Analyzing Over-Time Dyadic Data

(thanks to Debby Kashy & Tessa West)

Examples of Over-Time Dyadic Data

- Daily diary reports of relationship experiences from both members of heterosexual dating partners over 14 days
- Repeated measures experiment where dyads interact with each other multiple times and make ratings after each interaction
- Daily reports of closeness from both members of college roommate dyads

The Three-level Nested Myth

• Time is nested within person and person is nested within dyad



 Three-level nested only if the four time points differ such that T1a ≠ T1b, T2a ≠ T2b, etc.

Basic Data Structure

In most cases the two dyad members are measured at the same time points, so Time is *crossed* (or cross-classified) with person.



Basic Data Structure

This two-level crossed structure results in an error structure in which the residuals may be correlated both

- A) across dyad members
- B) across time



Types of Over-Time Models

Growth Curve Model

– Are there linear changes over time in the outcome variable?

Repeated Measures Model

Interest only in the effects of "time" across persons and dyads.

Stability and Influence Model

- Stability: Does Person A's score at time 1 predict Person A's score at time 2?
- Influence: Does Person A's score at time 1 predict Person B's score at time 2?
- Standard APIM
 - Different variables as the predictors and at the outcome
 - Does Variable 1 predict Variable 2?

Examples

- Growth Curve Model
 - Individual growth curve
 - Dyadic growth curve
 - Satisfaction over time
- Repeated Measures
 - The effects of day of the week and gender on satisfaction
- Stability and Influence Model

- Prior satisfaction predicts current satisfaction

Types of Variables

- Time Invariant
 - Do not change over time
 - Measured at one time point only (typically the beginning of the study)
 - E.g., gender, attachment style, race
- Time Varying
 - Measured at each time
 - E.g., daily mood, twice-weekly reports of friendship
 - Outcome variable must be time varying

How Many Time Points?

- Depends on type of analysis
 - The more complicated the model, the more time points needed
- Minimum
 - Repeated measures: Two
 - Other models: Three
- More is better.
- Ultimately depends on the model, the research setting, and research questions.

Example: Daily reports of conflict, support, and relationship satisfaction

- Kashy data set
- 103 heterosexual dating couples
- Assessed once daily for 14 days
- Completed daily reports of relationship satisfaction and amount of conflict that day
 - Satisfaction and Conflict are time-varying
- Pretest data for attachment avoidance
 - Measured for both people
 - Time invariant

Person Period Pairwise Dataset

- Each Person by Time combination has its own record
 - Person has its own variable (e.g., Person = 1, 2)
 - Occasion has its own variable (e.g., Day = 1 to 14)
- Required for Multilevel Modeling

Example

ID	DYADID	PERSON	DAY	ASATISF	PSATISF	Years
25	13	1	1	2	3	3
25	13	1	2	5	6	3
25	13	1	3	7	8	3
25	13	1	4	4	2	3
26	13	2	1	3	2	3
26	13	2	2	6	5	3
26	13	2	3	8	7	3
26	13	2	4	2	4	3