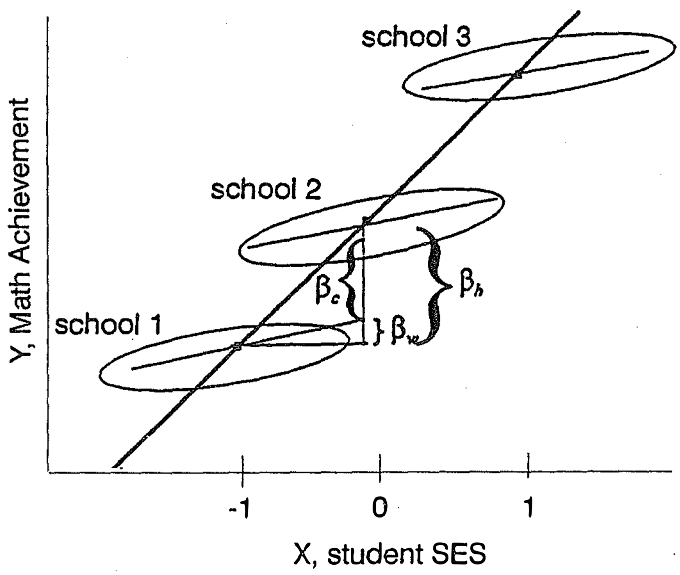

Figure 5.2. Illustration of the Contextual Effect, β_c, Associated with Attending School 2 versus School 1

variables omitted from the model. They may also signal a statistical artifact where $\overline{X}_{\cdot j}$ carries part of the effect of a poorly measured X_{ij}. Whatever their source, past empirical research indicates that compositional effects occur with considerable regularity (see Willms' [1986] review).

TABLE 5.11 Illustration of Person-Level and Compositional (or Contextual) Effects

			Statistical Model		
Group-Mean Centering			*Grand-Mean Centering*		
$Y_{ij} = \beta_{0j} + \beta_{1j}(X_{ij} - \overline{X}_{\cdot j}) + r_{ij}$			$Y_{ij} = \beta_{0j} + \beta_{1j}(X_{ij} - \overline{X}_{\cdot\cdot}) + r_{ij}$		
$\beta_{0j} = \gamma_{00} + \gamma_{01}\overline{X}_{\cdot j} + u_{0j}$			$\beta_{0j} = \gamma_{00} + \gamma_{01}\overline{X}_{\cdot j} + u_{0j}$		
$\beta_{1j} = \gamma_{10}$			$\beta_{1j} = \gamma_{10}$		
$\gamma_{01} = \beta_b$			$\gamma_{01} = \beta_c$		
$\gamma_{10} = \beta_w$			$\gamma_{10} = \beta_w$		
$\beta_c = \gamma_{01} - \gamma_{10}$			$\beta_b = \gamma_{01} + \gamma_{10}$		
		Estimates Using High School and Beyond Data			
	Coefficient	*se*		*Coefficient*	*se*
$\hat{\gamma}_{00}$	12.648	0.149	$\hat{\gamma}_{00}$	12.661	0.149
$\hat{\gamma}_{01} = \hat{\beta}_b$	5.866	0.362	$\hat{\gamma}_{01} = \hat{\beta}_c$	3.675	0.378
$\hat{\gamma}_{10} = \hat{\beta}_w$	2.191	0.109	$\hat{\gamma}_{10} = \hat{\beta}_w$	2.191	0.109
$\hat{\beta}_c$	3.675	0.378*	$\hat{\beta}_b$	5.866	0.362[a]

a. Not directly estimated but can be determined from the sampling variance-covariance matrix for the γ coefficients.