---

      name: **<unnamed>**
       log: **C:\Users\emily\Documents\Johns Hopkins Documents\Projects\ACTIVE\01. Depression_Trajectory_Manuscrip**
  log type: **smcl**
 opened on: **26 May 2020, 00:16:08**

```
1 .
2 . gen eemem1=eemem //replicate memory score into new variable
  (5,676 missing values generated)

3 . sum eemem
```

Variable	Obs	Mean	Std. Dev.	Min	Max
eemem	**13,938**	**-.1043839**	**2.451705**	**-7.802736**	**6.219384**

```
4 . replace eemem1 = eemem1-r(mean) //subtract mean to center each var at zero
  (13,938 real changes made)

5 . replace eemem1 = eemem1/r(sd) //divide by SD to standardize SD (1)
  (13,938 real changes made)

6 . sum eemem1 //check to make sure standardization worked
```

Variable	Obs	Mean	Std. Dev.	Min	Max
eemem1	**13,938**	**1.55e-08**	**1**	**-3.139999**	**2.579334**

```
7 . gen reascb1=reascb //repeat for each variable
  (5,688 missing values generated)

8 . sum reascb
```

Variable	Obs	Mean	Std. Dev.	Min	Max
reascb	**13,926**	**.8628198**	**2.771301**	**-7.659929**	**11.27199**

```
9 . replace reascb1 = reascb1-r(mean)
  (13,926 real changes made)

10 . replace reascb1 = reascb1/r(sd)
  (13,926 real changes made)

11 . sum reascb1
```

Variable	Obs	Mean	Std. Dev.	Min	Max
reascb1	**13,926**	**-2.57e-09**	**1**	**-3.07536**	**3.756059**

```
12 . gen spdcb1=spdcb
  (5,975 missing values generated)
```

```
13 . sum spdcb

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
       spdcb |     13,639   -1.238116    2.979233  -12.46868   4.045787

14 . replace spdcb1 = spdcb1-r(mean)
(13,639 real changes made)

15 . replace spdcb1 = spdcb1/r(sd)
(13,639 real changes made)

16 . sum spdcb1

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
      spdcb1 |     13,639    6.92e-09           1  -3.769616   1.773579

17 .
18 . recode  intgrp (1=2) (2=3) (3=4) (4=1)
(intgrp: 19614 changes made)

19 .
20 . capture program drop centervars

21 . program define centervars
  1.         sum yrseduc
  2.         gen c_yrseduc = yrseduc - r(mean)
  3.         sum(c_yrseduc)
  4.         sum basemmse
  5.         gen c_basemmse = basemmse - r(mean)
  6.         sum(c_basemmse)
  7.         sum baseage
  8.         gen c_baseage = baseage - r(mean)
  9.         sum(c_baseage)
 10. end

22 . quietly centervars

23 .
24 . //////////////MEMORY/////////////////
> mixed eemem1 i.visit i.intgrp i.depression c_baseage c_yrseduc c_basemmse female i.Race i.visit#i.intgrp#i.depr

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood = -5766.2791
Iteration 1:   log likelihood = -5766.2791

Computing standard errors:

Mixed-effects ML regression                     Number of obs     =      6,710
Group variable: id                              Number of groups  =      1,390

                                                Obs per group:
                                                              min =          1
                                                              avg =        4.8
                                                              max =          7

                                                Wald chi2(33)     =    3143.07
Log likelihood = -5766.2791                     Prob > chi2       =     0.0000
```

eemem1	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
visit						
2	-.0052638	.0286363	-0.18	0.854	-.0613899	.0508624
3	-.0631505	.0312469	-2.02	0.043	-.1243934	-.0019076
4	-.0700862	.0318353	-2.20	0.028	-.1324823	-.0076901
5	-.1681443	.032703	-5.14	0.000	-.2322409	-.1040476
6	-.4712558	.0348032	-13.54	0.000	-.5394687	-.4030428
7	-.9260307	.0433186	-21.38	0.000	-1.010933	-.8411278
intgrp						
2 Reasoning	-.0210193	.0449622	-0.47	0.640	-.1091436	.067105
depression						
1 have depression	.0160405	.0499677	0.32	0.748	-.0818943	.1139753
c_baseage	-.057617	.0031136	-18.50	0.000	-.0637196	-.0515145
c_yrseduc	.0734617	.0072042	10.20	0.000	.0593417	.0875818
c_basemmse	.1764461	.009823	17.96	0.000	.1571934	.1956988
female	.4735498	.0430676	11.00	0.000	.3891389	.5579608
Race						
Black	-.4184846	.0436672	-9.58	0.000	-.5040708	-.3328985
Other	-.2537981	.1509671	-1.68	0.093	-.5496883	.042092
visit#intgrp#depression						
1#2 Reasoning#1 have depression	.0846014	.0713493	1.19	0.236	-.0552407	.2244436
2#1 Memory#1 have depression	-.0353743	.0602979	-0.59	0.557	-.1535561	.0828075
2#2 Reasoning#0 no depression	.2457283	.0402664	6.10	0.000	.1668077	.3246489
2#2 Reasoning#1 have depression	.1849759	.0827564	2.24	0.025	.0227764	.3471754
3#1 Memory#1 have depression	-.1243442	.0693512	-1.79	0.073	-.2602701	.0115816
3#2 Reasoning#0 no depression	.1834647	.0439068	4.18	0.000	.0974089	.2695206
3#2 Reasoning#1 have depression	.1882074	.0851902	2.21	0.027	.0212376	.3551771
4#1 Memory#1 have depression	-.1357683	.0713482	-1.90	0.057	-.2756082	.0040715
4#2 Reasoning#0 no depression	.1472189	.0444456	3.31	0.001	.0601071	.2343308
4#2 Reasoning#1 have depression	.1007717	.0862999	1.17	0.243	-.068373	.2699165
5#1 Memory#1 have depression	-.0820883	.0748028	-1.10	0.272	-.2286992	.0645225
5#2 Reasoning#0 no depression	.2104121	.0457076	4.60	0.000	.1208269	.2999973
5#2 Reasoning#1 have depression	.0701889	.0865399	0.81	0.417	-.0994261	.2398039
6#1 Memory#1 have depression	-.0985643	.0784443	-1.26	0.209	-.2523123	.0551838
6#2 Reasoning#0 no depression	.224019	.0486148	4.61	0.000	.1287358	.3193021
6#2 Reasoning#1 have depression	.1014025	.0901776	1.12	0.261	-.0753423	.2781473
7#1 Memory#1 have depression	.0102005	.0930684	0.11	0.913	-.1722102	.1926111
7#2 Reasoning#0 no depression	.0744126	.0600124	1.24	0.215	-.0432095	.1920347
7#2 Reasoning#1 have depression	-.0053762	.1060762	-0.05	0.960	-.2132819	.2025294
_cons	-.1995031	.0457041	-4.37	0.000	-.2890814	-.1099247

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
id: Identity				
var(_cons)	.4038618	.0174111	.3711387	.43947
var(Residual)	.2041558	.0039599	.1965402	.2120666

LR test vs. linear model: chibar2(01) = **4062.37** Prob >= chibar2 = **0.0000**

```
25 .
26 . eststo memory_3wayreg

27 . esttab memory_3wayreg using memory_3wayreg.csv ///
>         , replace b(2) ci(2) parentheses nonumbers nomtitles nostar plain wide ///
>         title("Memory Change in 3-way Models")
(output written to memory_3wayreg.csv)

28 .
29 . //////////-------------------Reasoning--------------------\\\\\\\\\\\\\\\\\\\\
> mixed reascb1 i.visit i.intgrp i.depression c_baseage c_yrseduc c_basemmse female i.Race i.visit#i.intgrp#i.dep

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood = -4224.5525
Iteration 1:   log likelihood = -4224.5525

Computing standard errors:

Mixed-effects ML regression                     Number of obs     =      6,694
Group variable: id                              Number of groups  =      1,385

                                                Obs per group:
                                                              min =          1
                                                              avg =        4.8
                                                              max =          7

                                                Wald chi2(33)     =    4024.18
Log likelihood = -4224.5525                     Prob > chi2       =     0.0000
```

reascb1	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
visit						
2	.2671859	.0214355	12.46	0.000	.225173	.3091988
3	.1808258	.0234509	7.71	0.000	.1348629	.2267888
4	.197475	.0238935	8.26	0.000	.1506445	.2443055
5	.2414488	.0245411	9.84	0.000	.1933491	.2895484
6	.1046364	.0261139	4.01	0.000	.0534541	.1558187
7	-.2129813	.0325601	-6.54	0.000	-.276798	-.1491646
intgrp						
3 Speed	-.0112931	.0422754	-0.27	0.789	-.0941513	.0715651
depression						
1 have depression	-.0817045	.0382512	-2.14	0.033	-.1566754	-.0067336
c_baseage	-.0501393	.0032665	-15.35	0.000	-.0565414	-.0437371
c_yrseduc	.0978669	.0073469	13.32	0.000	.0834673	.1122665
c_basemmse	.1571788	.0101068	15.55	0.000	.1373699	.1769878
female	.0872938	.0441411	1.98	0.048	.0007788	.1738088
Race						
Black	-.5349913	.0437547	-12.23	0.000	-.620749	-.4492336
Other	.0830578	.1358422	0.61	0.541	-.183188	.3493036
visit#intgrp#depression						
1#3 Speed#1 have depression	.1471596	.0535822	2.75	0.006	.0421404	.2521788
2#1 Memory#1 have depression	.0047136	.045087	0.10	0.917	-.0836554	.0930826
2#3 Speed#0 no depression	.4460396	.0306143	14.57	0.000	.3860367	.5060425
2#3 Speed#1 have depression	.5423022	.0619429	8.75	0.000	.4208964	.6637079
3#1 Memory#1 have depression	.0426521	.0522701	0.82	0.415	-.0597954	.1450997

3#3 Speed#0 no depression	.4064175	.0335218	12.12	0.000	.340716	.4721191
3#3 Speed#1 have depression	.4674717	.0633175	7.38	0.000	.3433717	.5915717
4#1 Memory#1 have depression	.0728881	.0537089	1.36	0.175	-.0323795	.1781557
4#3 Speed#0 no depression	.2843141	.0340074	8.36	0.000	.2176607	.3509674
4#3 Speed#1 have depression	.2957395	.0640715	4.62	0.000	.1701617	.4213172
5#1 Memory#1 have depression	.0587275	.0563397	1.04	0.297	-.0516963	.1691512
5#3 Speed#0 no depression	.4023711	.0344888	11.67	0.000	.3347744	.4699678
5#3 Speed#1 have depression	.4419281	.0659173	6.70	0.000	.3127325	.5711237
6#1 Memory#1 have depression	-.0053295	.0591223	-0.09	0.928	-.121207	.1105481
6#3 Speed#0 no depression	.2765495	.0368864	7.50	0.000	.2042536	.3488455
6#3 Speed#1 have depression	.327785	.0656871	4.99	0.000	.1990407	.4565293
7#1 Memory#1 have depression	-.0368696	.0700733	-0.53	0.599	-.1742108	.1004715
7#3 Speed#0 no depression	.2009631	.0450446	4.46	0.000	.1126773	.2892489
7#3 Speed#1 have depression	.0610119	.0749251	0.81	0.415	-.0858386	.2078624
_cons	-.2273388	.0446453	-5.09	0.000	-.3148419	-.1398356

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
id: Identity				
var(_cons)	.4448039	.0181792	.410563	.4819004
var(Residual)	.1139505	.0022142	.1096924	.1183739

LR test vs. linear model: chibar2(01) = **6363.61** Prob >= chibar2 = **0.0000**

```
30 .
31 . eststo reasoning_3wayreg

32 . esttab reasoning_3wayreg using reasoning_3wayreg.csv ///
>         , replace b(2) ci(2) parentheses nonumbers nomtitles nostar plain wide ///
>         title("Memory Change in 3-way Models")
(output written to reasoning_3wayreg.csv)

33 .
34 .
35 . //////////-------------------Speed of Processing--------------------\\\\\\\\\\\\\\\\\\\\
> mixed spdcb1 i.visit i.intgrp i.depression c_baseage c_yrseduc c_basemmse female i.Race i.visit#i.intgrp#i.depr

Performing EM optimization:

Performing gradient-based optimization:

Iteration 0:   log likelihood =  -6110.876
Iteration 1:   log likelihood =  -6110.876

Computing standard errors:

Mixed-effects ML regression                    Number of obs     =      6,648
Group variable: id                             Number of groups  =      1,387

                                               Obs per group:
                                                             min =          1
                                                             avg =        4.8
                                                             max =          7

                                               Wald chi2(33)     =    5590.28
Log likelihood =  -6110.876                    Prob > chi2       =     0.0000
```

spdcb1	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
visit						
2	-.2942732	.0309112	-9.52	0.000	-.3548579	-.2336884
3	-.277078	.0335178	-8.27	0.000	-.3427717	-.2113842
4	-.2892801	.0342913	-8.44	0.000	-.3564897	-.2220704
5	-.3091736	.0351472	-8.80	0.000	-.3780609	-.2402864
6	-.1664237	.0374121	-4.45	0.000	-.23975	-.0930974
7	.4688379	.0473486	9.90	0.000	.3760364	.5616394
intgrp						
4 Control	.0643064	.0469167	1.37	0.170	-.0276485	.1562614
depression						
1 have depression	-.0352485	.0534524	-0.66	0.510	-.1400132	.0695162
c_baseage	.0717843	.0032831	21.86	0.000	.0653495	.0782191
c_yrseduc	-.0252761	.0073922	-3.42	0.001	-.0397645	-.0107876
c_basemmse	-.0786342	.0101545	-7.74	0.000	-.0985367	-.0587317
female	.004181	.0444012	0.09	0.925	-.0828437	.0912057
Race						
Black	.2340071	.044435	5.27	0.000	.1469161	.3210981
Other	.1214982	.1450036	0.84	0.402	-.1627036	.4057
visit#intgrp#depression						
1#4 Control#1 have depression	-.0789945	.0747708	-1.06	0.291	-.2255426	.0675536
2#1 Memory#1 have depression	.0488106	.064799	0.75	0.451	-.0781931	.1758143
2#4 Control#0 no depression	-1.140495	.0435262	-26.20	0.000	-1.225805	-1.055185
2#4 Control#1 have depression	-1.112975	.0871029	-12.78	0.000	-1.283694	-.9422567
3#1 Memory#1 have depression	.0330644	.0745805	0.44	0.658	-.1131107	.1792395
3#4 Control#0 no depression	-.9925965	.047118	-21.07	0.000	-1.084946	-.900247
3#4 Control#1 have depression	-.9951193	.0908394	-10.95	0.000	-1.173161	-.8170774
4#1 Memory#1 have depression	.0448015	.0765875	0.58	0.559	-.1053073	.1949103
4#4 Control#0 no depression	-.7350554	.0484187	-15.18	0.000	-.8299543	-.6401566
4#4 Control#1 have depression	-.5793068	.0915262	-6.33	0.000	-.7586949	-.3999188
5#1 Memory#1 have depression	.1408927	.0802846	1.75	0.079	-.0164623	.2982477
5#4 Control#0 no depression	-.8125752	.04908	-16.56	0.000	-.9087702	-.7163801
5#4 Control#1 have depression	-.6885887	.0960151	-7.17	0.000	-.8767747	-.5004026
6#1 Memory#1 have depression	.1062587	.0843778	1.26	0.208	-.0591186	.2716361
6#4 Control#0 no depression	-.6248641	.0521973	-11.97	0.000	-.7271689	-.5225592
6#4 Control#1 have depression	-.5888349	.0961815	-6.12	0.000	-.7773472	-.4003225
7#1 Memory#1 have depression	.1153226	.1012011	1.14	0.254	-.083028	.3136731
7#4 Control#0 no depression	-.4648288	.0656788	-7.08	0.000	-.5935569	-.3361006
7#4 Control#1 have depression	-.2475132	.1092487	-2.27	0.023	-.4616368	-.0333897
_cons	.3580514	.0472454	7.58	0.000	.2654521	.4506507

Random-effects Parameters	Estimate	Std. Err.	[95% Conf.	Interval]
id: Identity				
var(_cons)	.417505	.0182257	.3832688	.4547993
var(Residual)	.2339792	.004562	.2252065	.2430936

LR test vs. linear model: chibar2(01) = **3706.12** Prob >= chibar2 = **0.0000**

```
36 .
37 . eststo speed_3wayreg

38 . esttab speed_3wayreg using speed_3wayreg.csv ///
   >         , replace b(2) ci(2) parentheses nonumbers nomtitles nostar plain wide ///
   >         title("Memory Change in 3-way Models")
   (output written to speed 3wayreg.csv)

39 .
40 . log close
         name:  <unnamed>
          log:  C:\Users\emily\Documents\Johns Hopkins Documents\Projects\ACTIVE\01. Depression_Trajectory_Manuscrip
     log type:  smcl
    closed on:  26 May 2020, 00:16:23
```