**Covariation Analyses**

Specific code and data for Waters, West, & Mendes (2014) can be found here: <http://mendes.socialpsychology.org/files>

**Step one: Create a person period data file**

In this data file, each person will have one line of data for every time point (e.g., if there are 30 times points of physiologic data, then there would be 30 lines of data). Each person will also be treated as an “actor” (have a line of data for their own physiologic data) and a “partner” (next to that data is their partner’s score). See below for an example (and Thorson et al., 2018, for illustration).

If you are using one variable for the actor (e.g., PEP for the moms, as in Waters et al., 2014 and HR for the babies), you need the “mom data” as the actor and the “baby data” as the partner.

Partnum is used to distinguish between the two dyad members (each dyad will have a 1 and 2, even if the dyads are indistinguishable)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Participant ID** | **DyadID** | **Partnum** | **Mom\_PEP** | **Baby\_HR** | **Time** | **Condition** |
| 001 | 1 | 1 | 30 | 12 | 1 | 1 |
| 001 | 1 | 1 | 40 | 14 | 2 | 1 |
| 001 | 1 | 1 | 35 | 5 | 3 | 1 |
| 002 | 1 | 2 | 12 | 30 | 1 | 1 |
| 002 | 1 | 2 | 14 | 40 | 2 | 1 |
| 002 | 1 | 2 | 5 | 35 | 3 | 1 |

**Step two: Run a multilevel model, treating the “mom data” as the outcome and the “baby data” as the predictor. Center the predictor variable first (subtract off the grand mean from everyone’s score).**

“condition” is a three-level predictor variable. Because it is categorical it goes after “BY”

Baby\_HR is a continuous predictor. Time is also a continuous predictor. All continuous predictors go after “WITH”

This model has three main effects (Condition, Baby\_HR, Time) and all possible interactions. By including Time, we can look at linear increases and decreases in covariation (the Time x Baby\_HR interaction tests this).

The RANDOM statement tells the model to estimate a random intercept, a random slope for Time, and UNR means estimate their covariances (UNR means all possible covariances; here that’s just intercept x time):

MIXED

**Mom\_PEP** BY **Condition** WITH **Baby\_HR Time**

/FIXED = **Condition Baby\_HR Time Condition\*Baby\_HR Condition\*Time Baby\_HR\*Time**

**Condition\*Baby\_HR\*Time**|

/PRINT = SOLUTION TESTCOV

/CRITERIA = MXITER(10000) MXSTEP(500)

/RANDOM intercept **Time** | SUBJECT(**DyadID**) COVTYPE(UNR).