MEDYAD: An Analytical Tool for Assessing Mediation in Distinguishable Dyads

Jacob J. Coutts, Andrew F. Hayes, and Tao Jiang
The Ohio State University, Department of Psychology

The dyad is the fundamental unit of interpersonal interaction (Kenny, Kashy, & Cook, 2006). Consequently, it is important for researchers to measure dyads as they seek to understand social phenomena. Constructs such as love, conflict, and friendship not only say something about one specific individual, but rather both persons involved.

Mediation analysis has grown in popularity in recent years, and continues to grow as quantitative methods develop and become more accessible for substantive researchers. Mediation analysis is a popular analytical technique in the social sciences that investigates how one variable causes another through one or more mediating variable(s) (Hayes, 2018). The Actor Partner Interdependence Model Extended to Mediation (APIMeM) applies this methodology to a dyadic framework and is an extension of the Actor Partner Interdependence Model, a model commonly used in dyadic data literature.

The APIMeM is typically estimated using a structural equation modeling (SEM) program, or through a series of regression equations. While the estimation procedure differs between SEM and OLS regression, the substantive conclusions reached are often (if not always) identical (Hayes, Montoya, & Rockwood, 2013).

The estimation of the APIMeM can be difficult/belious and requires that the researcher be familiar with statistical programming in software such as Mplus. This difficulty is simplified when comparing indirect effects with each other. However, with just one line of code, MEDYAD allows researchers to estimate these types of models in SPSS and SAS with a biny of other features. In its current form, MEDYAD allows for the specification of one or two Xs and one or two Ys depending on whether they are between-dyad variables or mixed variables. MEDYAD also allows users to enter up to 12 mediators, M(12 between-dyad mediators, 6 mixed mediators, or any combination thereof).

MEDYAD estimates the direct and indirect effects of each actor’s X on their own and their partner’s Y through their own and their partner’s M(1). Additionally, MEDYAD estimates total effects of each actor’s X on their own and their partner’s Y. All estimates are obtained via ordinary least squares (OLS) regression and inference about indirect effects and contrasts between them are obtained via percentile bootstrap confidence intervals. Contrasts are calculated within and between dyad members and within and between mediators.

By default, MEDYAD will print descriptive statistics for the variables entered in the model (e.g., correlations, means, standard deviations) and a correlation matrix for the residuals of the M and Y. MEDYAD is designed to handle the APIMeM and special cases/extensions of this model with just small changes to the syntax command.

The APIMeM

**SPSS Syntax Structure**

```
MEDYAD y = y(var)/x = x(var)/m = m(var)/mb = [...]/base = [10000]/

(bootstrap = [10000])
```

*Everything in brackets is optional and not needed in order for the MEDYAD syntax to run. The bolded text in each subcommand is the default value and each command is described in detail in the documentation (details for obtaining MEDYAD and its documentation are available by scanning the QR Code at the bottom of the poster).

A dialog box for MEDYAD exists and can be permanently installed for those familiar with the graphical user interface of SPSS. The SAS syntax structure is similar to the SPSS version and the documentation is available in the same download folder.

**Example Output**

```
MEDYAD Output from 20 Data Version 3.1

Outcome:
X2

Model Summary
<table>
<thead>
<tr>
<th>Model</th>
<th>DF1</th>
<th>DF2</th>
<th>MSE</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>10</td>
<td>209.0000</td>
<td>209.0000</td>
<td>5.4503</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Indirect Effect(s):
Y2
X1
M1
M2

Total, Direct, and Indirect Effects of X1:
X1
M1
M2
Y2

Correlation between residuals:
X2
M1
M2
Y1
Y2
```

**References**


Obtaining MEDYAD

In order to download MEDYAD and its documentation, please visit jjcoutts.com or scan the following QR Code.