Multilevel Models, Equations, Syntax & English

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model	equation	Stata	English
Intercept Only	$y = \beta_0 + e_{ij}$	`mixed y`	We estimated the mean of [outcome]
Intercept Independent Variable(s)	$y = \beta_0 + \beta_1 x + e_{ij}$ $y = \beta_0 + \beta_1 x + \beta_2 z + e_{ij}$	`mixed y x` `mixed y x z`	We estimated the relationship of [independent variable(s)] with [outcome]
Intercept Random variation of the intercept	$y = \beta_0 + e_{ij} + u_{0j}$	`mixed y || groupid:`	We estimated the mean of [outcome]. We allowed the intercept of the model to vary by [groupid].
Unconditional intraclass correlation coefficient (ICC)	$\frac{var(u_{0j})}{var(u_{0j})+var(e_{ij})}$	`mixed y || groupid:` `estat icc`	XX% of the variation in [outcome] was explained by clustering of participants in [groupid]

model	equation	Stata	English
Intercept Independent variable(s) Random variation of the intercept	$y = \beta_0 + \beta_1 x + e_{ij} + u_{0j}$ $y = \beta_0 + \beta_1 x + \beta_2 z + e_{ij} + u_{0j}$	`mixed y x || groupid:` `mixed y x z || groupid:`	We estimated the relationship of [independent variable(s)] with [outcome]. We allowed the intercept of the model to vary by group.
Intercept Independent variable Random intercept Random slope	$y = \beta_0 + \beta_1 x + e_{ij} + u_{0j} + u_{1j} x$	`mixed y x || groupid: x`	We estimated the relationship of [independent variable] with [outcome]. We allowed the intercept of the model to vary by group. We also allowed the relationship of [independent variable] with [outcome] to vary by group.
We can estimate multilevel models with more than 1 random slope.	$y = \beta_0 + \beta_1 x + \beta_2 z +$ $e_{ij} + u_{0j} + u_{1j} x + u_{2j} z$	`mixed y x z || groupid: x z`	