Stata 13.0 Outputs and Coding

From Knowing to Living Well: How Behavioural Skills Bridge the Gap Between Knowledge, Self-Management, and Quality of Life in Type 2 Diabetes

```
  ___  ____  ____  ____  ____ (R)
 /__    /   ____/   /   ____/
___/   /   /___/   /   /___/   13.0   Copyright 1985-2013 StataCorp LP
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Notes:
      1.  (/v# option or -set maxvar-) 5000 maximum variables

. use "D:\S3 IKM\Henny\Humanities & Social Sciences Communications\Minor
Revision\Data Diabetes IMB HbA1c QoL_HS > SC.dta", clear
```

Coding Scheme:

I1-6= Information items 1-6= Diabetes knowledge
Inf= sum of Information scores items 1-6
M1-6= Motivation items 1-6= Motivation for Self-Management Behavior
Mot= sum of Motivation scores items 1-6
BS1-6= Behavioral Skills items 1- 6= Behavioral Skills
BS= sum of Behavioral Skills items 1-6
B1-6 Behavior items 1 – 6= Self-Management Behavior
Bhv= sum of Behavior scores items 1-6
Gender= Sex (0=Male; 1= Female)
Edudic= Education level (0<High School; 1 >= High School)
Incmillion= Monthly income (x Rp 1,000,000)
HbA1c= Glycated Hemoglobin — specifically Hemoglobin A1c (%)
Illdur= Illness Dration (months)
ql1-25= Quality of Life items 1-25 (WHOQOL-BREF)
Qol= sum of Quality of Life scores items 1-25

A. Internal Consistency (Table 1)

```
. alpha I1 I2 I3 I4 I5 I6, std item

Test scale = mean(standardized items)

                                                          average
                          item-test     item-rest       interitem
Item          |  Obs  Sign   correlation   correlation     correlation     alpha
--------------+-----------------------------------------------------------------
I1            |  300    +       0.8243        0.7324          0.4973      0.8318
I2            |  300    +       0.8338        0.7461          0.4929      0.8293
I3            |  300    +       0.7101        0.5751          0.5504      0.8596
I4            |  300    +       0.5913        0.4227          0.6056      0.8848
I5            |  300    +       0.8794        0.8128          0.4717      0.8170
I6            |  300    +       0.8098        0.7118          0.5040      0.8356
--------------+-----------------------------------------------------------------
Test scale    |                                                 0.5203      0.8668
------------------------------------------------------------------------------

. alpha M1 M2 M3 M4 M5 M6, std item

Test scale = mean(standardized items)

                                                          average
                          item-test     item-rest       interitem
Item          |  Obs  Sign   correlation   correlation     correlation     alpha
--------------+-----------------------------------------------------------------
M1            |  300    +       0.6772        0.5126          0.3990      0.7685
M2            |  300    +       0.7574        0.6227          0.3652      0.7421
M3            |  300    +       0.6366        0.4592          0.4160      0.7808
M4            |  300    +       0.7070        0.5528          0.3864      0.7590
M5            |  300    +       0.7300        0.5844          0.3768      0.7514
M6            |  300    +       0.6957        0.5375          0.3912      0.7626
--------------+-----------------------------------------------------------------
Test scale    |                                                 0.3891      0.7926
------------------------------------------------------------------------------

. alpha Bs1 Bs2 Bs3 Bs4 Bs5 Bs6, std item

Test scale = mean(standardized items)

                                                          average
                          item-test     item-rest       interitem
Item          |  Obs  Sign   correlation   correlation     correlation     alpha
--------------+-----------------------------------------------------------------
Bs1           |  300    +       0.7224        0.5824          0.4523      0.8050
Bs2           |  300    +       0.7702        0.6484          0.4313      0.7913
Bs3           |  300    +       0.8291        0.7329          0.4053      0.7731
Bs4           |  300    +       0.6221        0.4506          0.4965      0.8314
Bs5           |  300    +       0.7313        0.5945          0.4484      0.8025
Bs6           |  300    +       0.7307        0.5937          0.4486      0.8027
--------------+-----------------------------------------------------------------
Test scale    |                                                 0.4470      0.8291
------------------------------------------------------------------------------
```

```
. alpha B1 B2 B3 B4 B5 B6, std item

Test scale = mean(standardized items)
```

Item	Obs	Sign	item-test correlation	item-rest correlation	average interitem correlation	alpha
B1	300	+	0.7103	0.5442	0.2974	0.6791
B2	300	+	0.6590	0.4745	0.3176	0.6995
B3	300	+	0.5644	0.3524	0.3549	0.7334
B4	300	+	0.7085	0.5418	0.2981	0.6798
B5	300	+	0.6959	0.5244	0.3031	0.6850
B6	300	+	0.6052	0.4041	0.3388	0.7193
Test scale					0.3183	0.7370

```
. alpha ql1 ql2 ql3 ql4 ql5 ql6 ql7 ql8 ql9 ql10 ql11 ql12 ql13 ql14 ql15 ql16 ql17
ql18
>  ql19 ql20 ql21 ql22 ql23 ql24 ql25, std item

Test scale = mean(standardized items)
```

Item	Obs	Sign	item-test correlation	item-rest correlation	average interitem correlation	alpha
ql1	300	+	0.2825	0.1979	0.1762	0.8370
ql2	300	+	0.3248	0.2420	0.1745	0.8353
ql3	300	-	0.1473	0.0590	0.1817	0.8420
ql4	300	-	0.1617	0.0736	0.1811	0.8415
ql5	300	+	0.4544	0.3796	0.1692	0.8301
ql6	300	+	0.4952	0.4236	0.1675	0.8285
ql7	300	+	0.4065	0.3284	0.1711	0.8321
ql8	300	+	0.4993	0.4281	0.1674	0.8283
ql9	300	+	0.5583	0.4924	0.1650	0.8258
ql10	300	+	0.4311	0.3546	0.1701	0.8311
ql11	300	+	0.5175	0.4479	0.1666	0.8275
ql12	300	+	0.5121	0.4420	0.1668	0.8278
ql13	300	+	0.5312	0.4629	0.1661	0.8270
ql14	300	+	0.4226	0.3455	0.1705	0.8314
ql15	300	+	0.4683	0.3946	0.1686	0.8296
ql16	300	+	0.4664	0.3925	0.1687	0.8297
ql17	300	+	0.5700	0.5053	0.1645	0.8253
ql18	300	+	0.5144	0.4445	0.1667	0.8277
ql19	300	+	0.5393	0.4716	0.1657	0.8266
ql20	300	+	0.5952	0.5331	0.1634	0.8242
ql21	300	+	0.5929	0.5306	0.1635	0.8243
ql22	300	+	0.5628	0.4974	0.1648	0.8256
ql23	300	+	0.4815	0.4088	0.1681	0.8290
ql24	300	+	0.4551	0.3803	0.1692	0.8301
ql25	300	+	0.2621	0.1766	0.1770	0.8377
Test scale					0.1694	0.8360

B. Sample Characteristics (Table 2)

```
. sum Age HbA1c Illdur Gender Mot Inf Incmillion Edudic

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
         Age |       300       58.28    7.964486         41         88
       HbA1c |       300    7.767333     1.34199        5.1       11.7
      Illdur |       300    52.84333    47.83366          3        336
      Gender |       300    .7233333    .4480977          0          1
         Mot |       300    8.656667    2.828212          0         12
-------------+--------------------------------------------------------
         Inf |       300    7.423333    3.346858          0         12
  Incmillion |       300    .9468747    1.701307          0          8
      Edudic |       300         .66    .4745003          0          1

. sum Age Gender Incmillion Edudic Inf Mot  BS Bhv Illdur HbA1c QoL

    Variable |       Obs        Mean    Std. Dev.       Min        Max
-------------+--------------------------------------------------------
         Age |       300       58.28    7.964486         41         88
      Gender |       300    .7233333    .4480977          0          1
  Incmillion |       300    .9468747    1.701307          0          8
      Edudic |       300         .66    .4745003          0          1
         Inf |       300    7.423333    3.346858          0         12
-------------+--------------------------------------------------------
         Mot |       300    8.656667    2.828212          0         12
          BS |       300    10.80667    2.017305          1         12
         Bhv |       300    9.636667    2.158747          0         12
      Illdur |       300    52.84333    47.83366          3        336
       HbA1c |       300    7.767333     1.34199        5.1       11.7
-------------+--------------------------------------------------------
         QoL |       300       77.91     7.02803         65        110

. tab Gender

     Gender |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |         83       27.67       27.67
          1 |        217       72.33      100.00
------------+-----------------------------------
      Total |        300      100.00

. tab Edudic

     Edudic |      Freq.     Percent        Cum.
------------+-----------------------------------
          0 |        102       34.00       34.00
          1 |        198       66.00      100.00
------------+-----------------------------------
      Total |        300      100.00
```

C. Structural Equation Model (Table 3)

```
. sem (BS -> Bhv, ) (Inf -> BS, ) (Inf -> Bhv, ) (Mot -> BS, ) (Mot -> Bhv, ) (Bhv ->
HbA1c, ) (HbA1c -> QoL, )
> (Age -> HbA1c, ) (Age -> QoL, ) (Age -> Incmillion, ) (Incmillion -> HbA1c, )
(Incmillion -> QoL, ) (Illdur ->
>  HbA1c, ) (Illdur -> QoL, ) (Gender -> HbA1c, ) (Gender -> QoL, ) (Edudic -> BS, )
(Edudic -> Incmillion, ), s
> tandardized nocapslatent

Endogenous variables

Observed:  BS Bhv HbA1c QoL Incmillion

Exogenous variables

Observed:  Inf Mot Age Illdur Gender Edudic

Fitting target model:

Iteration 0:   log likelihood = -7364.4829
Iteration 1:   log likelihood = -7364.4829

Structural equation model                       Number of obs      =       300
Estimation method  = ml
Log likelihood     = -7364.4829

------------------------------------------------------------------------------
                 |                 OIM
    Standardized |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------+------------------------------------------------------------
Structural       |
  BS <-          |
             Inf |   .3359314   .1003535     3.35   0.001     .1392421    .5326207
             Mot |   .2789418   .1007161     2.77   0.006     .0815418    .4763418
          Edudic |   .0976815   .0454371     2.15   0.032     .0086265    .1867366
           _cons |   3.628276    .267756    13.55   0.000     3.103484    4.153068
  ---------------+------------------------------------------------------------
  Bhv <-         |
              BS |    .683828   .0370015    18.48   0.000     .6113064    .7563497
             Inf |    .115026   .0787517     1.46   0.144    -.0393244    .2693764
             Mot |   .0626936   .0783085     0.80   0.423    -.0907882    .2161755
           _cons |   .3543239   .2103145     1.68   0.092    -.0578849    .7665327
  ---------------+------------------------------------------------------------
  HbA1c <-       |
             Bhv |  -.2206361   .0541354    -4.08   0.000    -.3267396   -.1145327
      Incmillion |  -.1153329   .0564125    -2.04   0.041    -.2258995   -.0047664
             Age |   -.032477   .0601126    -0.54   0.589    -.1502956    .0853416
          Illdur |   .1960572    .059395     3.30   0.001     .0796451    .3124693
          Gender |   .0655604   .0559605     1.17   0.241    -.0441201    .1752409
           _cons |   6.724563   .5528234    12.16   0.000     5.641049    7.808077
  ---------------+------------------------------------------------------------
  QoL <-         |
           HbA1c |  -.1109023    .055488    -2.00   0.046    -.2196568   -.0021479
      Incmillion |   .1715721   .0556532     3.08   0.002     .0624938    .2806504
             Age |   .2219845   .0574829     3.86   0.000       .10932     .334649
```

```
          Illdur |  -.1739563   .0600317    -2.90   0.004    -.2916162   -.0562964
          Gender |  -.0612748   .0552633    -1.11   0.268     -.169589    .0470393
           _cons |   10.22181   .7260841    14.08   0.000      8.79871    11.64491
  ---------------+------------------------------------------------------------------
  Incmillion <-  |
             Age |   .2420693   .0550276     4.40   0.000     .1342172    .3499213
          Edudic |   .3983424    .051211     7.78   0.000     .2979707    .4987141
           _cons |  -1.771805   .4362704    -4.06   0.000     -2.62688   -.9167312
-----------------+------------------------------------------------------------------
        var(e.BS)|   .6189072   .0396923                      .5458025    .7018035
       var(e.Bhv)|   .3578747   .0314692                      .3012187    .4251872
     var(e.HbA1c)|   .9014541   .0346193                      .8360922    .9719256
       var(e.QoL)|     .88618   .0367019                      .8170877    .9611147
var(e.Incmillion)|   .8522642   .0364018                      .7838226    .9266818
------------------------------------------------------------------------------
LR test of model vs. saturated: chi2(22)  =     46.24, Prob > chi2 = 0.0018
.
. estat gof, stats (all)

------------------------------------------------------------------------------
Fit statistic        |      Value   Description
---------------------+--------------------------------------------------------
Likelihood ratio     |
         chi2_ms(22) |     46.236   model vs. saturated
            p > chi2 |      0.002
         chi2_bs(40) |    604.860   baseline vs. saturated
            p > chi2 |      0.000
---------------------+--------------------------------------------------------
Population error     |
               RMSEA |      0.061   Root mean squared error of approximation
 90% CI, lower bound |      0.036
         upper bound |      0.085
              pclose |      0.218   Probability RMSEA <= 0.05
---------------------+--------------------------------------------------------
Information criteria |
                 AIC |  14784.966   Akaike's information criterion
                 BIC |  14888.672   Bayesian information criterion
---------------------+--------------------------------------------------------
Baseline comparison  |
                 CFI |      0.957   Comparative fit index
                 TLI |      0.922   Tucker-Lewis index
---------------------+--------------------------------------------------------
Size of residuals    |
                SRMR |      0.040   Standardized root mean squared residual
                  CD |      0.546   Coefficient of determination
------------------------------------------------------------------------------
```

D. Final SEM Diagram (Figure 2)

