Appendix C: Mplus and SPSS syntax

Mplus syntax

```
/* Null model */
TITLE:     Multilevel model (MLM) analysis - Two-level Null Model;
DATA:      FILE=C:\temp\implist.dat;
           TYPE=IMPUTATION;
           FORMAT IS 4F8.2;
VARIABLE: NAMES=IDSchool PV WTS2019 WT2019;
USEVAR = IDSchool PV WTS2019 WT2019;
       CLUSTER = IDSchool;
       WEIGHT = WT2019;
       WTSCALE = CLUSTER;
       BWEIGHT = WTS2019;
       BWTSCALE= SAMPLE;
ANALYSIS: TYPE=TWOLEVEL;
MODEL:    %WITHIN%
        PV;
        %BETWEEN%
        PV;

/* Model 1 – Student factors */
TITLE:     Multilevel model (MLM) analysis - Model 1;
DATA:      FILE=C:\temp\implist.dat;
           TYPE=IMPUTATION;
           FORMAT IS 33F8.2;
VARIABLE: NAMES=IDSchool PV WTS2019 WT2019
                       S_AGE S_GENDER S_LANG preschool SES domesticR commercialR
                       PARENG locality RESOU HINDER COMATST Sch_SES ISCEDYRS CONFID
                       TeachYrs STRATIO SCHSIZE STUDATT SC23R01 SC26R01 SC27
                       CHILCAP ST25R01 ST25R02 ST25R03 ST25R04 ST25R05 ST16R02;
USEVAR =IDSchool PV WT2019 WTS2019
            S_AGE S_GENDER S_LANG SES commercialR CHILCAP PARENG;
CLUSTER IS IDSchool;
WITHIN = S_AGE S_GENDER S_LANG SES commercialR CHILCAP PARENG;
         CLUSTER IS IDSchool;
         WEIGHT = WT2019;
         WTSCALE = CLUSTER;
         BWEIGHT = WTS2019;
         BWTSCALE= SAMPLE;
 ANALYSIS:  TYPE=TWOLEVEL;
 MODEL:     %WITHIN%
              PV ON S_AGE S_GENDER S_LANG SES commercialR CHILCAP PARENG;
              %BETWEEN%
              PV;


/* Model 2 – School factors */
TITLE:     Multilevel model (MLM) analysis - Model 2;
DATA:      FILE=C:\temp\implist.dat;
```

```
          TYPE=IMPUTATION;
          FORMAT IS 33F8.2;
VARIABLE: NAMES=IDSchool PV WTS2019 WT2019
          S_AGE S_GENDER S_LANG preschool SES domesticR commercialR
          PARENG locality RESOU HINDER COMATST Sch_SES ISCEDYRS CONFID
          TeachYrs STRATIO SCHSIZE STUDATT SC23R01 SC26R01 SC27
          CHILCAP ST25R01 ST25R02 ST25R03 ST25R04 ST25R05 ST16R02;
USEVAR =IDSchool PV WT2019 WTS2019
          SC23R01 ST16R02 Sch_SES locality;
CLUSTER IS IDSchool;
WITHIN =   SC23R01 ST16R02 Sch_SES locality;
         CLUSTER IS IDSchool;
         WEIGHT = WT2019;
         WTSCALE = CLUSTER;
         BWEIGHT = WTS2019;
         BWTSCALE= SAMPLE;
 ANALYSIS:  TYPE=TWOLEVEL;
 MODEL:     %WITHIN%
            PV ON SC23R01 ST16R02 Sch_SES locality;
           %BETWEEN%
            PV;

/* Model 3: Full model */
TITLE:     Multilevel model (MLM) analysis - Model 3;
DATA:      FILE=C:\temp\implist.dat;
          TYPE=IMPUTATION;
          FORMAT IS 33F8.2;
VARIABLE: NAMES=IDSchool PV WTS2019 WT2019
          S_AGE S_GENDER S_LANG preschool SES domesticR commercialR
          PARENG locality RESOU HINDER COMATST Sch_SES ISCEDYRS CONFID
          TeachYrs STRATIO SCHSIZE STUDATT SC23R01 SC26R01 SC27
          CHILCAP ST25R01 ST25R02 ST25R03 ST25R04 ST25R05 ST16R02;
USEVAR =IDSchool PV WT2019 WTS2019
          S_AGE S_GENDER S_LANG SES commercialR
          PARENG locality Sch_SES
          SC23R01 CHILCAP ST16R02;
CLUSTER IS IDSchool;
WITHIN = S_AGE S_GENDER S_LANG SES commercialR PARENG CHILCAP ST16R02;
BETWEEN = Sch_SES locality SC23R01;
         CLUSTER IS IDSchool;
         WEIGHT = WT2019;
         WTSCALE = CLUSTER;
         BWEIGHT = WTS2019;
         BWTSCALE= SAMPLE;
 ANALYSIS:  TYPE=TWOLEVEL;
 MODEL:     %WITHIN%
            PV ON S_AGE S_GENDER S_LANG SES commercialR PARENG CHILCAP ST16R02;
            %BETWEEN%
            PV ON Sch_SES locality SC23R01;
```

SPSS syntax

```
*** Sample syntax for logistic regression ***.
numeric LowReadGrp (f1).
compute LowReadGrp =9.
do if (CNT='KHM').
 if (PV1_R <= 275.3) LowReadGrp = 1.
 if (PV1_R >  275.3) LowReadGrp = 0.
end if.

do if (CNT='LAO').
 if (PV1_R <= 261.1) LowReadGrp = 1.
 if (PV1_R > 261.1) LowReadGrp = 0.
end if.

do if (CNT='MMR').
 if (PV1_R <= 278.3) LowReadGrp = 1.
 if (PV1_R > 278.3) LowReadGrp = 0.
end if.

do if (CNT='MYS').
 if (PV1_R <= 305.1) LowReadGrp = 1.
 if (PV1_R > 305.1) LowReadGrp = 0.
end if.

do if (CNT='PHL').
 if (PV1_R <= 273.0) LowReadGrp = 1.
 if (PV1_R > 273.0) LowReadGrp = 0.
end if.

do if (CNT='VNM').
 if (PV1_R <= 322.1) LowReadGrp = 1.
 if (PV1_R > 322.1) LowReadGrp = 0.
end if.

missing values LowReadGrp (9).
value labels LowReadGrp 1 'Bottom 25%' 0 'Top 75%'.
exe.

numeric Female (f1).
recode S_Gender (0=0)(1=1)(else=9) into Female.
missing values female (9).
value labels Female 1 'Yes' 0 'No'.

numeric Urban (f1).
recode locality (0=0)(1=1)(else=9) into Urban.
missing values Urban (9).
value labels Urban 1 'Yes' 0 'No'.

numeric CommercialWork (f1).
recode commercialR (0=0)(1=1)(else=9) into CommercialWork.
missing values CommercialWork (9).
```

```
value labels CommercialWork 1 'Yes' 0 'No'.

numeric TestLang (f1).
recode S_Lang (0=0)(1=1)(else=9) into TestLang.
missing values TestLang (9).
value labels TestLang 1 'Yes' 0 'No'.

fre ST16R02.
numeric OneLesson (f1).
recode ST16R02 (0,2,3=0)(1=1)(else=9) into OneLesson.
missing values OneLesson (9).
value labels OneLesson 1 'Yes' 0 'No'.

numeric AtLeast2 (f1).
recode ST16R02 (0,1=0)(2,3=1)(else=9) into AtLeast2.
missing values AtLeast2 (9).
value labels AtLeast2 1 'Yes' 0 'No'.
exe.

/*****************************************************************************/.
Insert file='C:\Program Files\IBM\SPSS\Statistics\Addins\Replicates\Macros\mcr_SE_GRPPCT.sps'.
set mprint=yes.
OMSEND.

!GRPPCT
     nrep = 95 /
     grp = LowReadGrp  /
     within = CNT  /
     wgt = WT2019 /
     rwgt = rwgt /
     cons = 1 /
     miss = YES /
     PSU = SchID  /
     infile = 'c:\temp\int_read_grp.sav' /.
/*****************************************************************************/.
* Logistic regression with student variables only - low SES data with DV=1 (top 25% reading) *.
get file =  'c:\temp\int_read_grp.sav'.
sort cases by CNT .
split file by CNT .
weight WT2019.
LOGISTIC REGRESSION VARIABLES LowReadGrp
  /METHOD=ENTER Female Urban CommercialWork TestLang ST14R01 preschool
  /CONTRAST (Female)=Indicator(1)
  /CONTRAST (Urban)=Indicator(1)
  /CONTRAST (CommercialWork)=Indicator(1)
  /CONTRAST (TestLang)=Indicator(1)
  /CONTRAST (ST14R01)=Indicator(1)
  /CONTRAST (preschool)=Indicator(1)
  /SAVE=PRED
  /CRITERIA=PIN(.05) POUT(.10) ITERATE(20) CUT(.5).
weight off.
```

split file off.