

Mplus code corresponding to models 1 through 5 in Preacher, Rucker, and Hayes (2007)

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9 August 2011

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42, 185-227.

Model 1

```
TITLE: Preacher, Rucker, and Hayes (2007) Model 1
DATA:
    FILE IS C:\mplus3.txt;
    FORMAT IS FREE;
VARIABLE:
    NAMES ARE X M Y;
    USEVARIABLES ARE X M Y XM;
DEFINE:
    XM = X*M;
ANALYSIS:
    !BOOTSTRAP = 5000;
MODEL:
    Y ON M (b1)
        X
        XM (b2);
    M ON X (a1);
    XM WITH M;
MODEL CONSTRAINT:
    NEW (IND XMODVAL);
    XMODVAL = -1;
    IND = a1*(b1+b2*xmodval);
output:
    !CINTERVAL (bcbootstrap);

!remove exclamation points (!) in code above;
!to generate bias corrected bootstrap confidence intervals;
!for all effects;

!Set 'xmodval' to the value of X at which you desire the;
!estimate of the conditional indirect effect of X. This;
!conditional indirect effect will be produced in the output;
!with parameter label 'ind'. As written above, the program;
!generates the conditional indirect effect of X on Y through M;
!when X = -1;
```

Model 2

```
TITLE: Preacher, Rucker, and Hayes (2007) Model 2
       Called a 'direct effect and first stage' model by
       Edwards and Lambert (2007)
DATA:
      FILE IS C:\mplus3.txt;
      FORMAT IS FREE;
VARIABLE:
      NAMES ARE X M Y W;
      USEVARIABLES ARE X M Y W XW;
DEFINE:
      XW = X*W;
ANALYSIS:
      !BOOTSTRAP = 5000;
MODEL:
      Y ON M (B1)
          X
          W
          XW;
      M ON X (A1)
          W
          XW (A3);
MODEL CONSTRAINT:
      NEW (IND WMODVAL);
      WMODVAL = -1;
      IND = (A1 + A3*WMODVAL)*B1;
OUTPUT:
      !CINTERVAL (BCBOOTSTRAP);

!remove exclamation points (!) in code above;
!to generate bias corrected bootstrap confidence intervals;
!for all effects;

!Set 'wmodval' to the value of W at which you desire the;
!estimate of the conditional indirect effect of X. This;
!conditional indirect effect will be produced in the output;
!with parameter label 'ind'. As written above, the program;
!generates the conditional indirect effect of X on Y through M;
!when W = -1;
```

Model 3

```
TITLE: Preacher, Rucker, and Hayes (2007) Model 3
       Called a 'second stage' model by Edwards and Lambert (2007)
DATA:
      FILE IS C:\mplus3.txt;
      FORMAT IS FREE;
VARIABLE:
      NAMES ARE X M Y W;
      USEVARIABLES ARE X M Y W MW;
DEFINE:
      MW = M*W;
ANALYSIS:
      !BOOTSTRAP = 5000;
MODEL:
      Y ON M (b1)
          X
          W
          MW (b3);
      M ON X (a1);
      W WITH M;
      MW WITH M;
MODEL CONSTRAINT:
      NEW (IND WMODVAL);
      WMODVAL = -1;
      IND = A1*(B1+B3*WMODVAL);
output:
      !CINTERVAL (BCBOOTSTRAP);

!remove exclamation points (!) in code above;
!to generate bias corrected bootstrap confidence intervals;
!for all effects;

!Set 'wmodval' to the value of W at which you desire the;
!estimate of the conditional indirect effect of X. This;
!conditional indirect effect will be produced in the output;
!with parameter label 'ind'. As written above, the program;
!generates the conditional indirect effect of X on Y through M;
!when W = -1;
```

Model 4

```
TITLE: Preacher, Rucker, and Hayes (2007) Model 4
DATA:
  FILE IS C:\mplus3.txt;
  FORMAT IS FREE;
VARIABLE:
  NAMES ARE X M Y W Z;
  USEVARIABLES ARE X M Y W Z MZ XW;
DEFINE:
  MZ = M*Z;
  XW = X*W;
ANALYSIS:
  !BOOTSTRAP = 5000;
MODEL:
  Y ON M (b1)
    X
    W
    Z
    MZ (b3)
    XW;
  M ON X (a1)
    W
    XW (a3);
  Z WITH M;
  MZ WITH M;
MODEL CONSTRAINT:
  NEW (IND WMODVAL ZMODVAL);
  WMODVAL = 1;
  ZMODVAL = 2;
  IND = (A1 + A3*WMODVAL) * (B1 + B3*ZMODVAL);
OUTPUT:
  !CINTERVAL (BCBOOTSTRAP);

!remove exclamation points (!) in code above;
!to generate bias corrected bootstrap confidence intervals;
!for all effects;

!Set 'wmodval' and 'zmodval' to the values of W and Z at which you ;
!desire the estimate of the conditional indirect effect of X. This;
!conditional indirect effect will be produced in the output;
!with parameter label 'ind'. As written above, the program;
!generates the conditional indirect effect of X on Y through M;
!when W = 1 and Z = 2;
```

Model 5

```
TITLE: Preacher, Rucker, and Hayes (2007) Model 5
       Called a 'total effect moderation model' by
       Edwards and Lambert (2007)

DATA:
      FILE IS C:\mplus3.txt;
      FORMAT IS FREE;

VARIABLE:
      NAMES ARE X M Y W;
      USEVARIABLES ARE X M Y W XW MW;

DEFINE:
      MW = M*W;
      XW = X*W;

ANALYSIS:
      !BOOTSTRAP = 5000;

MODEL:
      Y ON M (b1)
          X
          W
          MW (b2)
          XW;
      M ON X (a1)
          W
          XW (a3);
      MW WITH M;

MODEL CONSTRAINT:
      NEW (IND WMODVAL);
      WMODVAL = -1;
      IND = (A1 + A3*WMODVAL) * (B1 + B2*WMODVAL);

OUTPUT:
      !CINTERVAL (BCBOOTSTRAP);

!REMOVE EXCLAMATION POINTS (!) IN CODE ABOVE;
!TO GENERATE BIAS CORRECTED BOOTSTRAP CONFIDENCE INTERVALS;
!FOR ALL EFFECTS;

!SET 'WMODVAL' TO THE VALUE OF W AT WHICH YOU DESIRE THE;
!ESTIMATE OF THE CONDITIONAL INDIRECT EFFECT OF X. THIS;
!CONDITIONAL INDIRECT EFFECT WILL BE PRODUCED IN THE OUTPUT;
!WITH PARAMETER LABEL 'IND'. AS WRITTEN ABOVE, THE PROGRAM;
!GENERATES THE CONDITIONAL INDIRECT EFFECT OF X ON Y THROUGH M;
!WHEN W = -1;
```