1

Computation of Bayes Intraclass Correlations

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This document shows you how to calculate intraclass correlations (ICCs) in Mplus per Chapter 25. I use the minutes of vigorous physical activity (MVPA) per day example. Recall that this study is multilevel in character. Three variables are measured at the within cluster level, namely MVPA and the two mediators, (1) perceived benefits or advantages of MVPA, and (2) peer support. Table 1 contains the Mplus syntax I use to calculate the relevant ICCs.

```
1.   TITLE: Calculation of ICCs ;
2.   DATA: FILE IS mvpa.dat ;
3.   VARIABLE:
4.   NAMES ARE
5.    mvpa peers advant treat school  ;
6.   USEVARIABLES ARE
7.    mvpa peers advant ;
8.   CLUSTER is school ;
10. ANALYSIS:
11. TYPE = TWOLEVEL ;
12. ESTIMATOR = BAYES ;
13. BITERATIONS=100000 (50000); BCONVERGENCE =.01;
14. MODEL :
15. %WITHIN%                    ! specify within cluster model
16. mvpa advant peers WITH mvpa advant peers; ! correlate the vars
17. mvpa (wvmvpa);     !calculate within cluster variance of mvpa
18. advant (wvadvant); !calculate within cluster variance of advant
19. peers (wvpeers);  !calculate within cluster variance of peers
20. %BETWEEN%                            ! specify between cluster model
21. mvpa advant peers WITH mvpa advant peers; ! correlate the vars
22. mvpa (bvmvpa);     !calculate between cluster variance of mvpa
23. advant (bvadvant); !calculate between cluster variance of advant
24. peers (bvpeers);    !calculate between cluster variance of peers
28. MODEL CONSTRAINT:                    ! define contrasts
29. NEW (iccmvpa iccadv iccpeer) ; ! give names to new variables
30. iccmvpa = bvmvpa/(bvmvpa + wvmvpa); ! icc is between var/ total var
31. iccadv = bvadvant/(bvadvant + wvadvant);
32. iccpeer = bvpeers/(bvpeers + wvpeers);
33. OUTPUT: CINTERVAL(HPD) ;
```

All of the syntax should be familiar to you from the main text. Here is the relevant output from the MODEL RESULTS section that reports the three ICCs:

```
MODEL RESULTS

                               Posterior  One-Tailed         95% C.I.
                    Estimate      S.D.      P-Value   Lower 2.5%  Upper 2.5%  Sig


New/Additional Parameters
    ICCMVPA           0.503       0.058      0.000      0.387       0.615       *
    ICCADV            0.602       0.054      0.000      0.499       0.710       *
    ICCPEER           0.604       0.054      0.000      0.502       0.712       *
```

They are all substantial in value and they are reasonably close to the ICC values I reported in the main text using maximum likelihood analysis (ICCMVPA = 0.461; ICCADV = 0.562; ICCPEER = 0.565). The output also reports credible intervals for them under 95% C.I.