

Test the dotted line double arrow

```
/* csem5.sas SEM for Castilla's language development data */
%include 'cread3.sas';
title2 'Test Correlated Errors: Compare Chisq = 30.2680';

proc calis cov;
  /* Analyze the covariance matrix (Default is corr). Divide by n to
  get true MLE of covariance matrix. */
  title3 'Full Model';
  /* Name the observed variables */
  var age difwords tvip subind mltu domit1 domit2 aomit1 aomit2;
  /* Now give simultaneous equations, separated by commas. Latent
  variables begin with F for factor. Error terms begin with
  E for error or D for disturbance. SAS is not case sensitive.
  You must name all the parameters. Optional starting values in
  parentheses may be given after the parameters. */
  lineqs
    /* Structural Model */
    Fvsize = gamma1 age + e1,
    Fucomp = gamma2 age + b21 Fvsize + e2,
    Fdomit = gamma3 age + b31 Fvsize + b32 Fucomp + e3,
    Faomit = gamma4 age + b41 Fvsize + b42 Fucomp + e4,
    /* Measurement model */
    difwords = Fvsize + delta1,
    tvip = lambda1 Fvsize + delta2,
    subind = Fucomp + delta3,
    mltu = lambda2 Fucomp + delta4,
    domit1 = Fdomit + delta5,
    domit2 = Fdomit + delta6,
    aomit1 = Faomit + delta7,
    aomit2 = Faomit + delta8;
  std /* Variances (not standard deviations). Colon means
  fill in the numbers. */
  age = phi, e1-e4 = 4 * psi: , delta1-delta8 = 8 * omega: ;
  cov e3 e4 = psi34;
  bounds 0.0 < phi psi1-psi4 omeg1-omega8; /* Variances are positive */
```

Castilla's Language development Study
Test Correlated Errors: Compare Chisq = 30.2680
Full Model

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The CALIS Procedure
Covariance Structure Analysis: Maximum Likelihood Estimation

Fit Function	0.2880
Goodness of Fit Index (GFI)	0.9423
GFI Adjusted for Degrees of Freedom (AGFI)	0.8703
Root Mean Square Residual (RMR)	14.7896
Parsimonious GFI (Mulaik, 1989)	0.5235
Chi-Square	30.2392
Chi-Square DF	20
Pr > Chi-Square	0.0661

$G = 30.2680 - 30.2392 = 0.0288$, $df=1$, $p = 0.865$