Q: In a TWOLEVEL model, is there a way in Mplus to save the values of the second level residuals?

A: Note first that if you have the input:

```
%BETWEEN%
yb ON xb;

SAVEDATA:
  FILE = FS.dat;
  SAVE = FSCORES;
```

where yb is the random intercept, you get the random intercept estimates for each cluster as the factor scores B_YB, and you also get their standard errors B_YB_SE.

The statement yb ON xb implies the equation

$$yb\_j = alpha + beta*xb\_j + e\_j \quad (1)$$

where yb_j is the random intercept for cluster j. To get the residual e_j for each cluster, you can use (1) to compute

$$e\_j = yb\_j - alpha\text{-hat} - beta\text{-hat}*xb,$$ where alpha-hat and beta-hat are the intercept and slope estimates, respectively.

An alternative is to turn the residual e_j into a factor and get its factor score. Here is how you turn the residual into a factor f:

```
%BETWEEN%
yb ON xb;
yb@0;
f BY yb@1;
```