Edpsy/Psych/Stat 587
Spring 2019
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SAS: Computer Lab Session 2
Thursday February 14, 2019

The goals of this session are

- More practice creating SAS data sets with centered variables.

- Fit random intercept and slope models.

- Detect problems in estimated solutions.

For this computer lab, we'll the USA TIMSS data and model science scores again; however, I've added some micro and macro variables. A list and definition of all the variables in this data set are on the last page.

1. Run the program "ComputerLab2.sas" to turn TIMSS raw data into a SAS data set.

2. Create a school centered math scores (i.e., GRPCMATH), and the school math means (i.e., GRPMMATH)..

3. Fit the following models to the data:

   (j) Random intercept model with GRPCMATH, GENDER, GRADE, GRPMMATH. Verify that you get the same results as model (j) from computer lab/homework #1.

   (n) Random intercept model with GRPCMATH, GENDER, GRADE, GRPMMATH (i.e., the model from part (j)) but add the following micro level variables to the model: HOURS_TV, HOURS_COMPUTER_GAMES. This model should include all micro level variables, as well as GRPMMATH, which is an explanatory variable for the random intercept.

   (o) The model part (n) but add TYPE_COMMUNITY as an additional explanatory variable for the intercept.

   (p) Model (o) but add random slope for GRPCMATH.

   (q) Model (o) with a random slope for HOURS_TV.

   (r) Model (o) with a random slope for HOURS_COMPUTER_GAMES.

   (s) Model (o) with a random slope for GRPCMATH where both GRPMATH and TYPE_COMMUNITY are explanatory variables for the random slope.

   (t) Model (s) but add SHORTAGES as an explanatory variable for the random slope for GRPCMATH.

   (u) Model (s) but add a random slope for HOURS_TV.

   (v) Fit a model that you think is a good — a possible "best"one in your opinion.

Variable in Data Set for Computer Lab 2:

TIMSS	SAS data	Values	Desription
IDSCHOOL	IDSCHOOL	10–263	School ID
IDSTUD	IDSTUD		Student ID
IDGRADE	GRADE	3 or 4	Student's grade in school
ASSNRSC	SCIENCE	103.4 – 185	Science score based on ability estimates using the RASCH IRT model.
ASMNRSC	MATH	104.3 – 189	Math scores based on ability estimates using the RASCH model.
ITSEX	GENDER	girl, boy	Student's gender
ACBGST01	GEN_SHORT		General school shortages of instructional materials
		none a little some a lot	
—	SHORTAGES	0,1,2,3	Re-coded GEN_SHORT as a numerical variable.
ASBGDAY1	HOURS_TV		Time spent watching TV or videos
		1 = 3 = 4 = 5 =	< 1 hr. 1-2 hrs. 3-4 hrs. >4 hrs.
ASBGDAY2	HOURS_COMPUTER_GAMES		Time spent playing computer games
		1 = 2 = 3 = 4 = 5 =	no time less than 1 hour" 1–2 hours 3–4 hours more than 4 hours
ACBGCOMM	TYPE_COMMUNITY		Type of community where school is located
		1 = 2 = 3 = 4 =	a geographically isolated area village or rural (farm) area one on the outskirts of a town/city one close to the center of a town/city