Using ggm

library(ggm)

> DAG3.1<-DAG(B~A,C~B,D~B,E~C+D)

> shipley.test2(DAG3.1,cov(data.path.model.3.1),100)

testing individual d-sep claims in basis set

A \_||\_ D |{ B } r= 0.121 p= 0.231

A \_||\_ C |{ B } r= -0.024 p= 0.816

A \_||\_ E |{ D C } r= 0.233 p= 0.021

B \_||\_ E |{ A D C } r= 0.093 p= 0.365

D \_||\_ C |{ B } r= -0.063 p= 0.533

$ctest

[1] 14.34239

$df

[1] 10

Now, fit regressions following the structure specified in figure 3.1

> lm(B~A,data.path.model.3.1)

Call:

lm(formula = B ~ A, data = data.path.model.3.1)

Coefficients:

(Intercept) A

 -0.1070 0.5937

> lm(C~B,data.path.model.3.1)

Call:

lm(formula = C ~ B, data = data.path.model.3.1)

Coefficients:

(Intercept) B

 0.1606 0.4353

> lm(D~B,data.path.model.3.1)

Call:

lm(formula = D ~ B, data = data.path.model.3.1)

Coefficients:

(Intercept) B

 0.005214 0.403517

> lm(E~C+D,data.path.model.3.1)

Call:

lm(formula = E ~ C + D, data = data.path.model.3.1)

Coefficients:

(Intercept) C D

 -0.009205 0.478485 0.581836

Using lavaan

Library(lavaan)

Lavaan.model3.1<-

“#paths…

B~A

C~B

D~B

E~C+D

#Free variances…

B~~B

C~~C

D~~D

E~~E”

> summary(sem(lavaan.model3.1,data.path.model.3.1))

Model converged normally after 13 iterations using ML

 Minimum Function Chi-square 8.367

 Degrees of freedom 5

 P-value 0.1371

 Estimate Std.err Z-value P(>|z|)

Regressions:

 B ~

 A 0.594 0.087 6.832 0.000

 C ~

 B 0.435 0.079 5.517 0.000

 D ~

 B 0.404 0.080 5.041 0.000

 E ~

 C 0.478 0.073 6.558 0.000

 D 0.582 0.073 7.932 0.000

Residual variances:

 B 0.797 0.113 7.071 0.000

 C 0.728 0.103 7.071 0.000

 D 0.749 0.106 7.071 0.000

 E 0.482 0.068 7.071 0.000

>