A test with 26 multiple-choice items and one 4-category item: three-parameter logistic and generalized partial credit model

This example illustrates a test consisting primarily of machine-scorable multiple choice items, but also containing one open-ended item scored in three categories. The latter item appears in the middle.

The item responses are from several test forms, and items not represented on a particular form are assigned the not-presented code 9. The not-presented key appears in the **exampl05.npc** file. The codes 1 and 0 for correct and incorrect response to the multiple-choice items must be recoded 1 and 2, respectively, for the PARSCALE analysis. This is accomplished through use of the ORIGINAL and MODIFIED keywords on the BLOCK commands.

The first few lines of the file **exampl05.dat** are shown below. The data and command files can be found in the **examples** folder of the PARSCALE installation.

```
1 110000000000019999999999999
2 110000000001119999999999999
3 011001000001199999999999999
4 110000100000019999999999999
5 101011010011199999999999999
```

The contents of **exampl05.npc**, are as shown below. It is indicated in the syntax by the NFNAME keyword on the FILES command.

```
KEY 999999999999999999999999999
```

The first information read according to the format statement shown below is the case ID, which is read in the format "3A1". The NIDCHAR keyword is set to 3 to indicate that the case ID is six characters in length. The response to the first item is in column 5, and the format ("27A1") that follows after skipping of the fourth column using the "X" operator indicates that 27 items are read from each line.

The 3-parameter logistic model (3PL) is assumed for the multiple-choice items, and the partial credit model is assumed for the open-ended item. Because the parameters of the 3PL model differ from one item to another, each item must be assigned to a separate block. This is

facilitated by the REPEAT keyword of the BLOCK command, which indicates the number of successive items that have the same block specifications. In the present example, the first block specification applies to the first 12 multiple-choice items, the second applies to the open-ended item, and the third applies to the remaining 14 multiple-choice items. Note also the assignment of separate block names using the BNAME keyword.

The use of the SPRIOR and GPRIOR options on the CALIB command requests the use of a log-normal prior distribution and a normal prior distribution on the slope and guessing parameters respectively.

The Bayes estimates (EAP option on the SCORE command) of the respondents' scale scores are estimated and saved.

```
        EXAMPL05.PSL - A TEST WITH 26 MULTIPLE CHOICE ITEMS AND ONE 4-CATEGORY ITEM
                      THREE-PARAMETER LOGISTIC AND GENERALIZED PARTIAL CREDIT MODEL
        >FILE   DFNAME='EXAMPL05.DAT', NFNAME='EXAMPL05.NPC', SAVE ;
        >SAVE   PARM='EXAMPL05.PAR', SCORE='EXAMPL05.SCO' ;
        >INPUT  NIDCHAR=3, NTOTAL=27, NTEST=1, LENGTH=27;
        (3A1,1X,27A1)
        >TEST1  TNAME=SOCSCI, ITEM=(1(1)27), NBLOCK=27 ;
        >BLOCKS BNAME=(MC01,MC02,MC03,MC04,MC05,MC06,MC07,MC08,MC09,MC10,MC11,MC12),
                NITEMS=1, NCAT=2, ORIGINAL=(0,1), MODIFIED=(1,2),
                REPEAT=12, GUESSING=(2,ESTIMATE) ;
        >BLOCK  BNAME=OE, NITEMS=1, NCAT=3, SCORING=(1,2,3) ;
        >BLOCKS BNAME=(MC13,MC14,MC15,MC16,MC17,MC18,MC19,MC20,MC21,MC22,MC23,MC24,
                MC25,MC26),
                NITEMS=1, NCAT=2, ORIGINAL=(0,1), MODIFIED=(1,2),
                REPEAT=14, GUESSING=(2,ESTIMATE) ;
        >CALIB  PARTIAL, LOGISTIC, NQPTS=15, CYCLE=(50,1,1,1,1), NEWTON=2,
                CRIT=0.01, SPRIOR, GPRIOR ;
        >SCORE  EAP, SMEAN=0.0, SSD=1.0, NAME=SOCSCI ;
```