DyadR: An R Package for Dyadic Data Analysis

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Download: davidakenny.net/doc/dyadR_IARR.pdf

DyadR

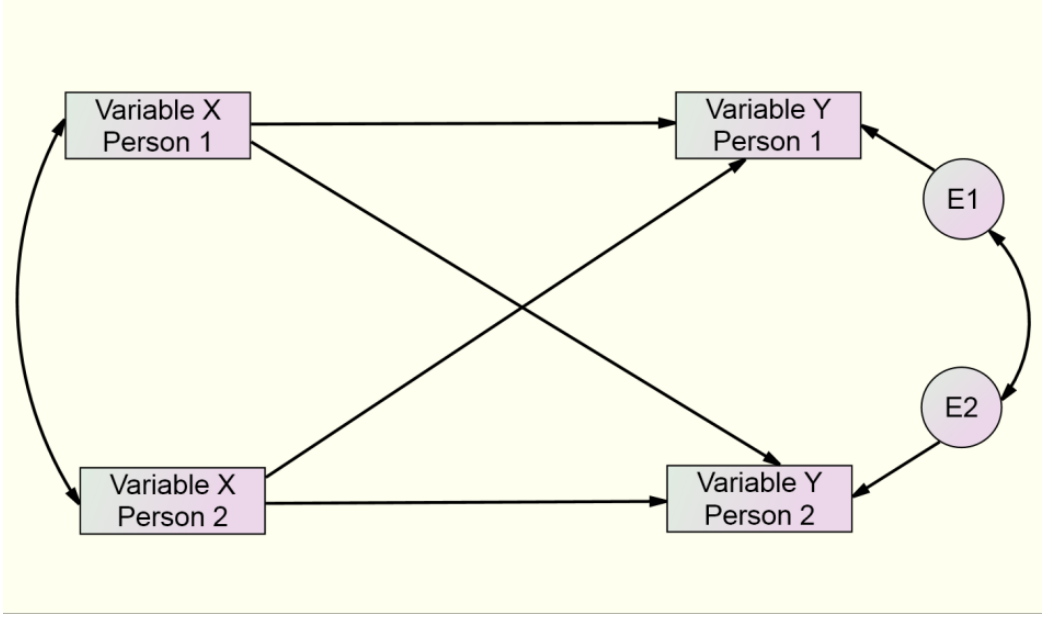
Restructure Dyadic Data (work with Tom Ledermann)

Dyadic Data Analysis

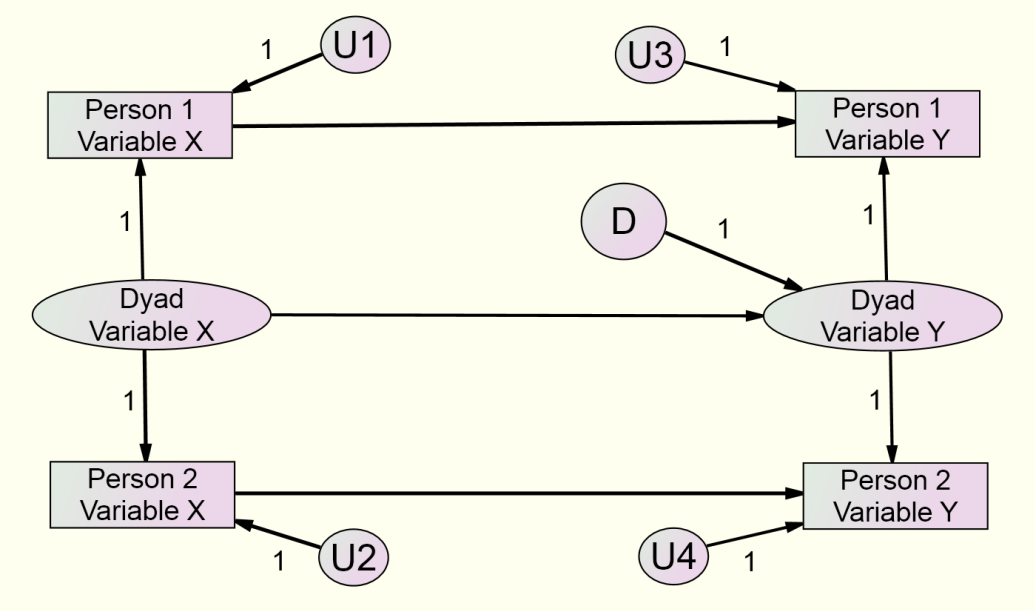
Example

Commitment to Relationship is meaured twice for 238 dating and married couples separated by two years (data collected by Linda Acitelli, University of Houston). Three different models that have been proposed to study the relationship between two variables measured on both members of the dyad. They are the Actor-Partner Interdependence Model (APIM), Common Fate Model (CFM), and the Mutual Influence Model (MIM).

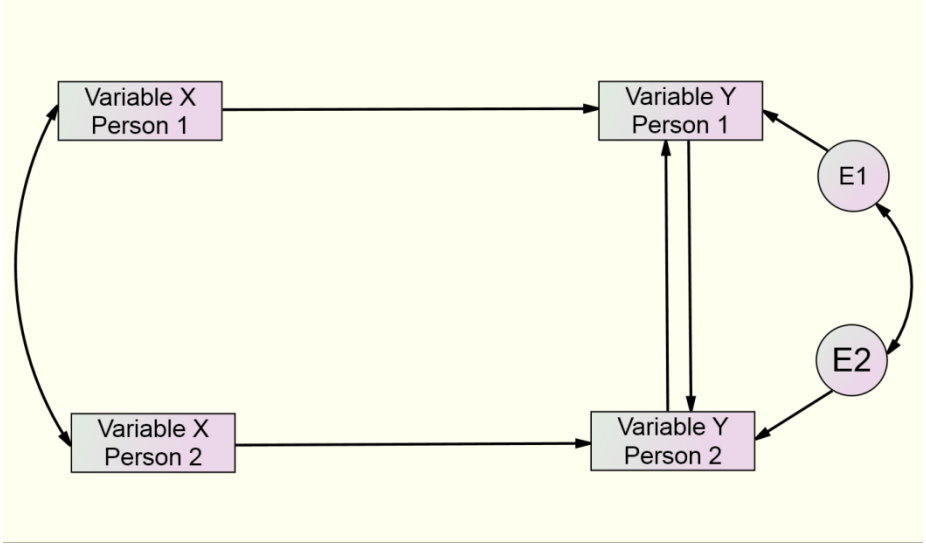
Actor-Partner Interdependence Model (APIM)



Common Fate Model (CFM)



Mutual Influence Model (MIM)



All three models are saturated, and so the choice among them is more due to theory than to an empirical analysis.

Illustrative Example of DyadR_Analysis

Download: davidakenny.net/DyadR/DyadR.htm (VERY Preliminary version)

For the Commitment example, the APIM and CFM seem plausiable and we shall estimate each using DyadR. The APIM shall be estimated using both Multilevel Modeling (MLM) and Structural Equation Modeling (SEM). We begin first with an APIM Power Analysis.

DyadR_Analysis

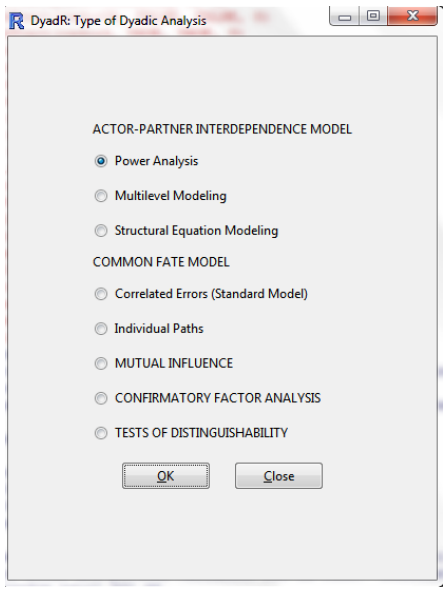
- APIM
  - Power Analysis
  - **MLM**
  - **SEM**
- Common Fate
  - Standard Model
  - **Model with Paths**
- Mutual Influence
- Confirmatory Factor Analysis
- Tests of Distinguishability
- Extras
  - Provide text output not just "computer" output: DataToText **(APIM by MLM and SEM and CFM)**
  - Re-estimate some of the models allowing for measurement error and correlated errors **(APIM by SEM and CFM)**
  - Provide tests of assumptions and warnings about problems **(APIM by MLM)**
  - Test Distinguishability **(APIM by SEM and CFM)**

DyadR_Restructure

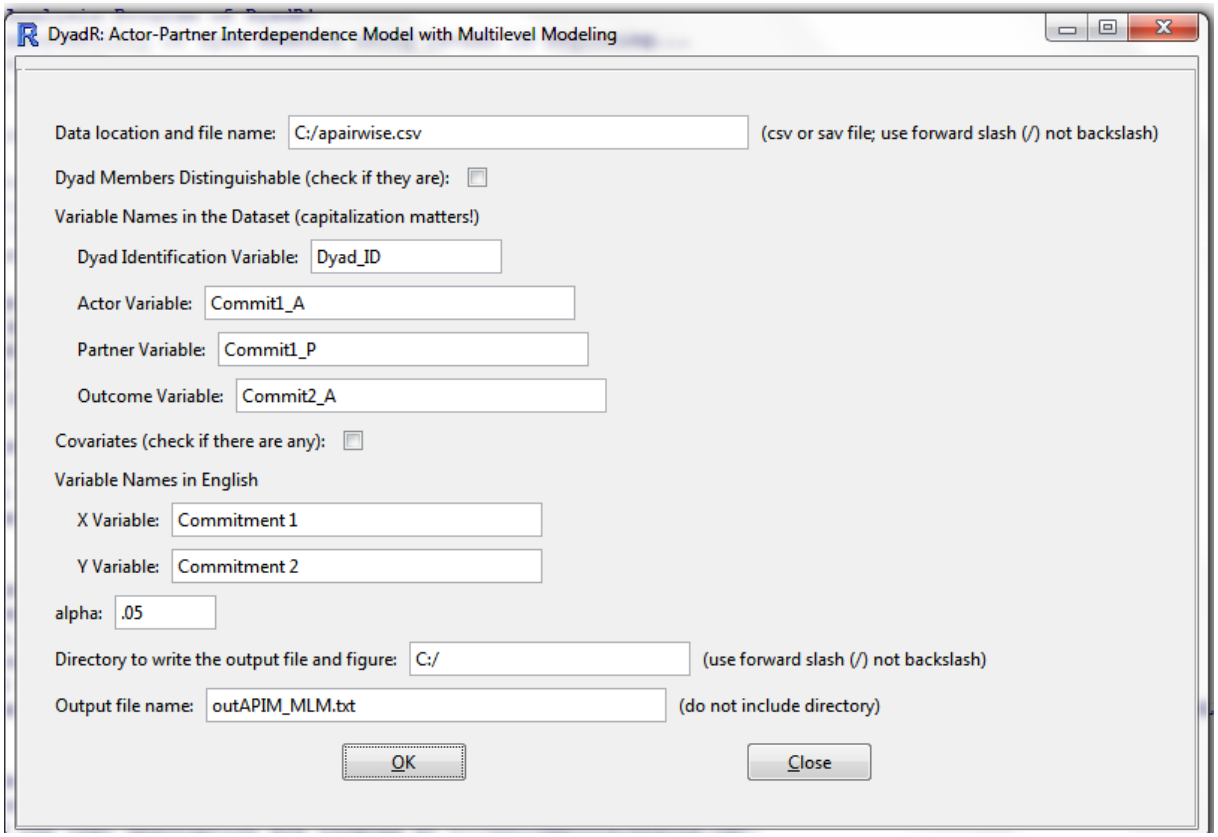
Written with Thomas Ledermann (Ledermann, T., & Kenny, D. A. (2014). *A toolbox with programs to restructure and describe dyadic data*, University of Basel)

http://davidakenny.net/kkc/c1/restructure.htm

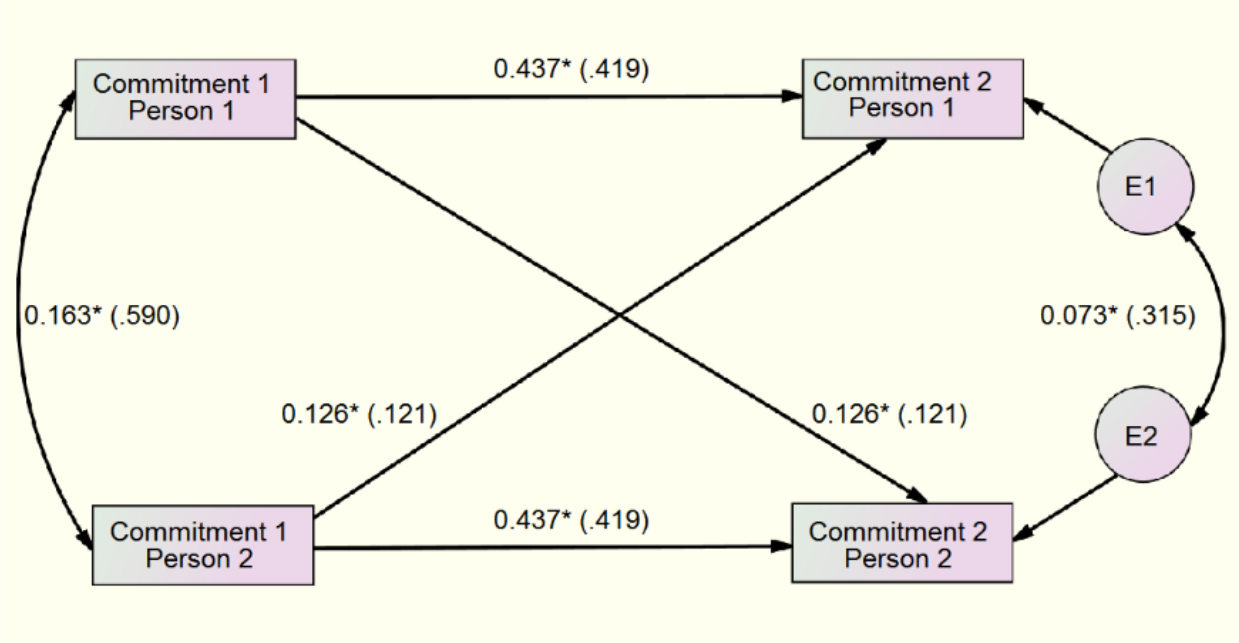
Illustrative Example of DyadR_Analysis



TASK 1: Multilevel APIM



Actor-Partner Interdependence Model (standardized estimates)



(template can be downloaded from davidakenny.net/img/APIM.tif)

```
              Indistinguishable Dyads: R GLS Output

Generalized least squares fit by REML
  Model: pix
  Data: MaDa
       AIC      BIC    logLik
  427.2559 445.8575 -208.628

Correlation Structure: Compound symmetry
 Formula: ~1 | Dyad_ID
 Parameter estimate(s):
      Rho
0.3150833

Coefficients:
               Value  Std.Error  t-value p-value
(Intercept) 1.6311739 0.24772069 6.584730  0.0000
actvar      0.4365789 0.05797094 7.530996  0.0000
partvar     0.1263273 0.05835659 2.164747  0.0312

 Correlation:
        (Intr) actvar
actvar  -0.565
partvar -0.574 -0.341

Standardized residuals:
numeric(0)
```

```
attr(,"label")
[1] "Standardized residuals"

Residual standard error: 0.4808438
Degrees of freedom: 308 total; 305 residual

Empty Model
Generalized least squares fit by REML
  Model: pix
  Data: MaDa
       AIC      BIC    logLik
  485.9662 497.1468 -239.9831

Correlation Structure: Compound symmetry
 Formula: ~1 | Dyad_ID
 Parameter estimate(s):
      Rho
0.4377934

Coefficients:
               Value  Std.Error  t-value p-value
(Intercept) 3.699701 0.03750949 98.63375       0

Standardized residuals:
numeric(0)
attr(,"label")
[1] "Standardized residuals"

Residual standard error: 0.5521073
Degrees of freedom: 308 total; 307 residual
```

CAUTION: If you do decide to use information contained here in a paper, please make sure that you acknowledge that you have used this program. Also should you decide to use the exact text included here, you will need to put quotes around that material to avoid plagiarism. Although great effort has been undertaken to ensure the accuracy of results, no complete guarantee can be about their accuracy. It is your responsibility to check the results and text for accuracy. If you do find an error, please report it to David A. Kenny.

Description of the Results

WARNINGS: 1. Because zero is not a possible value for Commitment 1, grand-mean centering that variable should be considered. 2. There is one outlier (standardized residual greater than 4.0 or less than 4.0) for Commitment 2. Examine the output to see what observation might be considered to be an outlier. 3. There is evidence of negative skew in the residuals of Commitment 2.

The focus of this study is the investigation of the effect of Commitment 1 on Commitment 2. Both the effect of own Commitment 1 (actor) and the effect of partner's Commitment 1 (partner) on Commitment 2 are studied. There is a total of 158 dyads and 308 individuals with 168 individuals missing data on one or more variables. The means and standard deviations are presented below in Table 1.

The analyses use generalized least squares analysis with correlated errors and restricted maximum likelihood estimation. The tests of coefficients are Z tests and the tests of correlations are based on one-way analysis of variance tests. Effect sizes for actor and partner effects are partial correlations.

The standard deviation of the errors is 0.481. The R squared for the full model is .241. The partial intraclass correlation for Commitment 2 controlling for actor and partner variables is equal to .315 and is statistically significant ($p < .001$). Thus, the two members of the dyad are similar to one another. The intraclass correlation between the actor and partner variables is equal to .590 and is statistically significant ($p < .001$).

The actor effect is equal to 0.437 and is statistically significant ($p < .001$). The standardized actor effect is 0.419 ($r = .358$ and a medium effect size). The partner effect is equal to 0.126 and is statistically significant ($p = .031$). The standardized partner effect is 0.121 ($r = .107$ and a small effect size). The intercept (the predicted score of Commitment 2 when the actor and partner variables equal zero) is equal to 1.631 and is statistically significant ($p < .001$). A summary of the APIM effects is contained in Table 2.

The actor-partner interaction is equal to 0.071 and is not statistically significant ($p = .513$). The partner effect for persons who are one standard deviation above the mean on Commitment 1 is 0.184 ($p = .082$) and for persons who are one standard deviation below the mean on Commitment 1 is 0.109 ($p = .087$). Alternatively, the effect of the absolute difference of the two members on Commitment 1 is equal to -0.149 and is not statistically significant ($p = .128$). Thus, if two members have the same score on Commitment 1, their score on Commitment 2 is 0.149 units higher than it is for a dyad whose scores on Commitment 2 differ by one unit. There is no evidence of an actor-partner interaction.

Because the standardized actor effect is greater than .1 in absolute value, k or the ratio of the partner effect to the actor effect can be computed and it equals 0.289. The approximate standard error of k is equal to 0.151 and the 95% confidence interval for k is from -0.007 to 0.586. (Note that this standard error is approximate and a better idea is use a bootstrapped confidence interval estimated by structural equation modeling.) It can be concluded that the contrast ($k = -1$) and the couple ($k = 1$) models are implausible and that the actor-only model ($k = 0$) is plausible.

Table 1: Descriptive Statistics

Variable	Mean	SD	Minimum	Maximum
Commitment 1	3.681	0.525	1.667	4.000
Commitment 2	3.707	0.547	1.333	4.000

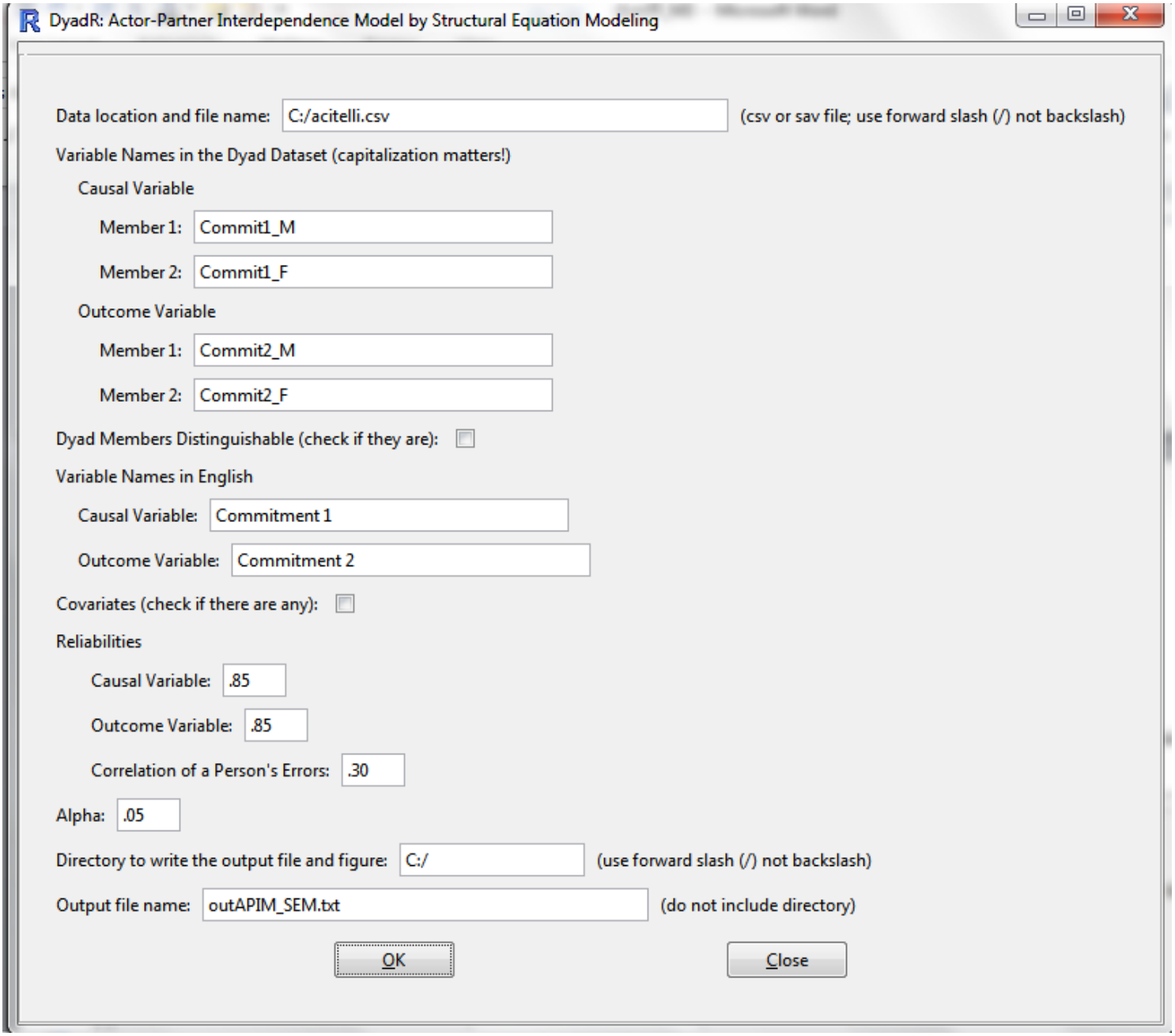
Table 2: APIM Effects

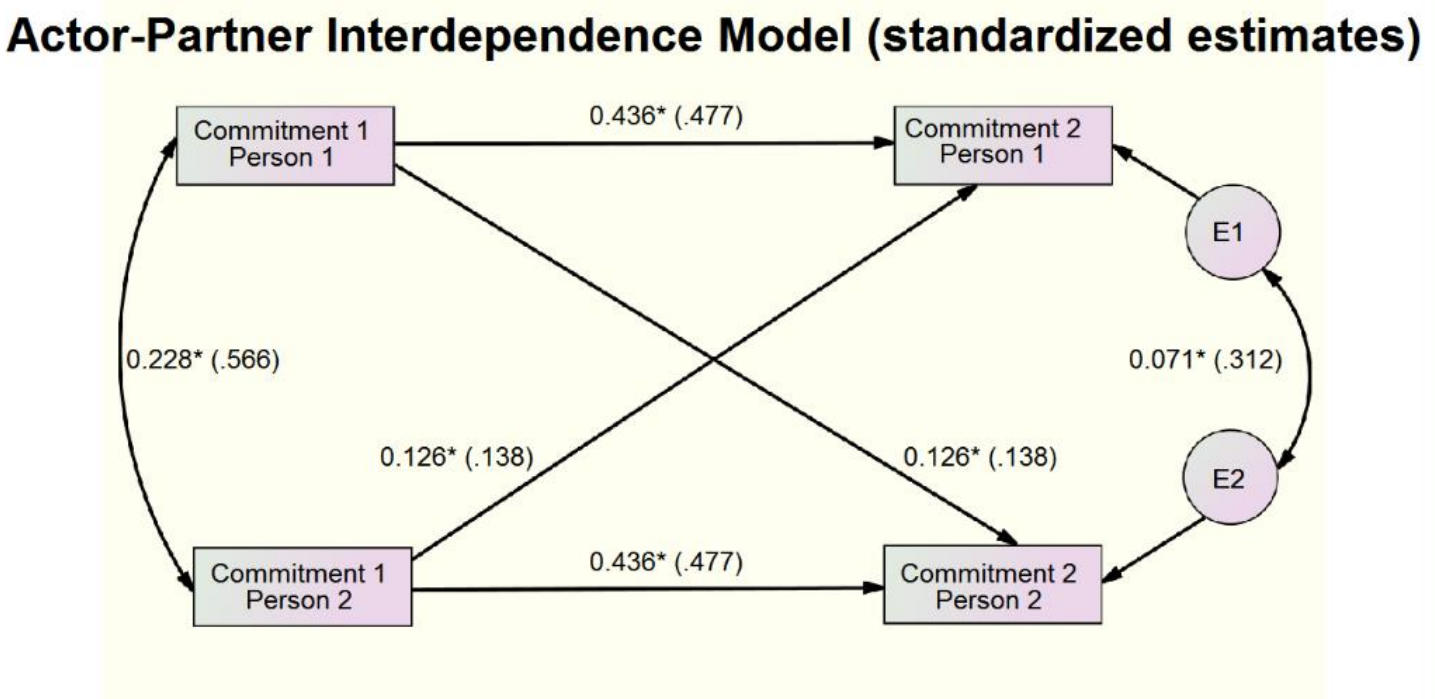
Effect	Estimate	Lower	95% CI	Upper	p value	Beta	r
Intercept	1.631	1.146	to	2.117	<.001		
Actor	0.437	0.323	to	0.550	<.001	0.419	0.358
Partner	0.126	0.012	to	0.241	.031	0.121	0.107
k	0.289	-0.007	to	0.586			

APIM MLM provides the following warnings:

1. **Need to center X.**
2. Dichotomous Y.
3. Multicollinearity between actor and partner variables.
4. Covariates do not explain any variance in Y.
5. Covariates collinear with X.
6. **Outliers in the residuals.**
7. **Residuals highly skewed.**
8. Too high an intraclass correlation for X.
9. Too low an intraclass correlation for the errors in Y.

TASK 2: Run APIM using SEM





(Note that the results are slightly different from MLM because SEM uses all the data – FIML.)

(template can be downloaded from davidakenny.net/img/APIM.tif)

Text Output

```
                Indistinguishable Dyads: lavaan Output

Standard Model (Indistinguishable)
lavaan (0.5-14) converged normally after  22 iterations

  Number of observations                           238

  Number of missing patterns                         5

  Estimator                                         ML
  Minimum Function Test Statistic               14.770
  Degrees of freedom                                 6
  P-value (Chi-square)                           0.022

Parameter estimates:

  Information                                 Observed
  Standard Errors                             Standard

                   Estimate  Std.err  Z-value  P(>|z|)
Regressions:
  yv1 ~
```

```
    xv1       (a)     0.436    0.058    7.557    0.000
  yv2 ~
    xv2       (a)     0.436    0.058    7.557    0.000
  yv1 ~
    xv2       (p)     0.126    0.058    2.173    0.030
  yv2 ~
    xv1       (p)     0.126    0.058    2.173    0.030

Covariances:
  xv1 ~~
    xv2               0.228    0.030    7.520    0.000
  yv1 ~~
    yv2               0.071    0.020    3.481    0.000

Intercepts:
    xv1       (m1)    3.568    0.036   97.906    0.000
    xv2       (m1)    3.568    0.036   97.906    0.000
    yv1       (m2)    1.632    0.246    6.620    0.000
    yv2       (m2)    1.632    0.246    6.620    0.000

Variances:
    xv1       (v1)    0.403    0.030
    xv2       (v1)    0.403    0.030
    yv1       (v2)    0.229    0.019
    yv2       (v2)    0.229    0.019

APIM with Measurement Error (Indistinguishable)
lavaan (0.5-14) converged normally after  26 iterations

  Number of observations                           238

  Number of missing patterns                         5

  Estimator                                         ML
  Minimum Function Test Statistic               14.770
  Degrees of freedom                                 6
  P-value (Chi-square)                           0.022

Parameter estimates:

  Information                                 Observed
  Standard Errors                             Standard

                   Estimate  Std.err  Z-value  P(>|z|)
Latent variables:
  xx1 =~
    xx1               0.000
  xx2 =~
    xx2               0.000
  yy1 =~
```

```
    yy1                0.000
  yy2 =~
    yy2                0.000
  xfact1 =~
    xv1                1.000
  yfact1 =~
    yv1                1.000
  xfact2 =~
    xv2                1.000
  yfact2 =~
    yv2                1.000

Regressions:
  xv1 ~
    xx1                0.284
  yv1 ~
    yy1                0.260
  xv2 ~
    xx2                0.284
  yv2 ~
    yy2                0.260
  yfact1 ~
    xfact1     (a)     0.473    0.096    4.942    0.000
    xfact2     (p)     0.132    0.096    1.374    0.170
  yfact2 ~
    xfact2     (a)     0.473    0.096    4.942    0.000
    xfact1     (p)     0.132    0.096    1.374    0.170

Covariances:
  xx1 ~~
    yy1                0.300
  xx2 ~~
    yy2                0.300
  xfact1 ~~
    xfact2             0.228    0.030    7.520    0.000
  yfact1 ~~
    yfact2             0.068    0.020    3.298    0.001

Intercepts:
    xv1        (m1)    3.568    0.036   97.906    0.000
    xv2        (m1)    3.568    0.036   97.906    0.000
    yv1        (m2)    3.640    0.038   95.818    0.000
    yv2        (m2)    3.640    0.038   95.818    0.000
    xx1                0.000
    xx2                0.000
    yy1                0.000
    yy2                0.000
    xfact1             0.000
    yfact1             0.000
    xfact2             0.000
```

```
    yfact2             0.000

Variances:
    xfact1    (vx)     0.322    0.030
    xfact2    (vx)     0.322    0.030
    yfact1    (vd)     0.163    0.019
    yfact2    (vd)     0.163    0.019
    xv1                0.000
    xv2                0.000
    yv1                0.000
    yv2                0.000
    xx1                1.000
    xx2                1.000
    yy1                1.000
    yy2                1.000
```

Description of the Results

The focus of this study is the investigation of the effect of Commitment 1 on Commitment 2. Both the effect of own Commitment 1 (actor) and the effect of partner's Commitment 1 (partner) on Commitment 2 are studied. The total number of dyads is 238, and there are missing data for one or more of the variables: The number of cases for Person 1 on Commitment 1 is 236, for Person 2 on Commitment 1 is 238, for Person 1 on Commitment 2 is 156, and for Person 2 on Commitment 2 is 152. The dyad members are treated as if they were indistinguishable. The test of distinguishability is statistically significant (chi-square(6) = 14.77, p = .022). Thus, the data are inconsistent with the hypothesis that members are indistinguishable. The analyses use the method of structural equation modeling for estimation with the program being lavaan.

The standard deviation of the errors is 0.229. The R squared for the model is .321. The partial intraclass correlation for Commitment 2 controlling for actor and partner variables is equal to .312 and is statistically significant ($p < .001$). The intraclass correlation between the actor and partner variables is equal to .566 and is statistically significant ($p < .001$).

The actor effect is equal to 0.436 and is statistically significant ($p < .001$). The standardized actor effect is 0.477 (r = .431 and a medium effect size). The partner effect is equal to 0.126 and is statistically significant (p = .030). The standardized partner effect is 0.138 (r = .137 and a small effect size). The intercept (the predicted score of Commitment 2 when the actor and partner variables equal zero) is equal to 1.632 and is statistically significant ($p < .001$).

Because the standardized actor effect is greater than .1 in absolute value and is statistically significant, k or the ratio of the partner effect to the actor effect can be computed and it equals 0.289. The 95% confidence interval for k is from -0.070 to 0.931. It can be concluded that the

contrast (k = -1) and the couple (k = 1) models are implausible and that the actor-only model (k = 0) is plausible.

The estimates here presume that the reliability of measurement of Commitment 1 is .85 and of Commitment 2 is .85. The correlation of errors within a person is assumed to be .30. The actor effect is equal to 0.461 and is statistically significant ($p < .001$). The standardized actor effect is .504. The partner effect is equal to 0.132 and is not statistically significant ($p = .105$). The standardized partner effect is .144. The standard deviation of the errors is 0.424. The R squared for the model is .372. The partial intraclass correlation for Commitment 2 controlling for actor and partner variables is equal to .382 and is statistically significant ($p < .001$). The intraclass correlation between the actor and partner variables is equal to .665 and is statistically significant ($p < .001$).

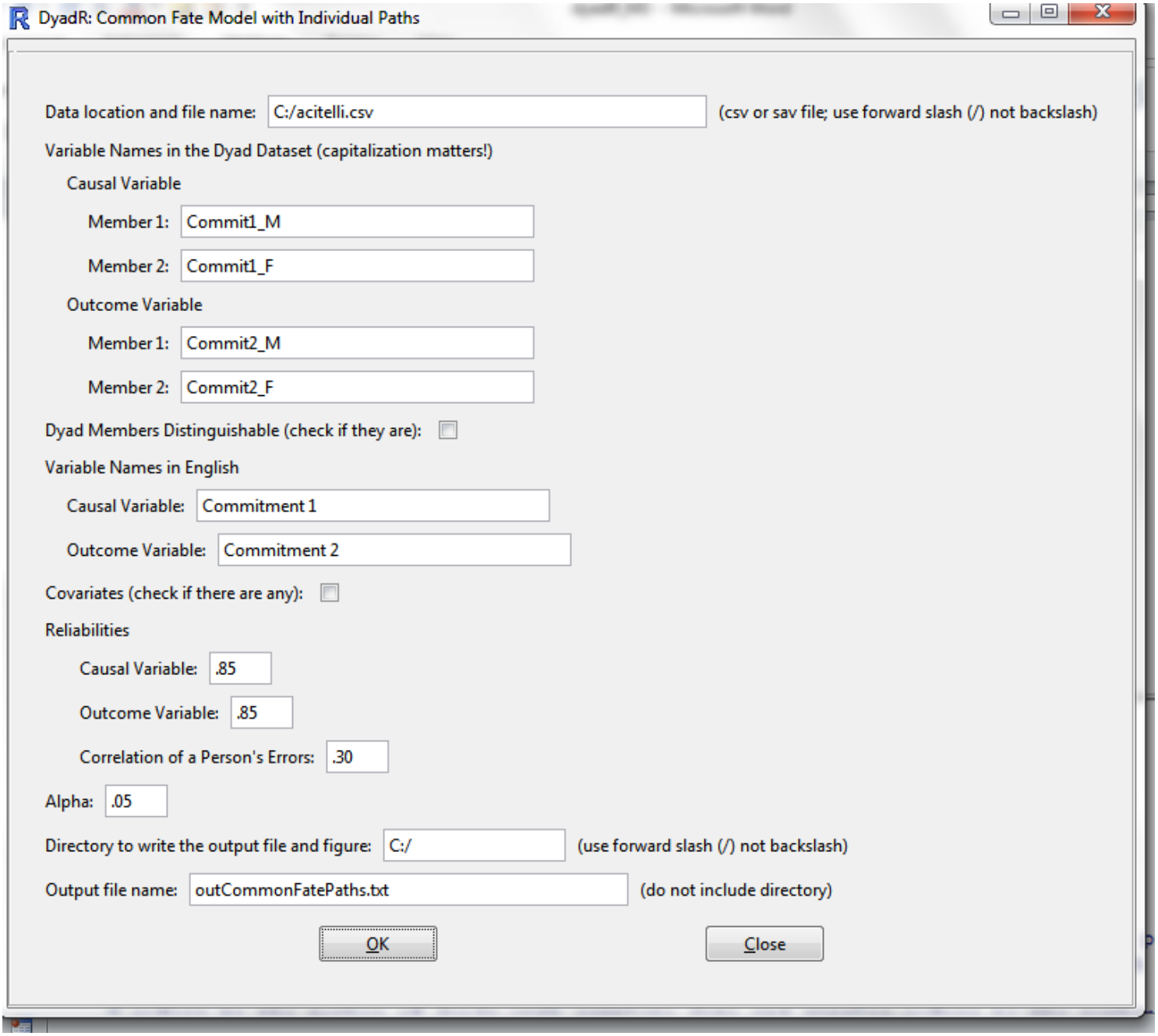
Table 1: Descriptive Statistics

Variable	Mean	SD	Minimum	Maximum
Commitment 1	3.568	0.635	1.000	4.000
Commitment 2	3.640	0.581	1.333	4.000

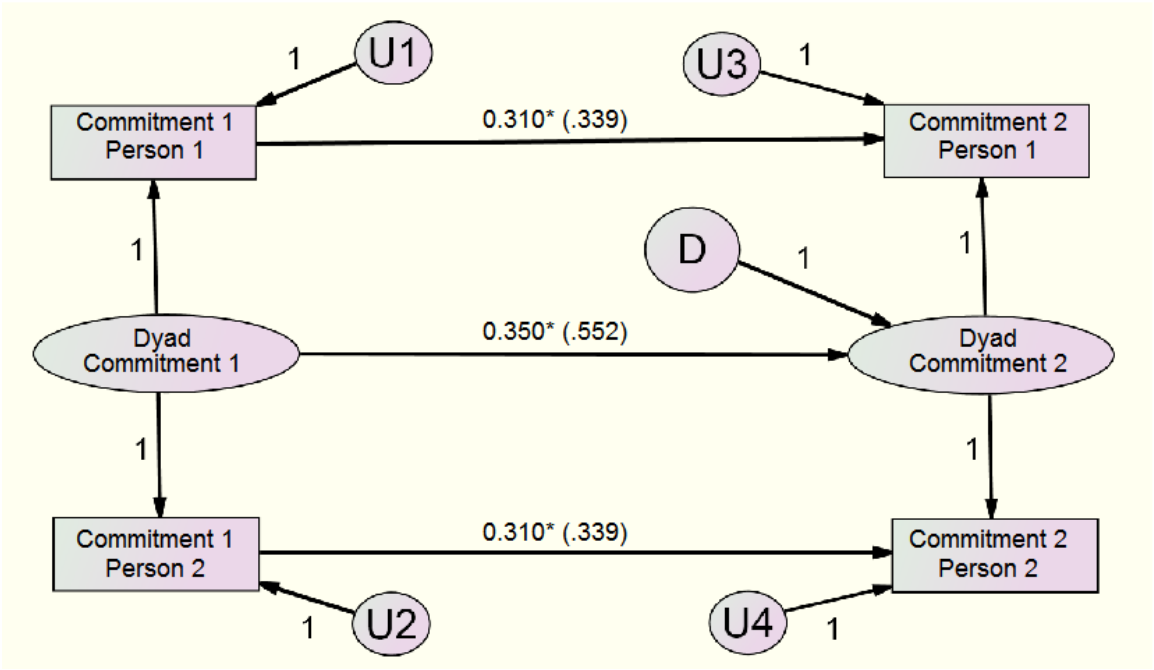
Table 2: Actor and Partner Effects

Effect	Estimate	Lower	95% CI	Upper	p value	Beta	r
Intercept	1.632	1.149	to	2.115	<.001		
Actor	0.436	0.323	to	0.550	<.001	0.477	0.431
Partner	0.126	0.012	to	0.240	.030	0.138	0.137
k	0.289	-0.070	to	0.931			

Task 3: Common Fate Model (CFM) with Paths

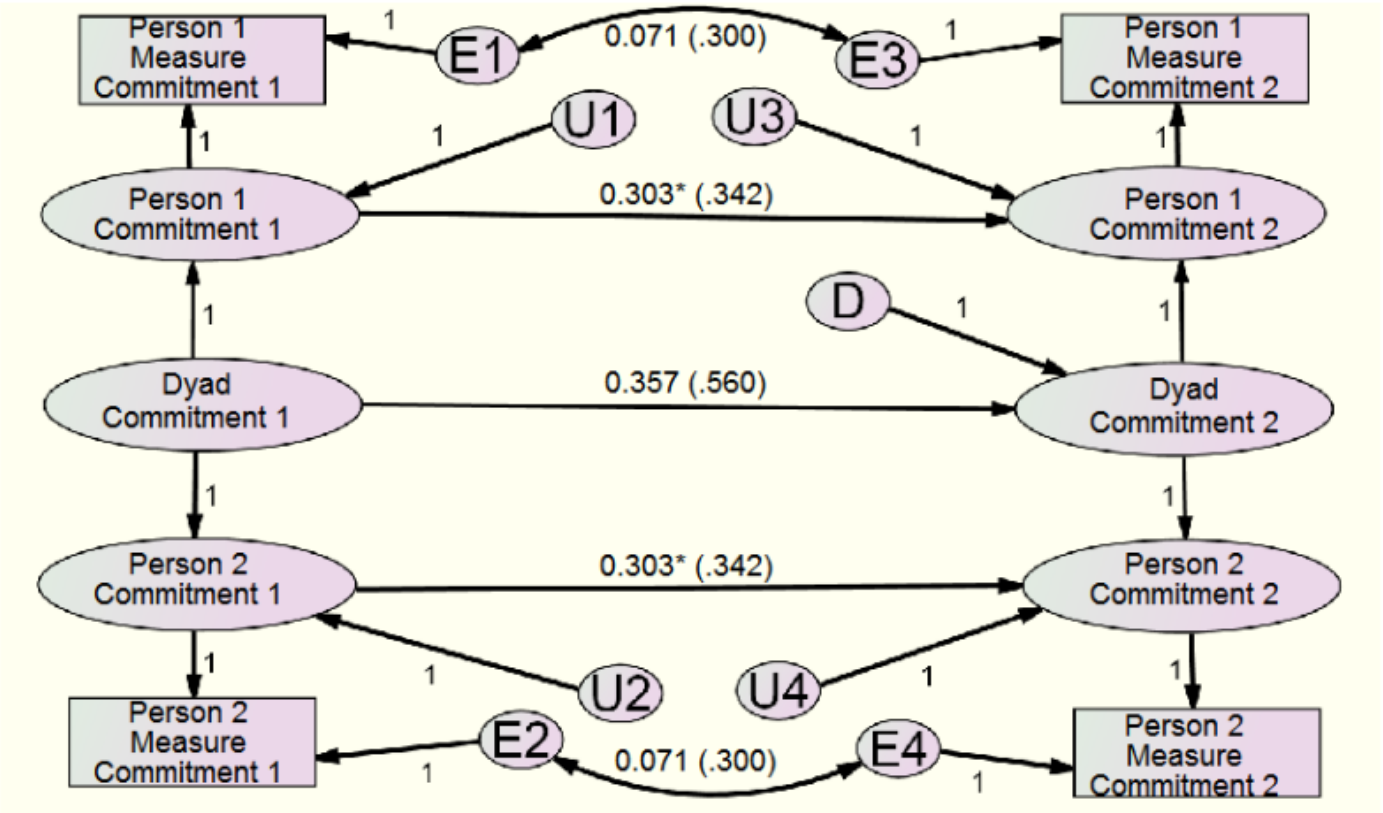


Common Fate Model (standardized estimates)



(template can be downloaded from davidakenny.net/img/CFP.tif)

Common Fate Model with Paths and Error Variances



(template can be downloaded from davidakenny.net/img/CFPU.tif)

Common Fate Model with Paths: Indistinguishable Dyads Using lavaan

```
Standard Model (Indistinguishable)
lavaan (0.5-14) converged normally after  23 iterations

  Number of observations                           238

  Number of missing patterns                         5

  Estimator                                         ML
  Minimum Function Test Statistic               14.770
  Degrees of freedom                                 6
  P-value (Chi-square)                           0.022

Parameter estimates:

  Information                                 Observed
  Standard Errors                             Standard

                   Estimate  Std.err  Z-value  P(>|z|)
Latent variables:
  xfact =~
    xv1               1.000
    xv2               1.000
  yfact =~
    yv1               1.000
    yv2               1.000

Regressions:
  yfact ~
    xfact             0.350    0.162    2.160    0.031
  yv1 ~
    xv1       (d)     0.310    0.095    3.267    0.001
  yv2 ~
    xv2       (d)     0.310    0.095    3.267    0.001

Intercepts:
    xfact             0.000
    yfact             0.000
    xv1       (m1)    3.568    0.036   97.906    0.000
    xv2       (m1)    3.568    0.036   97.906    0.000
    yv1       (m2)    2.533    0.340    7.446    0.000
    yv2       (m2)    2.533    0.340    7.446    0.000

Variances:
    xv1       (v1)    0.175    0.016
    xv2       (v1)    0.175    0.016
    yv1       (v2)    0.157    0.019
```

```
    yv2       (v2)      0.157    0.019
    xfact               0.228    0.030
    yfact               0.064    0.022



With Measurement Error (Indistinguishable)
lavaan (0.5-14) converged normally after  28 iterations

  Number of observations                           238

  Number of missing patterns                         5

  Estimator                                         ML
  Minimum Function Test Statistic               14.770
  Degrees of freedom                                 6
  P-value (Chi-square)                           0.022

Parameter estimates:

  Information                                 Observed
  Standard Errors                             Standard

                   Estimate  Std.err  Z-value  P(>|z|)
Latent variables:
  xx1 =~
    xx1               0.000
  xx2 =~
    xx2               0.000
  yy1 =~
    yy1               0.000
  yy2 =~
    yy2               0.000
  xfact1 =~
    xv1               1.000
  yfact1 =~
    yv1               1.000
  xfact2 =~
    xv2               1.000
  yfact2 =~
    yv2               1.000
  x1fact =~
    xfact1            1.000
  x2fact =~
    xfact2            1.000
  y1fact =~
    yfact1            1.000
  y2fact =~
    yfact2            1.000
  xfact =~
```

```
    x1fact            1.000
    x2fact            1.000
  yfact =~
    y1fact            1.000
    y2fact            1.000

Regressions:
  xv1 ~
    xx1               0.225
  yv1 ~
    yy1               0.246
  xv2 ~
    xx2               0.225
  yv2 ~
    yy2               0.246
  yfact ~
    xfact     (e)     0.357    0.195    1.834    0.067
  y1fact ~
    x1fact    (d)     0.303    0.133    2.270    0.023
  y2fact ~
    x2fact    (d)     0.303    0.133    2.270    0.023

Covariances:
  xx1 ~~
    yy1               0.300
  xx2 ~~
    yy2               0.300

Intercepts:
    xfact             0.000
    yfact             0.000
    xv1       (m1)    3.568    0.036   97.906    0.000
    xv2       (m1)    3.568    0.036   97.906    0.000
    yv1       (m2)    3.640    0.038   95.818    0.000
    yv2       (m2)    3.640    0.038   95.818    0.000
    xx1               0.000
    xx2               0.000
    yy1               0.000
    yy2               0.000
    xfact1            0.000
    yfact1            0.000
    xfact2            0.000
    yfact2            0.000
    x1fact            0.000
    x2fact            0.000
    y1fact            0.000
    y2fact            0.000

Variances:
    x1fact    (v1)    0.125    0.016
```

```
x2fact    (v1)      0.125     0.016
y1fact    (v2)      0.102     0.019
y2fact    (v2)      0.102     0.019
xv1                 0.000
xv2                 0.000
yv1                 0.000
yv2                 0.000
xx1                 1.000
xx2                 1.000
yy1                 1.000
yy2                 1.000
xfact1              0.000
yfact1              0.000
xfact2              0.000
yfact2              0.000
xfact               0.228     0.030
yfact               0.064     0.022
```

Description of the Results

The focus of this study is the investigation of the effects of couple-level and individual-level Commitment 1 on Commitment 2. In this model, a person's score on Commitment 1 is assumed to be a function of a dyad score and a unique individual score, symbolized as U1 and U2 in the figure. Finally, the dyad variance in Commitment 2 can be decomposed into variance due to Commitment 1 and disturbance variance, symbolized by D. The dyad members are treated as if they were indistinguishable. The test of distinguishability is statistically significant (chi-square(6) = 14.77, p = .022). Thus, the data are inconsistent with the hypothesis that members are indistinguishable. It needs to be established that there are a sufficiently large correlations to permit a latent variable analysis. For Commitment 1, the intraclass correlation between the two members is .483 (p < .001). For Commitment 2, the intraclass correlation between the two members is .566 (p < .001). Both of these correlations permit a latent variable analysis.

The effect of couple-level Commitment 1 on couple-level Commitment 2 is 0.350 (p = .031) with a standardized path of 0.552. The effect of individual-level Commitment 1 on individual-level Commitment 2 is 0.310 (p = .001) with a standardized path of 0.339. The estimates of the means and variances from the latent variables analysis are presented in Table 2.

The estimates here presume that the reliability of measurement of Commitment 1 is .85 and of Commitment 2 is .85. The correlation of errors within a person is assumed to be .30. In this model, a person's score on Commitment 1 is assumed to be a function of a true score and error, symbolized as E1 and E2 in the figure. Error variances are fixed to equal the variance of the measure times one minus the measure's reliability. In turn, the true score for Commitment 1 can

be decomposed into dyad variance and unique variance the, later being symbolized by U1 and U2. Additionally, a person's score on Commitment 2 is assumed to be a function of a true score and error, symbolized as E3 and E4 in the figure. In turn, the true score for Commitment 2 can be decomposed into dyad variance and unique variance, the latter being symbolized by U3 and U4. Finally, the dyad variance in Commitment 2 can be decomposed into variance due to Commitment 1 and disturbance variance, symbolized by D. Given these assumptions, the effect of couple-level Commitment 1 on couple-level Commitment 2 is 0.357 (p = .067) with a standardized path of 0.560. The effect of individual-level Commitment 1 on individual-level Commitment 2 is 0.303 (p = .023) with a standardized path of 0.342. The test that there is difference between the individual- and dyad-level paths is not statistically significant (chi-square(1) = 0.03, p = .866). The estimates of the means and variances from the latent variables analysis are presented in Table 3. (See the figure to better understand the symbols.)

Table 1: Descriptive Statistics

Variable	Mean	SD	Minimum	Maximum
Commitment 1	3.640	0.581	1.000	4.000
Commitment 2	3.568	0.635	1.333	4.000

Table 2: Means and Variances from the Base Model

Parameter		Term	Estimate	p-value
Mean		Commitment 1	3.568	<.001
Intercept		Commitment 2	2.533	<.001
Variance	Error	Commitment 1	0.175	<.001
	Error	Commitment 2	0.157	<.001
		Commitment 1	0.228	<.001
		Disturbance	0.064	.002

Table 3: Means and Variances from the Model with Corrections for Unreliability and Correlated Errors

Parameter		Term	Symbol	Estimate	p-value
Mean		Commitment 1		3.568	<.001
Intercept		Commitment 2		3.640	<.001
Variance	Error	Commitment 1	E1 & E2	0.225	fixed
	Error	Commitment 2	E3 & E4	0.246	fixed
	Unique	Commitment 1	U1 & U2	0.125	<.001
	Unique	Commitment 2	U3 & U4	0.102	<.001
		Commitment 1		0.228	<.001
		Disturbance	D	0.064	.002

R Screen after the DyadR_Analysis Runs

```
Welcome to the Analysis Program of DyadR!
Tests of distinguishability of dyad members using lavaan is beginning...
Data analysis completed.
The results and description of them are located at c:/Distinuishability_Output.txt.

Power calculations have begun...

 Effect  Size Power       N   singles ncp
 Actor   .500 virtually 1 150 8       10.439
 Partner .100 .548        150 8       2.088
Power calculations complete.

Effect size measure is Beta (standardized regression coefficient).  Alpha for all power calculations set to .050.
Correlation of actor and partner variables set to .500.  Correlation of errors set to .500.
Degrees of freedom equal 301.68.
N refers to the number of dyads with complete data and singles refers to the number of dyads with just one member.
The term "ncp" refers to the likely value of the t statistic.

APIM analysis using Multilevel Modeling is beginning...
APIM Multilevel data analysis completed.
The results and the text description are located at C:/outAPIM_MLM.txt.
The APIM diagram is located at C:/APIM_MLM_Fig.tif.


APIM analysis using SEM is beginning...
Bootstrapping beginning...
Can take awhile...
Data analysis completed.
The results and the text description are located at C:/outAPIM_SEM.txt.
The APIM diagram is located at C:/APIM_SEM_Fig.tif and the diagram with corrections for unreliablity at C:/APIM_SEMLV_Fig.tif.


Common Fate Model with Paths analysis is beginning...
Data analysis completed.
The results and the text description are located at C:/outCommonFatePaths.txt.
The Common Fate Model with Paths diagram is located at C:/CFPfig.tif and for the model corrected for measurement error at C:/CFPUFig.tif.
```

Further Plans

Improve the GUI (Graphical User Interface)

- Cleaner
- File and variable selection
- Error checking (started)

Allow for Covariates and Provide Warnings (only for APIM MLM)

New Modules

- Distinguishable Dyads (done for APIM MLM)
- APIM Moderation and Mediation Tests
- Over-time Analyses