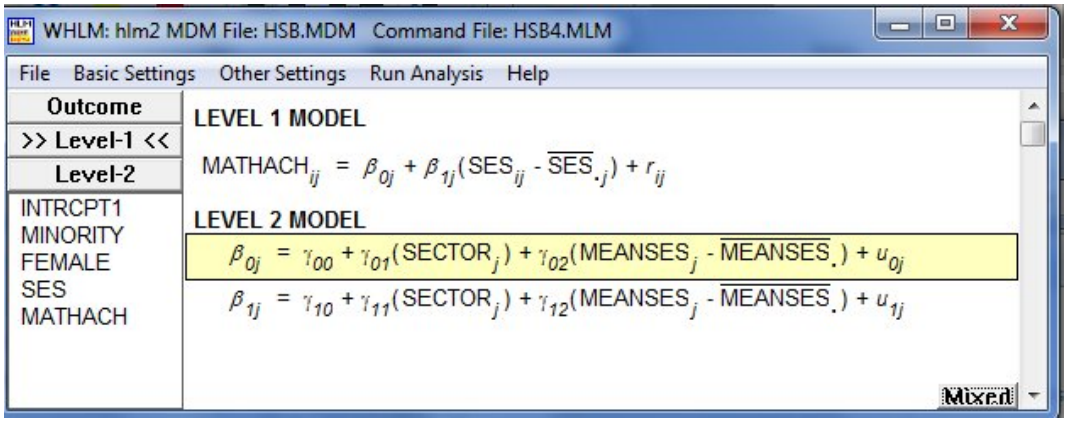
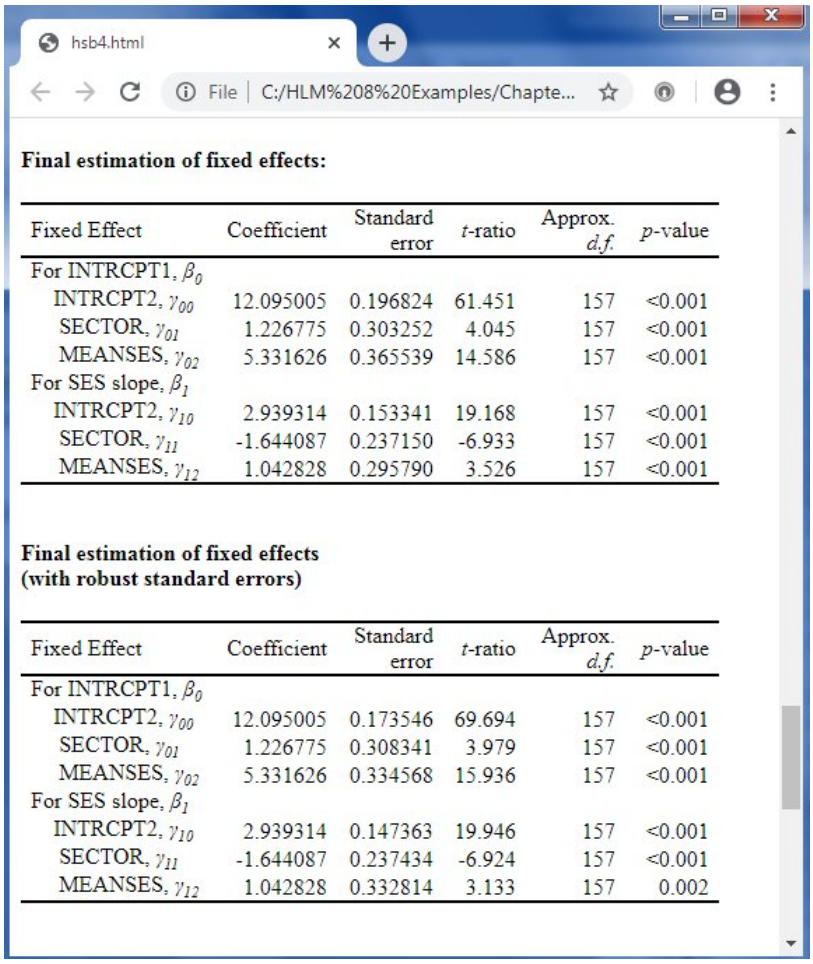
Calculating confidence intervals for fixed effects

HLM does not automatically produce confidence intervals - the user must do that after analysis using the output file contents. Also note that additional output can be obtained using the **Output Settings** option from the main menu bar.

An example using the HSB data distributed with the program is used to illustrate how to do this. For the model



The following output is obtained:



Final estimation of fixed effects:

Fixed Effect	Coefficient	Standard error	*t*-ratio	Approx. *d.f.*	*p*-value
For INTRCPT1, β_0					
INTRCPT2, γ_{00}	12.095005	0.196824	61.451	157	<0.001
SECTOR, γ_{01}	1.226775	0.303252	4.045	157	<0.001
MEANSES, γ_{02}	5.331626	0.365539	14.586	157	<0.001
For SES slope, β_1					
INTRCPT2, γ_{10}	2.939314	0.153341	19.168	157	<0.001
SECTOR, γ_{11}	-1.644087	0.237150	-6.933	157	<0.001
MEANSES, γ_{12}	1.042828	0.295790	3.526	157	<0.001

Final estimation of fixed effects (with robust standard errors)

Fixed Effect	Coefficient	Standard error	*t*-ratio	Approx. *d.f.*	*p*-value
For INTRCPT1, β_0					
INTRCPT2, γ_{00}	12.095005	0.173546	69.694	157	<0.001
SECTOR, γ_{01}	1.226775	0.308341	3.979	157	<0.001
MEANSES, γ_{02}	5.331626	0.334568	15.936	157	<0.001
For SES slope, β_1					
INTRCPT2, γ_{10}	2.939314	0.147363	19.946	157	<0.001
SECTOR, γ_{11}	-1.644087	0.237434	-6.924	157	<0.001
MEANSES, γ_{12}	1.042828	0.332814	3.133	157	0.002

Note that robust standard errors are not available for all data/models. When robust standard errors are available, these should be used in the calculation.

An approximate 95% confidence interval for $\hat{\gamma}_{01}$, the estimated main effect of the level-2 predictor SECTOR is calculated as

$$\begin{aligned} 95\%\ \textit{confidence interval for}\ \hat{\gamma}_{01} &= \textit{estimated parameter} \pm 1.96\big((\textit{standard error}\big) \\ &= 1.226775 \pm 1.96\big(0.308484\big) \\ &= \big(0.6221, 1.8314\big) \end{aligned}$$