

Mixed Models for the Analysis of Comparative Survey Data: Common Problems and Some Solutions

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Data set and do-file

All analyses presented in the paper can be replicated with the stata data set and do-file (ESS_example_icsr.dta, ESS_example_icsr.do).

Variable description

The selection of variables follows Te Grotenhuis et al. (2015). I added the control variables age and gender and replaced the objective income measure with a subjective measure.

Individual-level variables

1. Urban vs. rural: This variable has 5 categories (big city, suburbs of big city, town or small city, country village, farm or home in countryside) but is treated as continuous following Te Grotenhuis et al. (2015).
2. Education: Education is measured in years.
3. Subjective income: This variable has 4 categories (living comfortably on present income, coping on present income, difficult on present income, very difficult on present income) but is treated as continuous. The objective income measure in the ESS is not comparable across rounds, since there was a change in the measurement between survey waves.
4. Male: Dummy variable with male=1 and female =0.
5. Age: Age in years.

Country-level variables:

1. Social spending: Social spending as % of GDP, from OECD data base, downloaded on September 20th, 2017.
2. GDP/capita: from OECD data base, downloaded on September 20th, 2017.
3. Average urban vs. rural: Country-/Country-year-level average of individual-level variable.
4. Average education: Country-/Country-year-level average of individual-level variable.

Table OA1: Descriptive statistics of all variable

Variable	N	Mean	Std. Dev.	Min	Max
<i>Individual-level variables</i>					
Church attendance	277,505	1.583	1.566	0	6
Urban vs rural	277,505	2.903	1.220	1	5
Education (in years)	277,505	12.237	4.159	0	56
Subjective income	277,505	1.995	0.852	1	4
Male	277,505	0.468	0.499	0	1
Age	277,505	47.672	18.479	13	123
<i>Original Country-level variables</i>					
Social Spending	277,505	21.968	4.238	10.363	31.938
GDP/capita	277,505	33938.620	10922.750	10753.470	65716.480
Average Education	277,505	12.237	1.506	6.591	14.606
Average urban vs. rural	277,505	2.903	0.325	1.810	3.483
<i>Between-country variables</i>					
Social Spending	277,505	21.968	3.912	11.047	29.944
GDP/capita	277,505	33938.620	9646.664	13660.020	60830.930
Average Education	277,505	12.237	1.430	6.711	14.036
Average urban vs. rural	277,505	2.903	0.313	2.009	3.364
<i>Within-country variables</i>					
Social Spending	277,505	0.000	1.631	-4.037	4.404
GDP/capita	277,505	0.000	5123.321	-16095.560	13103.320
Average Education	277,505	0.000	0.472	-1.489	1.893
Average urban vs. rural	277,505	0.000	0.086	-0.297	0.251

Source: ESS 2002-2014, OECD.

Table OA2: Correlations of all variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
<i>Individual-level variables</i>																		
1 Church attendance	1.00																	
2 Urban vs rural	0.07	1.00																
3 Education (in years)	-0.13	-0.13	1.00															
4 Subjective income	0.08	-0.04	-0.25	1.00														
5 Male	-0.09	0.02	0.04	-0.07	1.00													
6 Age	0.14	0.05	-0.25	0.03	-0.04	1.00												
<i>Original Country-level variables</i>																		
7 Social Spending	-0.15	0.06	0.07	-0.15	0.03	0.04	1.00											
8 GDP/capita	-0.13	0.11	0.17	-0.30	0.03	0.03	0.30	1.00										
9 Average Education	-0.15	0.06	0.36	-0.19	0.03	0.01	0.19	0.47	1.00									
10 Average urban vs. rural	-0.03	0.27	0.09	-0.21	0.02	0.01	0.22	0.42	0.24	1.00								
<i>Between-country variables</i>																		
11 Social Spending	-0.15	0.07	0.05	-0.18	0.03	0.03	0.92	0.26	0.15	0.25	1.00							
12 GDP/capita	-0.14	0.13	0.16	-0.33	0.03	0.01	0.27	0.88	0.44	0.49	0.29	1.00						
13 Average Education	-0.15	0.07	0.34	-0.21	0.03	0.00	0.14	0.41	0.95	0.27	0.15	0.46	1.00					
14 Average urban vs. rural	-0.04	0.26	0.10	-0.22	0.02	0.01	0.24	0.45	0.27	0.96	0.26	0.51	0.28	1.00				
<i>Within-country variables</i>																		
15 Social Spending	-0.03	-0.01	0.06	0.05	0.00	0.02	0.38	0.17	0.15	-0.03	0.00	0.00	0.00	0.00	1.00			
16 GDP/capita	-0.02	-0.01	0.06	-0.01	0.00	0.04	0.14	0.47	0.18	-0.04	0.00	0.00	0.00	0.00	0.36	1.00		
17 Average Education	-0.03	-0.01	0.11	0.01	0.01	0.03	0.19	0.27	0.31	-0.06	0.00	0.00	0.00	0.00	0.49	0.57	1.00	
18 Average urban vs. rural	0.01	0.07	-0.02	0.00	0.00	0.00	-0.05	-0.07	-0.07	0.27	0.00	0.00	0.00	0.00	-0.13	-0.16	-0.21	1.00

Source: ESS 2002-2014, OECD.