(13) = 106.94

Log likelihood = -4147.6829 Prob > chi2 = 0.0000

-----------------------------------------------------------------------------------

nm3rt | Coef. Std. Err. z P>|z| [95% Conf. Interval]

------------------+----------------------------------------------------------------

c1sess | -106.4987 40.28342 -2.64 0.008 -185.4528 -27.54467

c1sess2 | 12.47966 6.84896 1.82 0.068 -.9440556 25.90337

age80 | 20.28963 8.560339 2.37 0.018 3.511674 37.06759

age80c1sess | -4.575965 3.267255 -1.40 0.161 -10.97967 1.827737

age80c1sess2 | .6176862 .5534206 1.12 0.264 -.4669983 1.702371

reas22 | -36.62127 10.76417 -3.40 0.001 -57.71865 -15.5239

reas22c1sess | 2.978325 1.280261 2.33 0.020 .4690588 5.487591

|

educgrp |

1 | -51.37684 151.0698 -0.34 0.734 -347.4682 244.7146

2 | 37.64254 120.8738 0.31 0.755 -199.2658 274.5509

|

educgrp#c.c1sess |

1 | -70.24589 59.07799 -1.19 0.234 -186.0366 45.54484

2 | -4.357661 48.13253 -0.09 0.928 -98.69569 89.98036

|

educgrp#c.c1sess2 |

1 | 11.06526 10.03237 1.10 0.270 -8.59782 30.72834

2 | -1.464111 8.188449 -0.18 0.858 -17.51318 14.58495

|

\_cons | 1961.886 101.7896 19.27 0.000 1762.382 2161.39

-----------------------------------------------------------------------------------

------------------------------------------------------------------------------

Random-effects Parameters | Estimate Std. Err. [95% Conf. Interval]

-----------------------------+------------------------------------------------

id: Unstructured |

var(c1sess) | 24143.51 5618.955 15300.26 38097.96

var(c1sess2) | 582.0274 164.456 334.5263 1012.643

var(\_cons) | 228602.5 34701.93 169772.9 307817.8

cov(c1sess,c1sess2) | -3635.975 939.954 -5478.251 -1793.699

cov(c1sess,\_cons) | -33285.56 10921.01 -54690.35 -11880.77

cov(c1sess2,\_cons) | 4127.576 1790.539 618.1843 7636.967

-----------------------------+------------------------------------------------

var(Residual) | 20298.15 1649.108 17310.16 23801.9

------------------------------------------------------------------------------

LR test vs. linear regression: chi2(6) = 826.31 Prob > chi2 = 0.0000

Note: LR test is conservative and provided only for reference.

. estat ic, n(101),

-----------------------------------------------------------------------------

Model | Obs ll(null) ll(model) df AIC BIC

-------------+---------------------------------------------------------------

. | 101 . -4147.683 21 8337.366 8392.283

-----------------------------------------------------------------------------

Note: N=101 used in calculating BIC

. estat recovariance, level(id),

Random-effects covariance matrix for level id

| c1sess c1sess2 \_cons

-------------+---------------------------------

c1sess | 24143.51

c1sess2 | -3635.975 582.0274

\_cons | -33285.56 4127.576 228602.5

. estimates store Educ,

. lrtest Educ Reas2,

Likelihood-ratio test LR chi2(6) = 4.70

(Assumption: Reas2 nested in Educ) Prob > chi2 = 0.5831

. \* Estimating group means at first and last sessions

. margins ib(last).educgrp, at(c.c1sess=(0) c.c1sess2=(0))

Predictive margins Number of obs = 606

Expression : Linear prediction, fixed portion, predict()

at : c1sess = 0

c1sess2 = 0

------------------------------------------------------------------------------

| Delta-method

| Margin Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

educgrp |

1 | 1889.892 110.7471 17.06 0.000 1672.831 2106.952

2 | 1978.911 66.69697 29.67 0.000 1848.187 2109.635

3 | 1941.268 101.3127 19.16 0.000 1742.699 2139.838

------------------------------------------------------------------------------

. margins ib(last).educgrp, at(c.c1sess=(5) c.c1sess2=(25))

Predictive margins Number of obs = 606

Expression : Linear prediction, fixed portion, predict()

at : c1sess = 5

c1sess2 = 25

------------------------------------------------------------------------------

| Delta-method

| Margin Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

educgrp |

1 | 1594.792 94.49411 16.88 0.000 1409.586 1779.997

2 | 1700.018 56.67399 30.00 0.000 1588.939 1811.097

3 | 1720.766 86.10053 19.99 0.000 1552.012 1889.52

------------------------------------------------------------------------------

. \* Contrasts between groups on intercept, linear, and quadratic slopes

. test 1.educgrp=3.educgrp // Low vs. High: Intercept

( 1) [nm3rt]1.educgrp - [nm3rt]3b.educgrp = 0

chi2( 1) = 0.12

Prob > chi2 = 0.7338

. test 2.educgrp=3.educgrp // Med vs. High: Intercept

( 1) [nm3rt]2.educgrp - [nm3rt]3b.educgrp = 0

chi2( 1) = 0.10

Prob > chi2 = 0.7555

. test 1.educgrp=2.educgrp // Low vs. Med: Intercept

( 1) [nm3rt]1.educgrp - [nm3rt]2.educgrp = 0

chi2( 1) = 0.46

Prob > chi2 = 0.4960

. test 1.educgrp#c1sess= 3.educgrp#c1sess // Low vs. High: Linear

( 1) [nm3rt]1.educgrp#c.c1sess - [nm3rt]3b.educgrp#co.c1sess = 0

chi2( 1) = 1.41

Prob > chi2 = 0.2344

. test 2.educgrp#c1sess= 3.educgrp#c1sess // Med vs. High: Linear

( 1) [nm3rt]2.educgrp#c.c1sess - [nm3rt]3b.educgrp#co.c1sess = 0

chi2( 1) = 0.01

Prob > chi2 = 0.9279

. test 1.educgrp#c1sess= 2.educgrp#c1sess // Low vs. Med: Linear

( 1) [nm3rt]1.educgrp#c.c1sess - [nm3rt]2.educgrp#c.c1sess = 0

chi2( 1) = 1.69

Prob > chi2 = 0.1939

. test 1.educgrp#c1sess2=3.educgrp#c1sess2 // Low vs. High: Quad

( 1) [nm3rt]1.educgrp#c.c1sess2 - [nm3rt]3b.educgrp#co.c1sess2 = 0

chi2( 1) = 1.22

Prob > chi2 = 0.2700

. test 2.educgrp#c1sess2=3.educgrp#c1sess2 // Med vs. High: Quad

( 1) [nm3rt]2.educgrp#c.c1sess2 - [nm3rt]3b.educgrp#co.c1sess2 = 0

chi2( 1) = 0.03

Prob > chi2 = 0.8581

. test 1.educgrp#c1sess2=2.educgrp#c1sess2 // Low vs. Med: Quad

( 1) [nm3rt]1.educgrp#c.c1sess2 - [nm3rt]2.educgrp#c.c1sess2 = 0

chi2( 1) = 2.12

Prob > chi2 = 0.1454

. predict prededuc

(option xb assumed)

. corr nm3rt prededuc

(obs=606)

| nm3rt prededuc

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nm3rt | 1.0000

prededuc | 0.4151 1.0000

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end of do-file

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