Actor-Partner Interdependence Model or APIM

Example

- Dyads, one a patient with a serious disease and other being the patient's spouse
- Interested in the effects of depression on relationship quality

APIM

- A model that simultaneously estimates the effect of a person's own variable (actor effect) and the effect of same variable but from the partner (partner effect) on an outcome variable
- The actor and partner variables are the same variable from different persons.
- All individuals are treated as actors and partners.

Data Requirements

- -two variables, X and Y, and X causes or predicts Y
- –Both X and Y are mixed variables; i.e., both members of the dyad have scores on X and Y.

Actor Effect

- Definition: The effect of a person's X variable on that person's Y variable
 - -the effect of patients' depression on patients' quality of life
 - -the effect of spouses' depression on spouses' quality of life
- Both members of the dyad have an actor effect.

Partner Effect

- Definition: The effect of a person's partner's X variable on the person's Y variable or alternatively the effect of a person's X variable on his or her partner's Y variable
 - the effect of patients' depression on spouses' quality of life
 - the effect of spouses' depression on patients' quality of life

Both members of the dyad have a partner effect.

Distinguishability and the APIM

- Distinguishable dyads
 - -Two actor effects
 - An actor effect for patients and an actor effect for spouses
 - -Two partner effects
 - A partner effect from spouses to patients and a partner effect from patients to spouses

Distinguishable Dyads



The partner effect for patients refers to the effect of spouses' depression on patients' quality of life.

The partner effect for spouses refers to the effect of patients' depression on spouses' quality of life.

The partner effect is fundamentally dyadic. A common convention is to refer to it by the outcome variable. Researcher should be clear!

Indistinguishable Dyads



The two actor effects are set to be equal and the two partner effects are set to be equal.

Nonindependence in the APIM



Right curved line: Nonindependence in Y Left curved line: X as a mixed variable (r cannot be 1 or -1)

Note that the combination of actor and partner effects explain some of the nonindependence in the dyad.

APIM Patterns: Couple Model

- Couple Model
 - Equal Actor and Partner Effects
 - e.g., my depressive symptoms has the same effect on my quality of life as does my partner's depressive symptoms on my quality of life
- Average or sum as the predictor
 - Although measured individually, the predictor variable is a "dyadic" variable, not an individual one

APIM Patterns: Contrast

- Contrast Model
 - Actor plus partner equals zero
 - e.g., time spent doing household labor on stress levels (Klumb et al. 2006)
 - the more household labor I do, the more stressed I feel
 - the more household labor my partner does, the less stress I feel
 - Difference score (actor X minus partner X) as the predictor

Variables versus Effects

- Variables
 - Actor variable: the person's standing on X
 - Partner variable: the partner's standing on X
- Effects
 - Actor effect: the path from a person's X variable to a person's Y variable
 - Partner effect: the path from a partner's X variable to a person's Y variable

APIM Estimation

- Multiple Regression
 - Saturated model with distinguishable dyads
 - Dyad dataset
- Multilevel Modeling
 Pairwise dataset
- Structural Equation Modeling
 Dyad dataset
- Generalized Estimation Equations
 - Non-interval outcomes
 - Pairwise dataset

Types of APIM Models

- Personality Model
- Relationship Variables
- Accuracy-Bias Model
- Stability-Influence Model

Personality Model



Actor effects measure the effect of own personality on satisfaction.

Partner effects measure the effect of partner's personality on satisfaction.

Relational Model



Actor effects measure the effect of one's own relational variable to one's own other relational variable.

Partner effects measure the effect of one's partner's relational variable on one's own relational variable.

Accuracy-Bias Model



Actor effects measure the bias of assumed similarity.

Partner effects measure accuracy in perception.

Stability-Influence Model



Actor effects measure stability.

Partner effects measure influence.