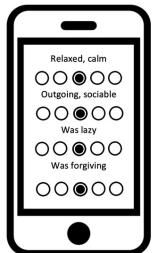


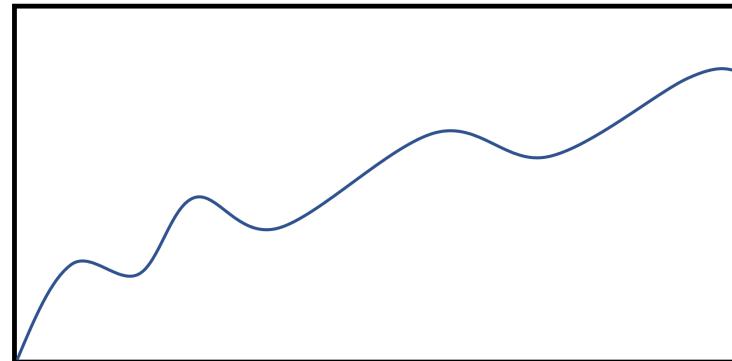
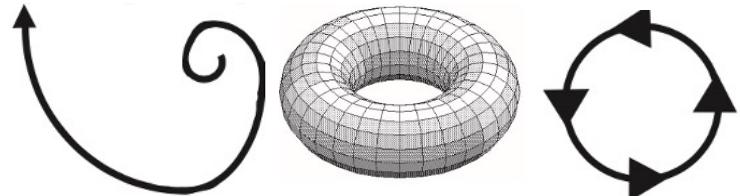
Personality Change: Traits, States, and Individual Lives

Emorie D. Beck, Ph.D.
University of California, Davis
 @EmorieBeck
beck-lab.ucdavis.edu



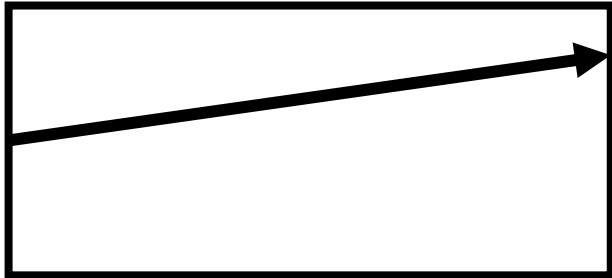


Assessment



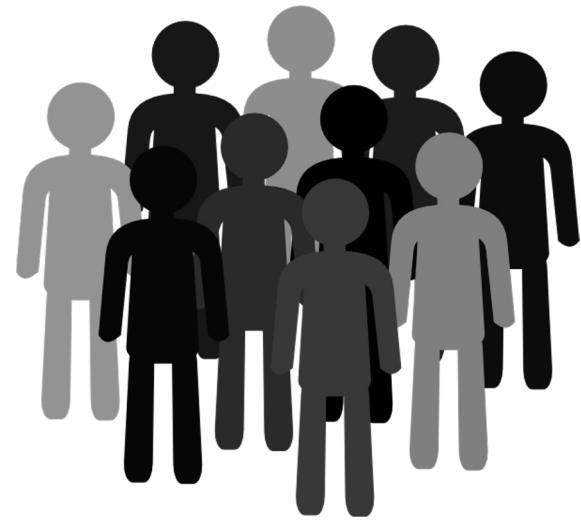
Time (Years)

Process

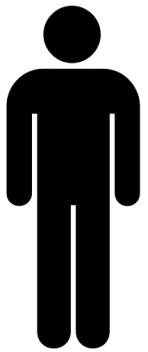


Time (Days)

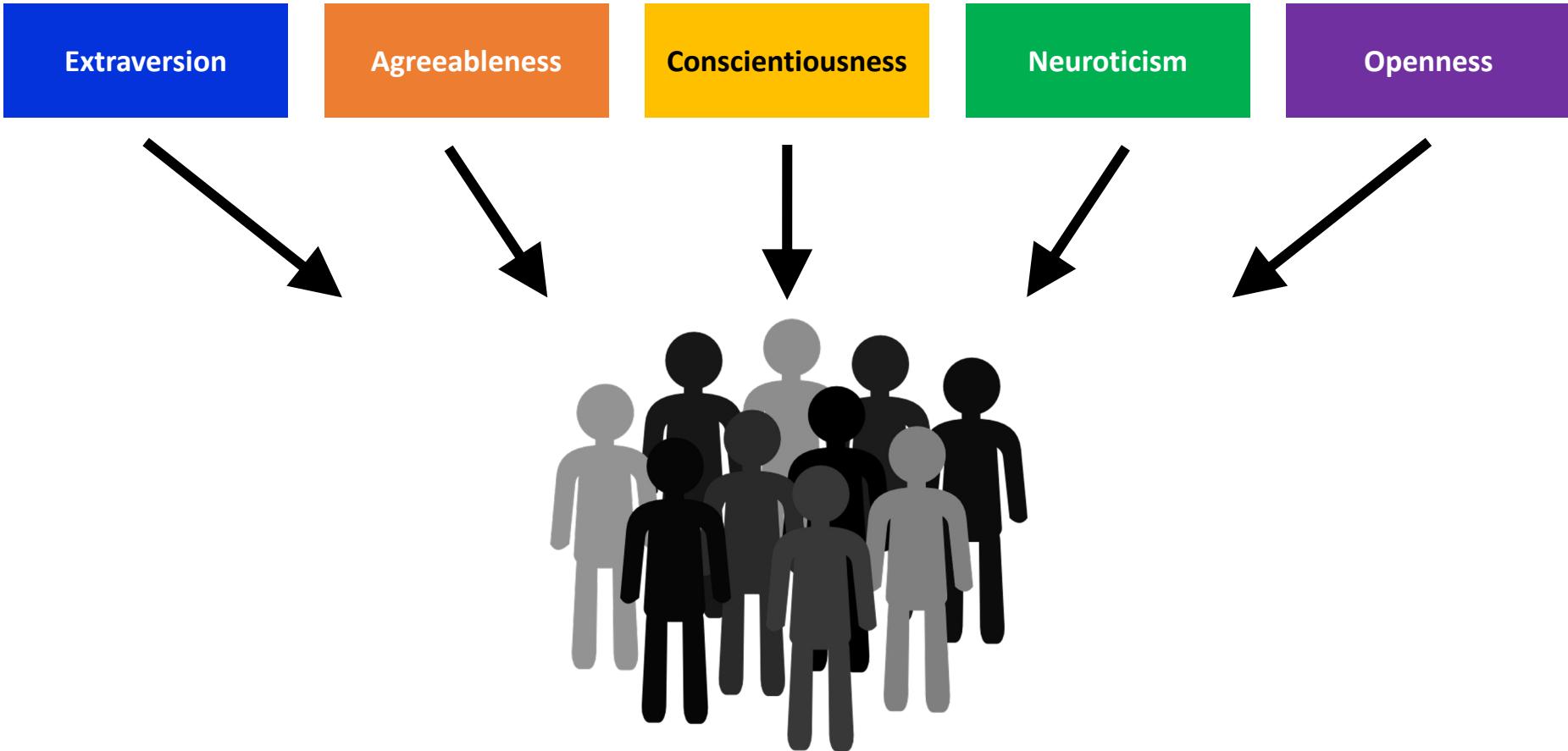
Change



Populations

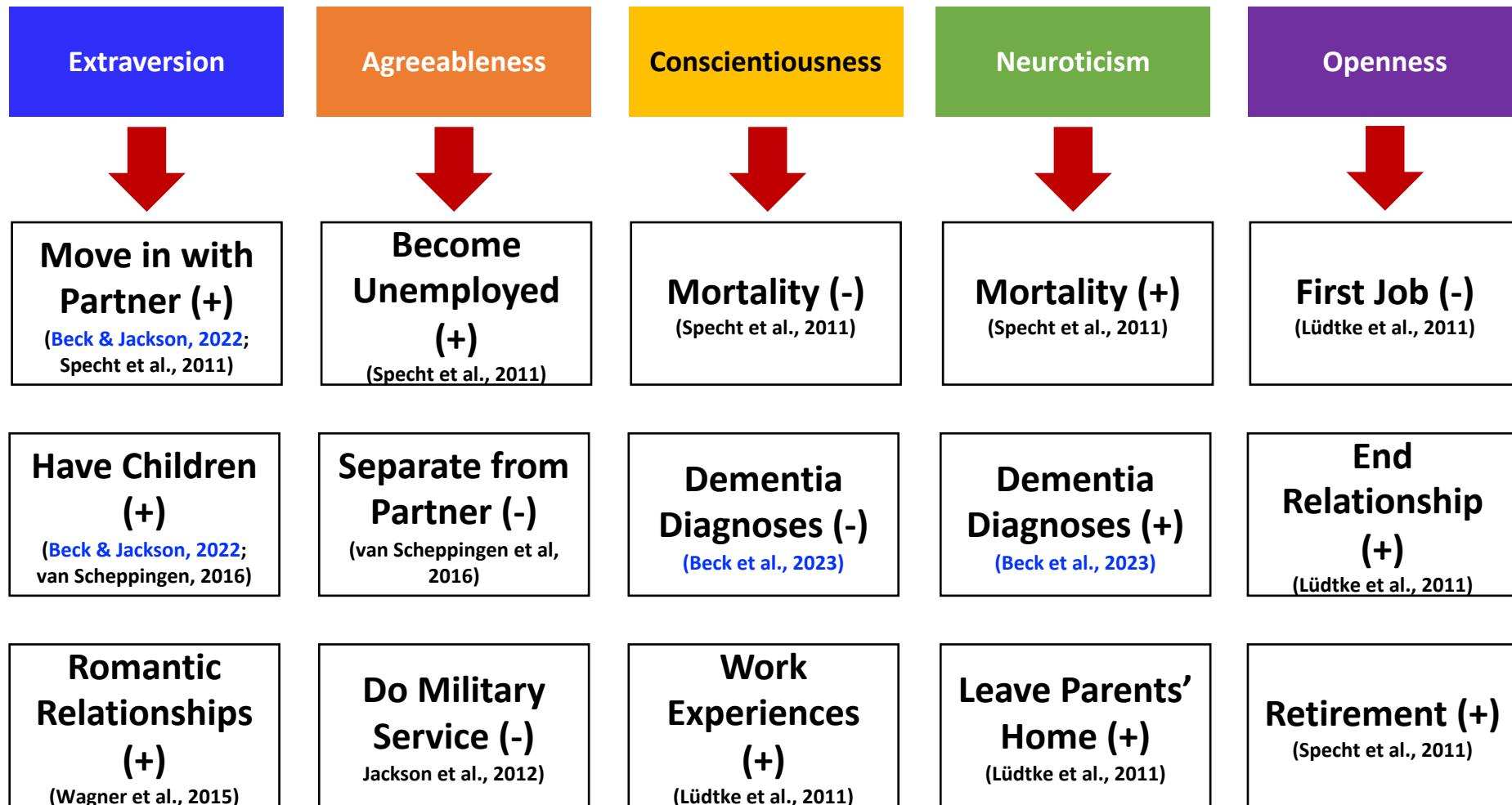


Persons



**Nomothetic
Between-Person
Variable Centered**

Selection



Con

But how do we
change personality
traits?

al
e

The Big 5

Extraversion

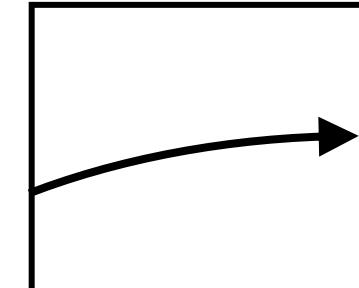
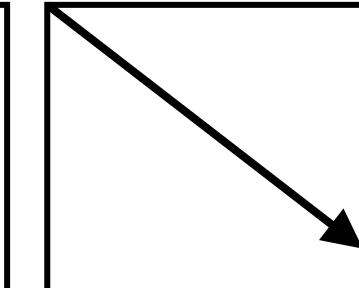
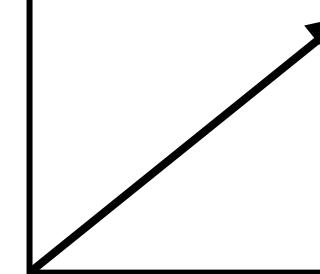
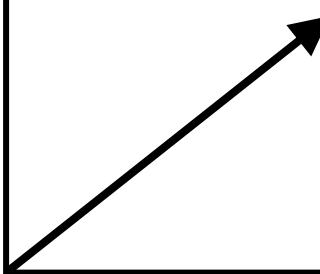
Agreeableness

Conscientiousness

Neuroticism

Openness

Direction



Magnitude

--

.6 SD

1 SD

-.8 SD

.4 SD

Timing

--

Lifespan

Lifespan

10-35

10-20

The Big 5

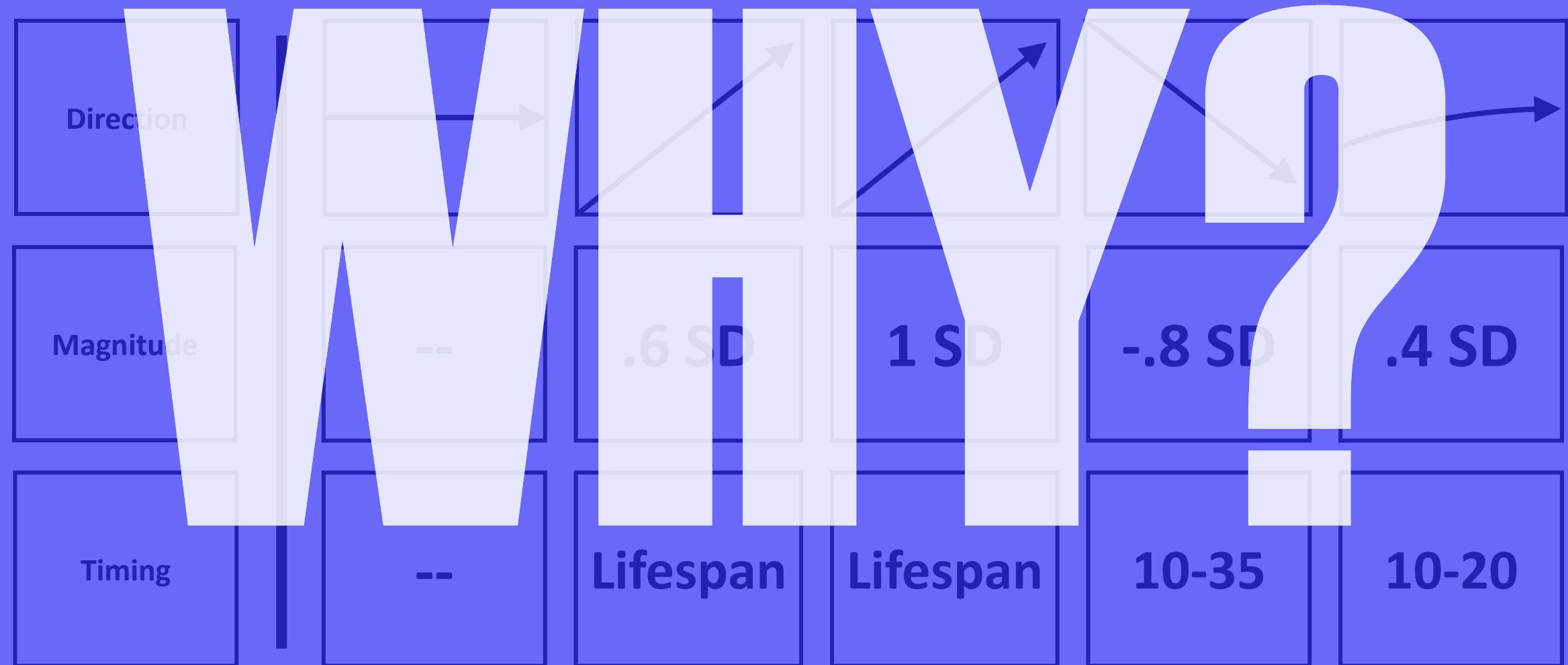
Extraversion

Agreeableness

Conscientiousness

Neuroticism

Openness



Roadmap for Today

**Life events as mechanisms of trait-level change
in personality**



**Conceptualizing personality and personality
change idiographically**



**Nonlinear changes in idiographic personality and
life events**

Roadmap for Today

**Life events as mechanisms of trait-level change
in personality**



**Conceptualizing personality and personality
change idiographically**



**Nonlinear changes in idiographic personality and
life events**

The Big 5

Extraversion

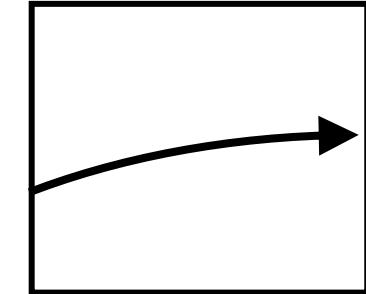
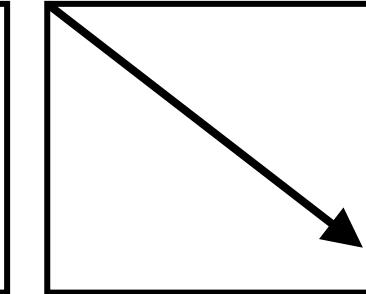
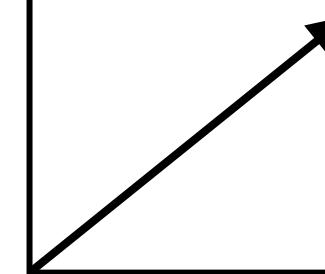
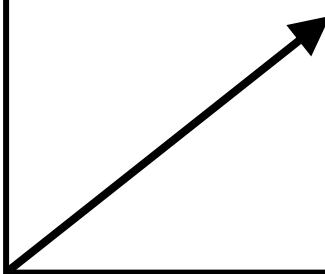
Agreeableness

Conscientiousness

Neuroticism

Openness

Direction



Magnitude

--

.6 SD

1 SD

-.8 SD

.4 SD

Timing

--

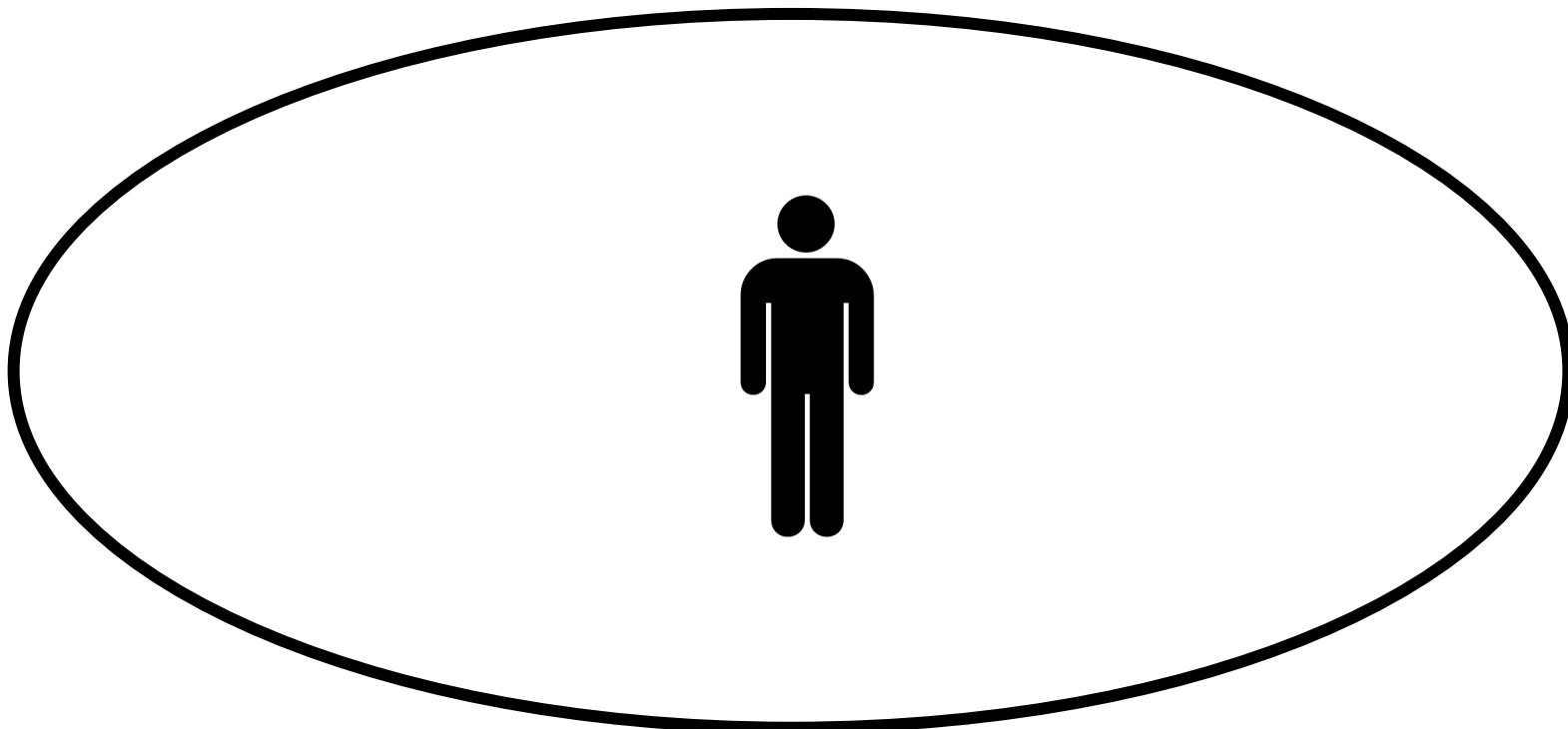
Lifespan

Lifespan

10-35

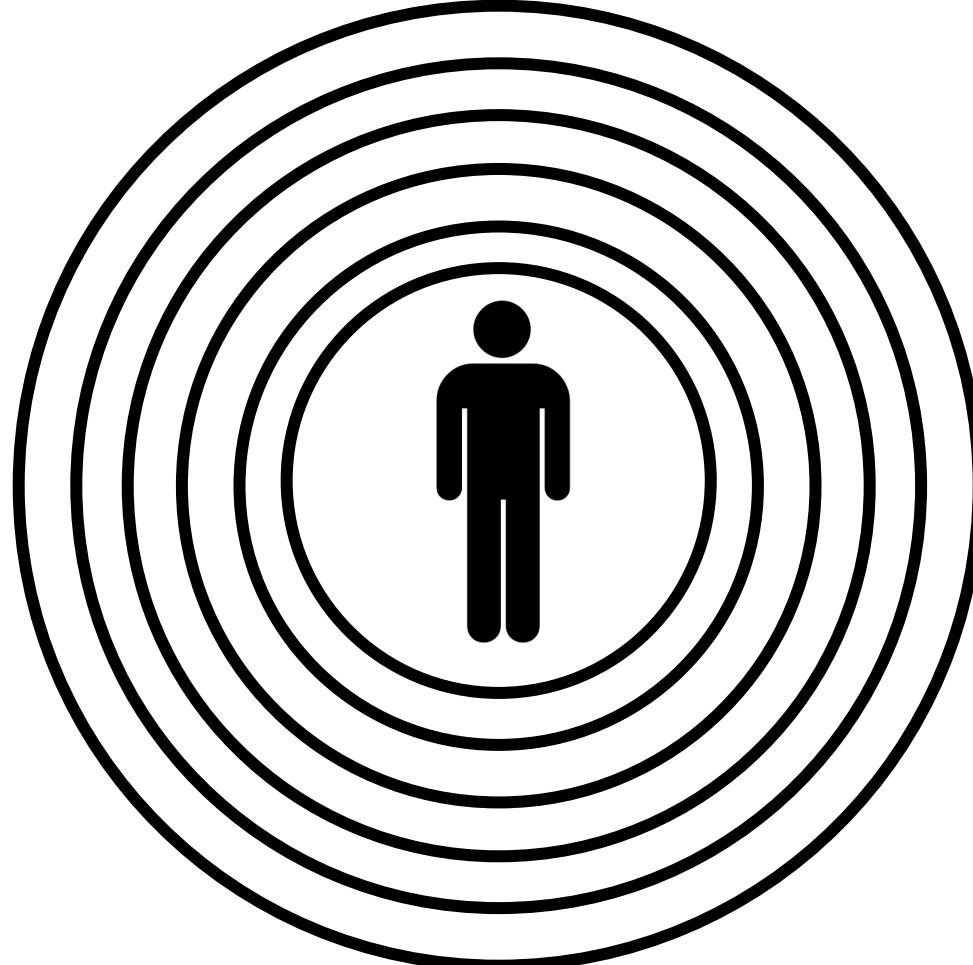
10-20

Persons in Context

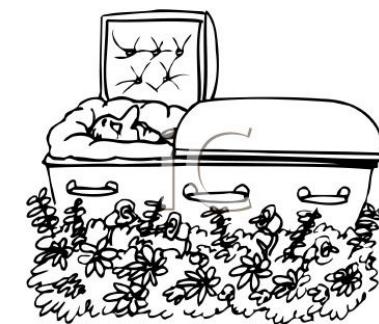
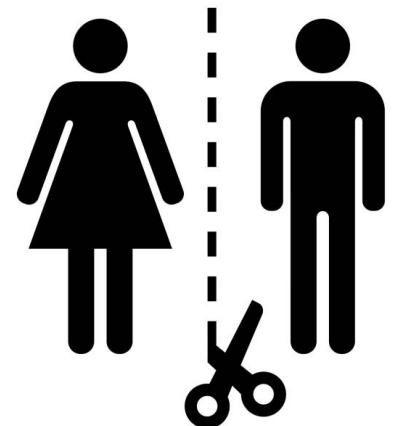


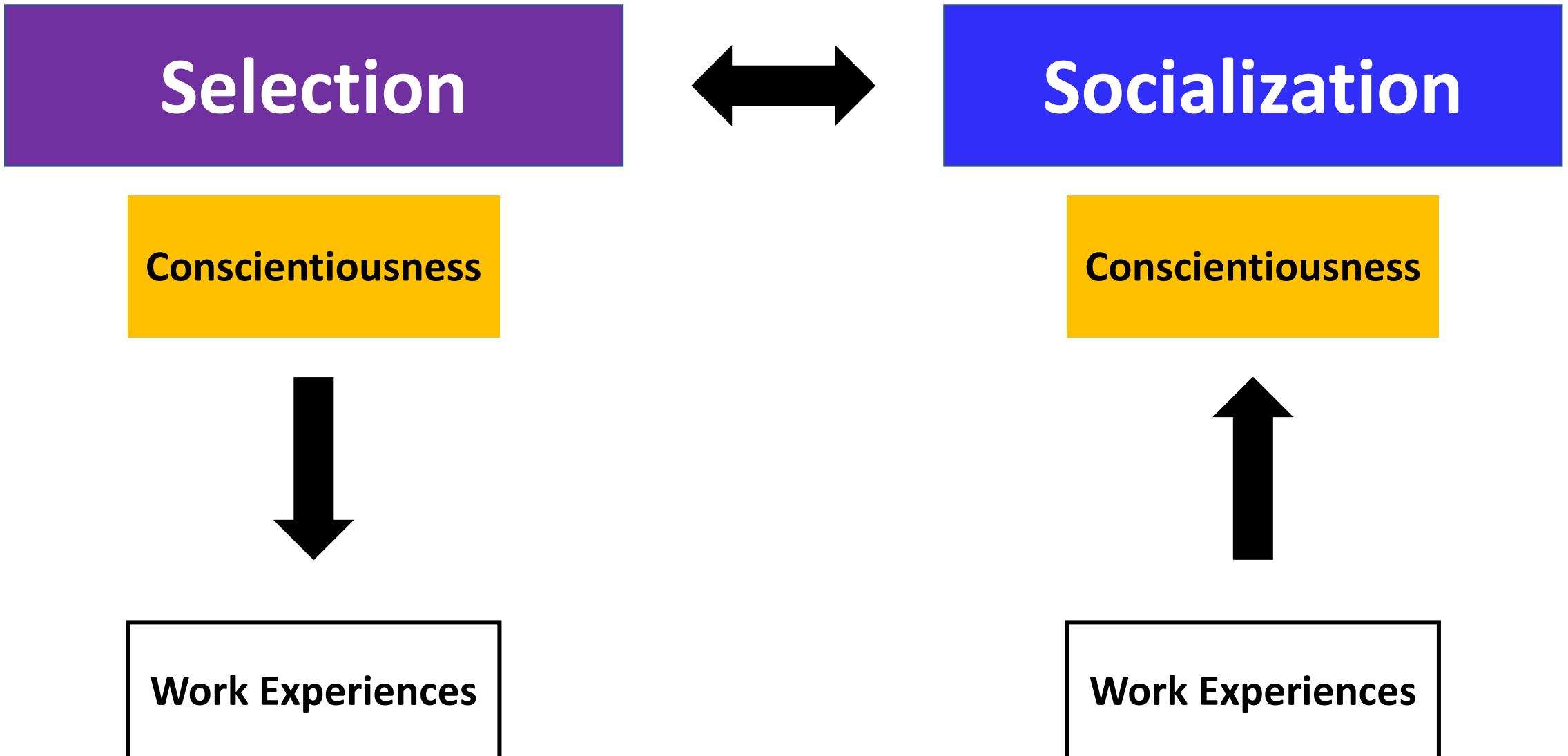
e.g., Lewin, 1936; Allport, 1936, 1961; Danvers et al., 2020

Persons in Context



e.g., Bronfenbrenner, 1979



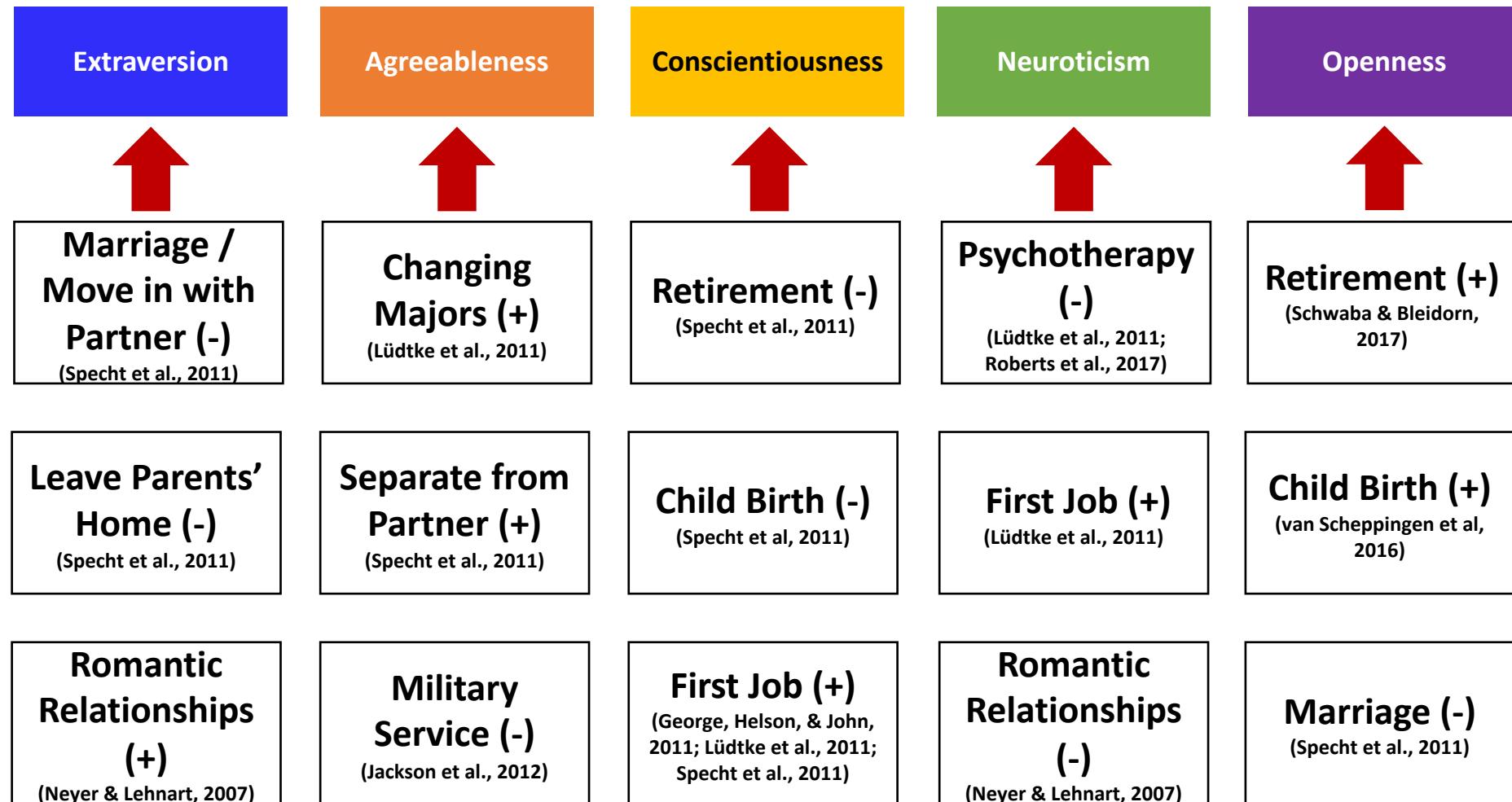


Barrick, Mount, & Judge, 2001

Roberts, Caspi, & Moffitt, 2003

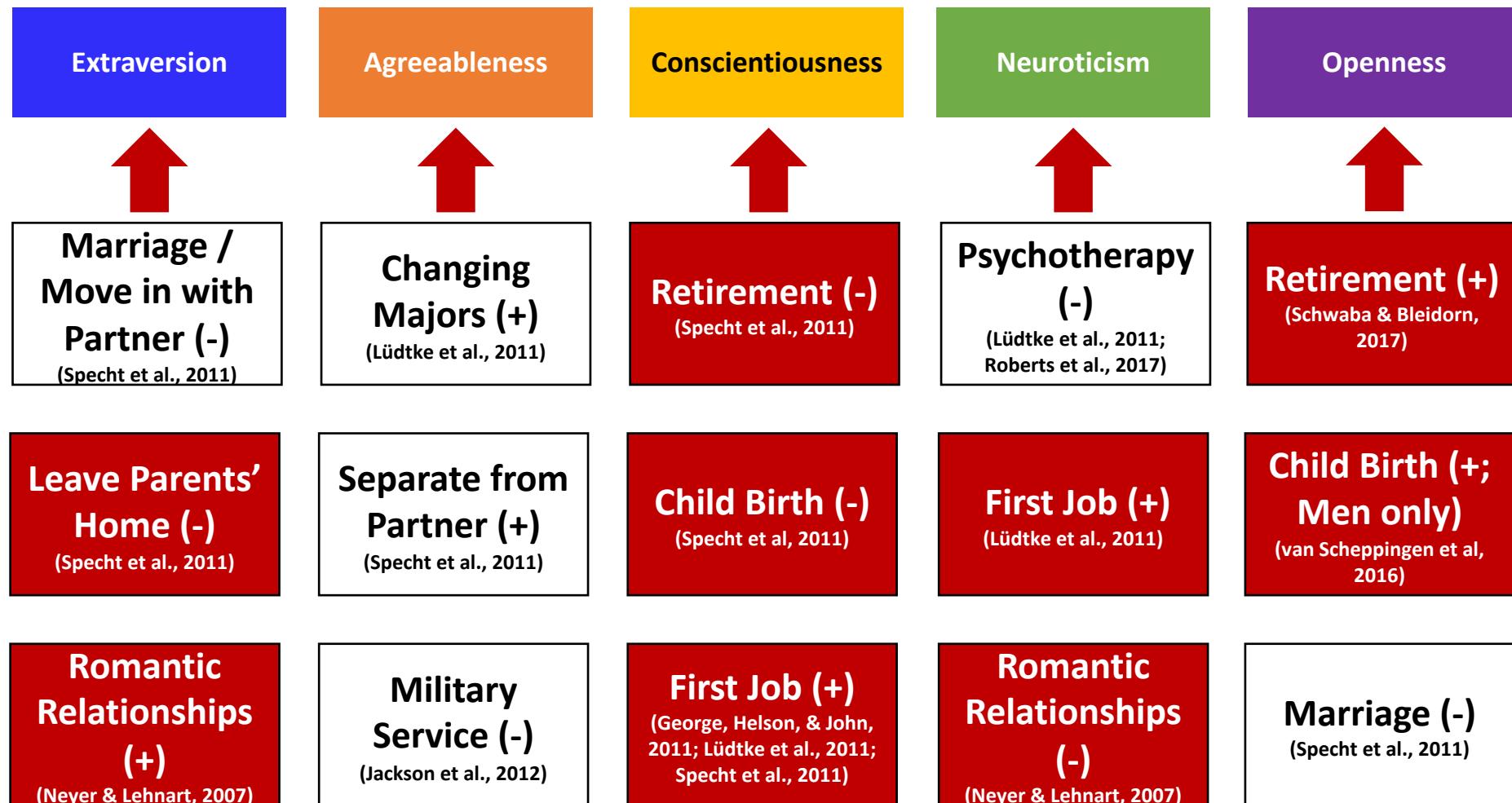
Socialization

Limitations



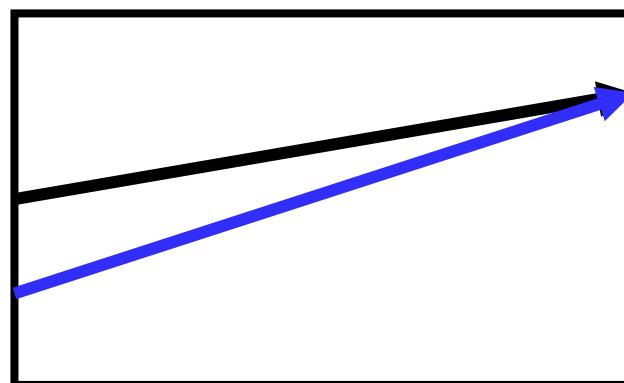
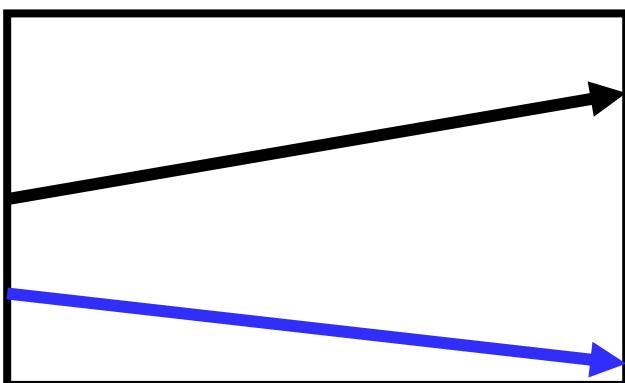
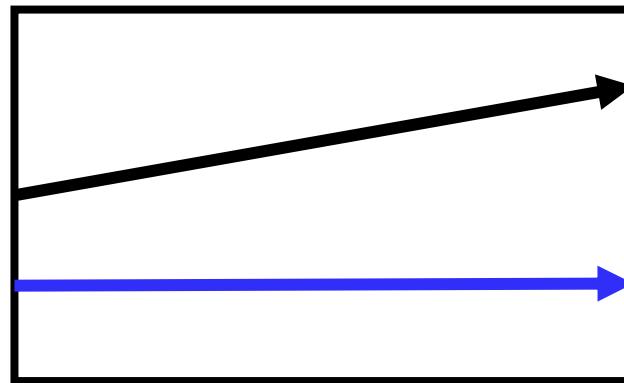
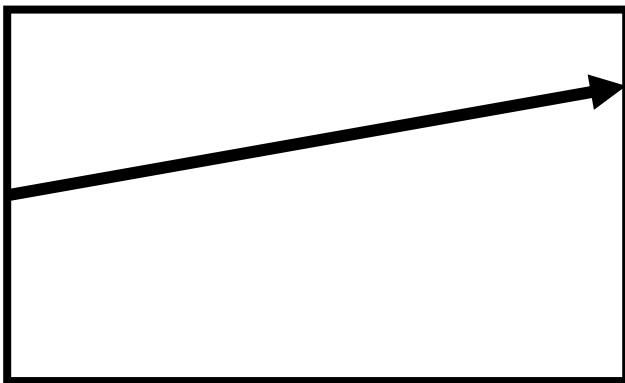
Socialization

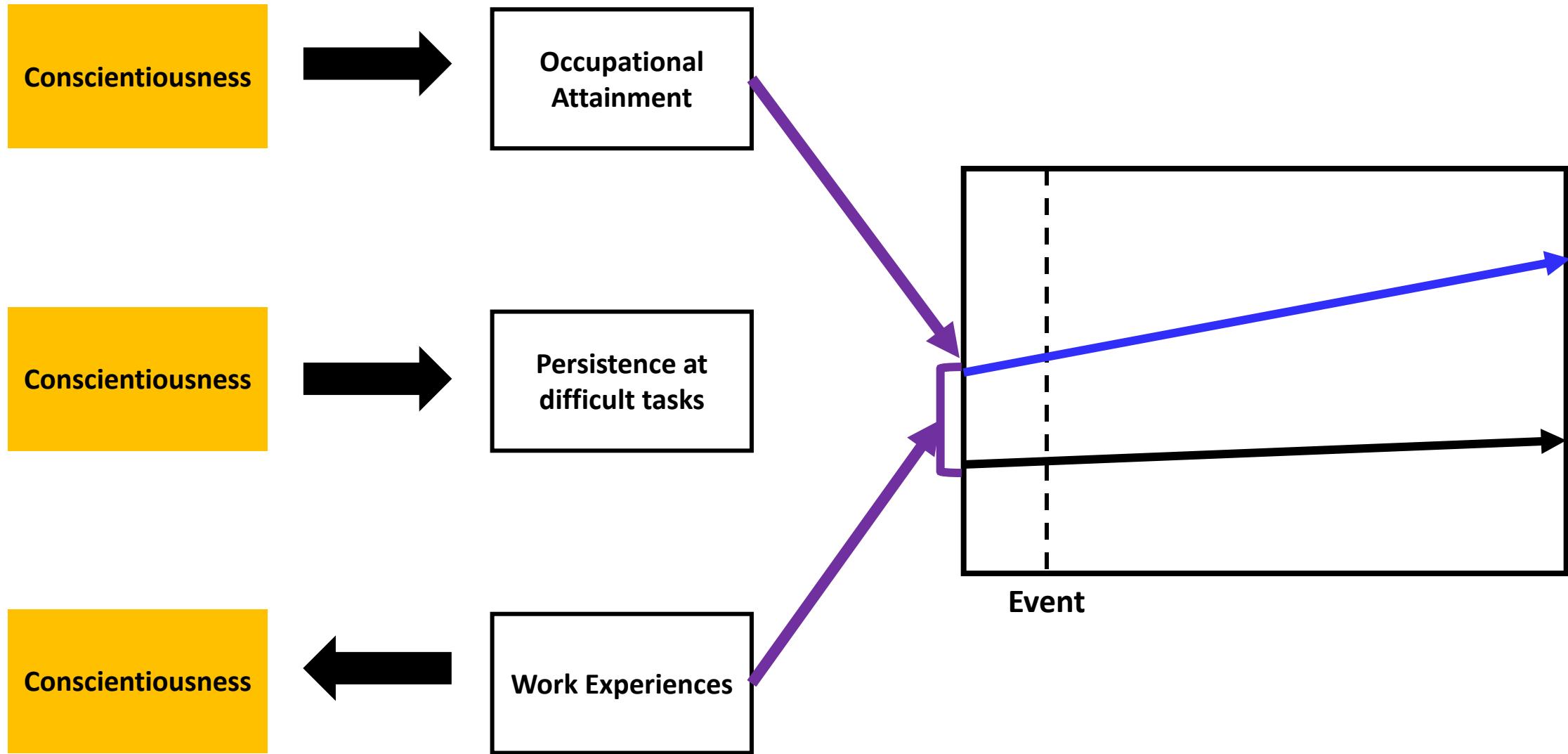
Limitations



Socialization

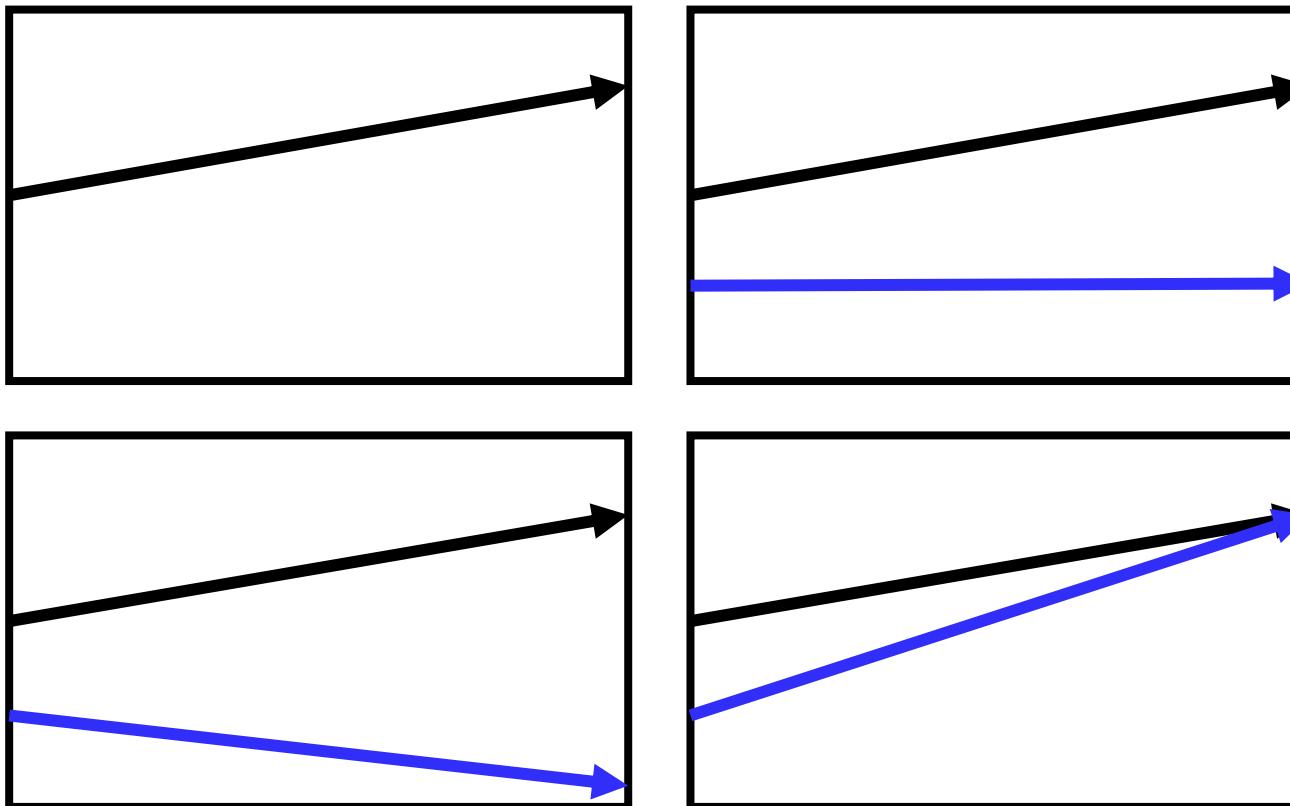
Selection Bias





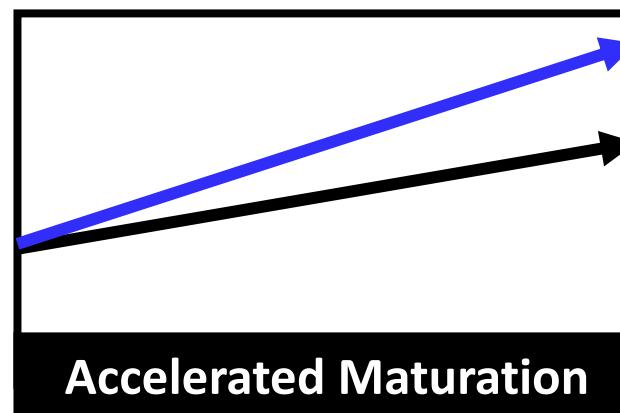
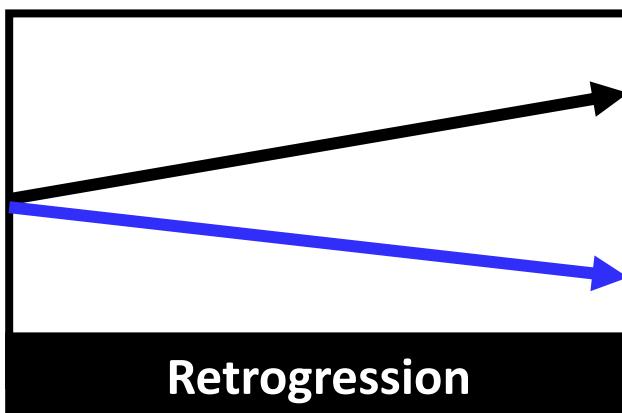
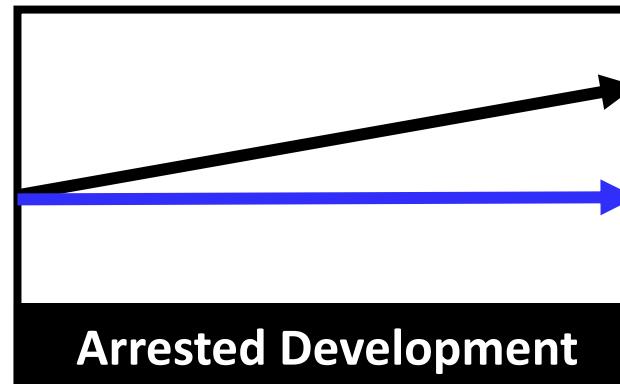
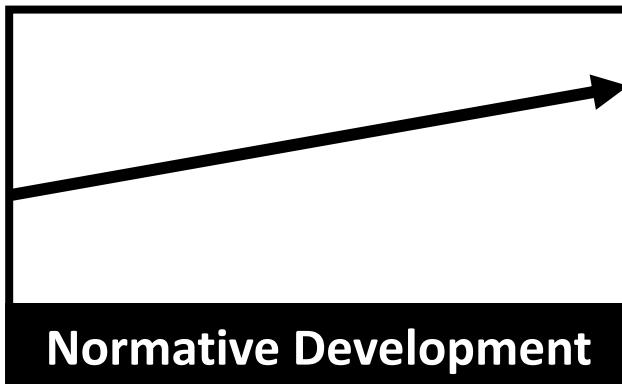
Socialization

Selection Bias



Socialization

Selection Bias

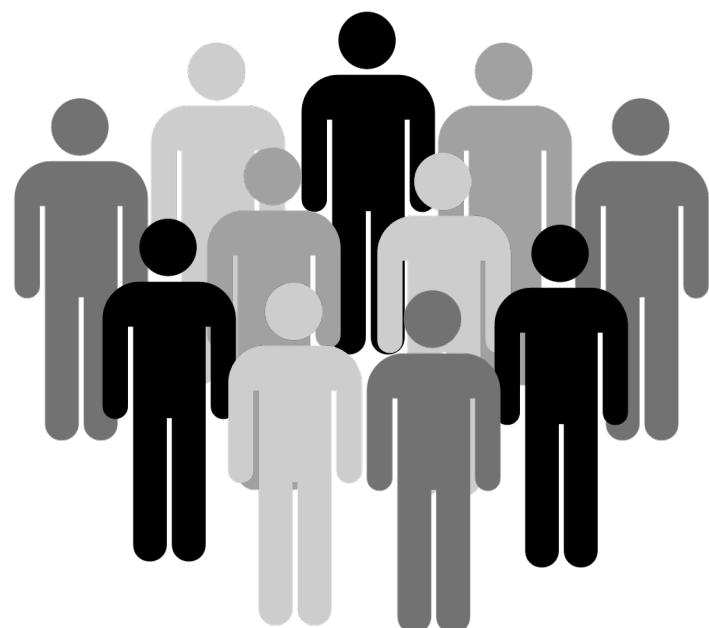


Research Question:
**Do life events predict individual
differences in personality trait change
when accounting for selection bias?**

No Event

Event

Propensity Score Matching



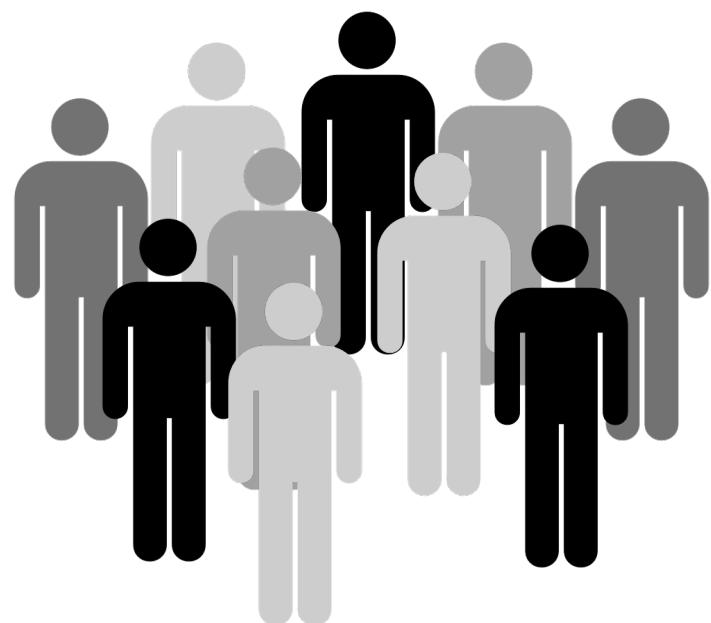
(Thoemmes & Kim, 2011)

No Event

Event



PS = .2



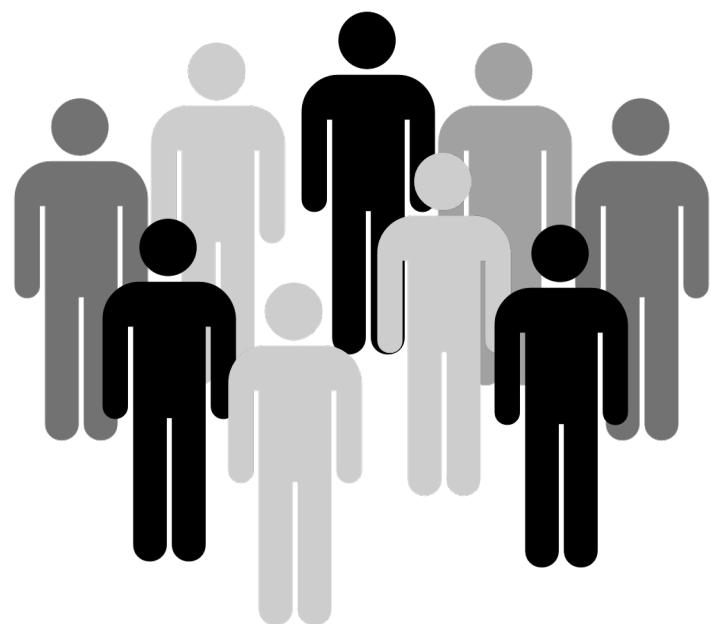
(Thoemmes & Kim, 2011)



PS = .2



No Event



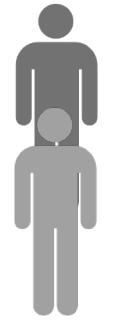
PS = .6



Event



(Thoemmes & Kim, 2011)



PS = .2



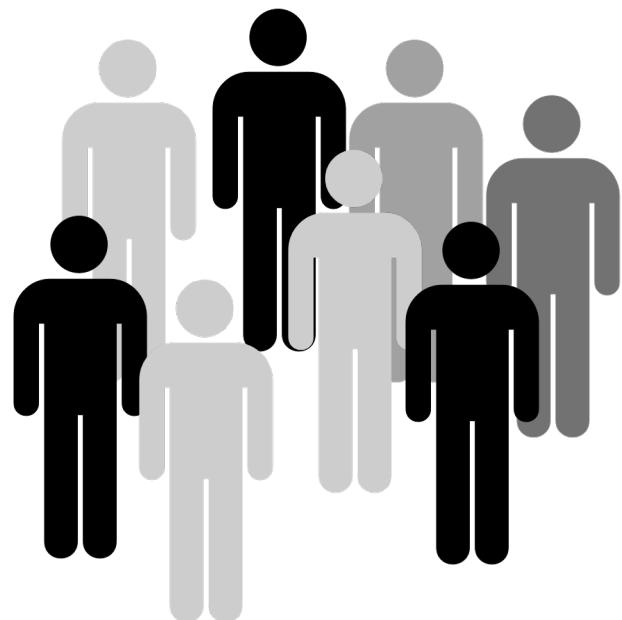
PS = .6

No Event

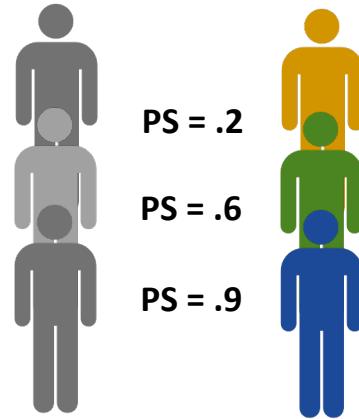
Event



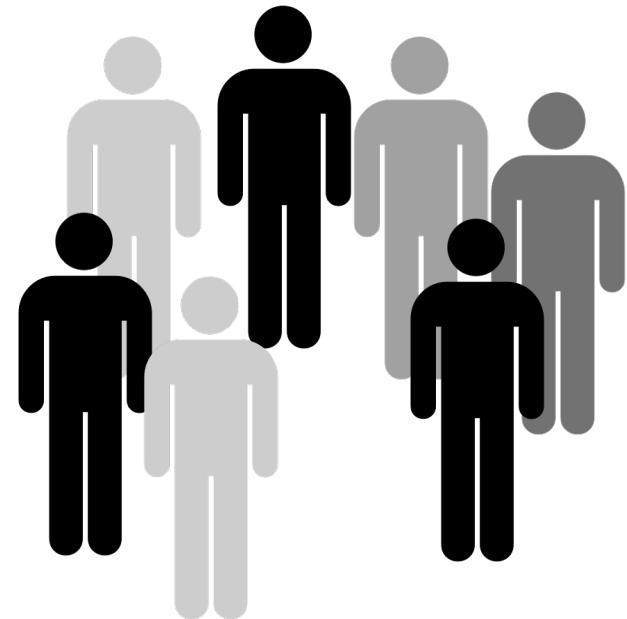
PS = .9



(Thoemmes & Kim, 2011)



No Event

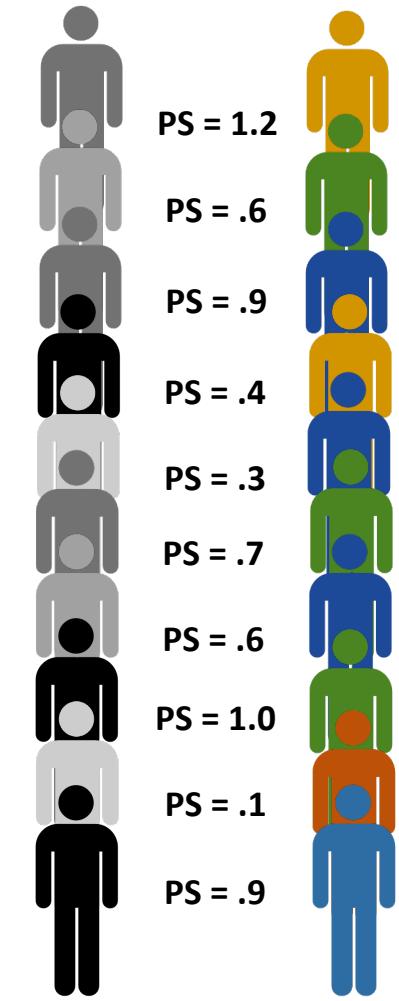


Event

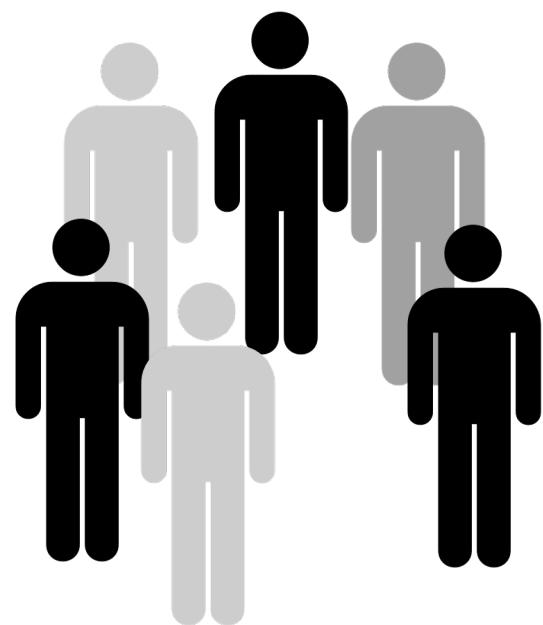
PS = .3



(Thoemmes & Kim, 2011)



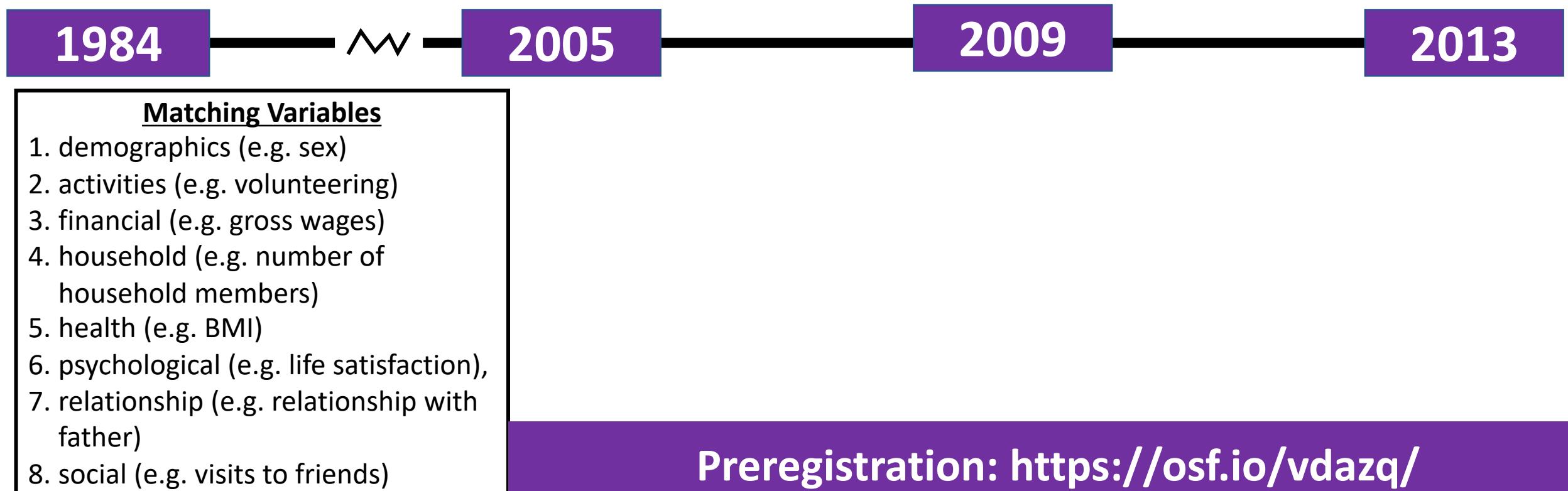
No Event



Event



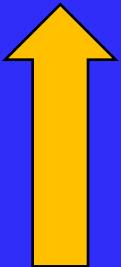
German Socioeconomic Panel Study (GSOEP)



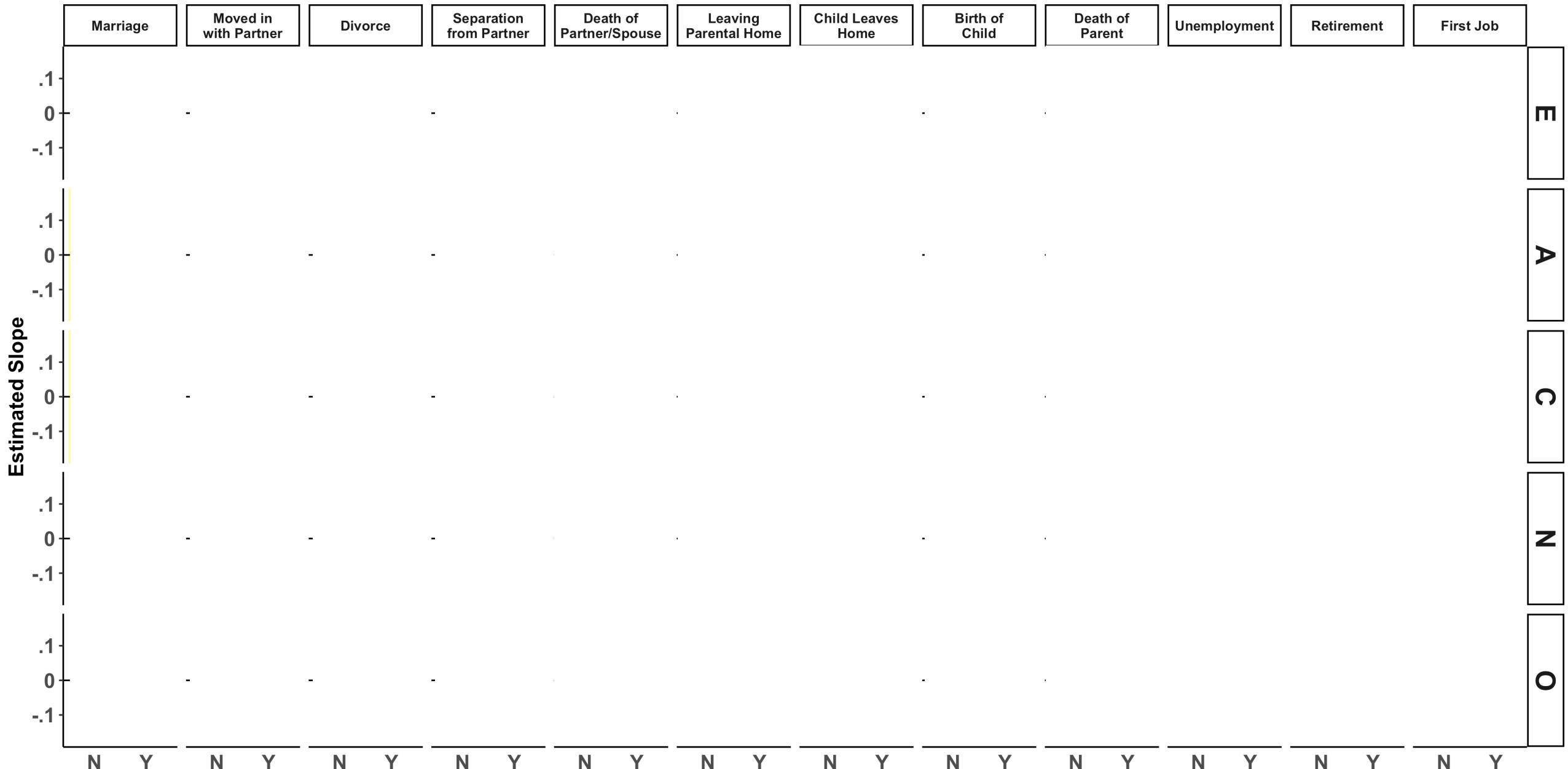
Results

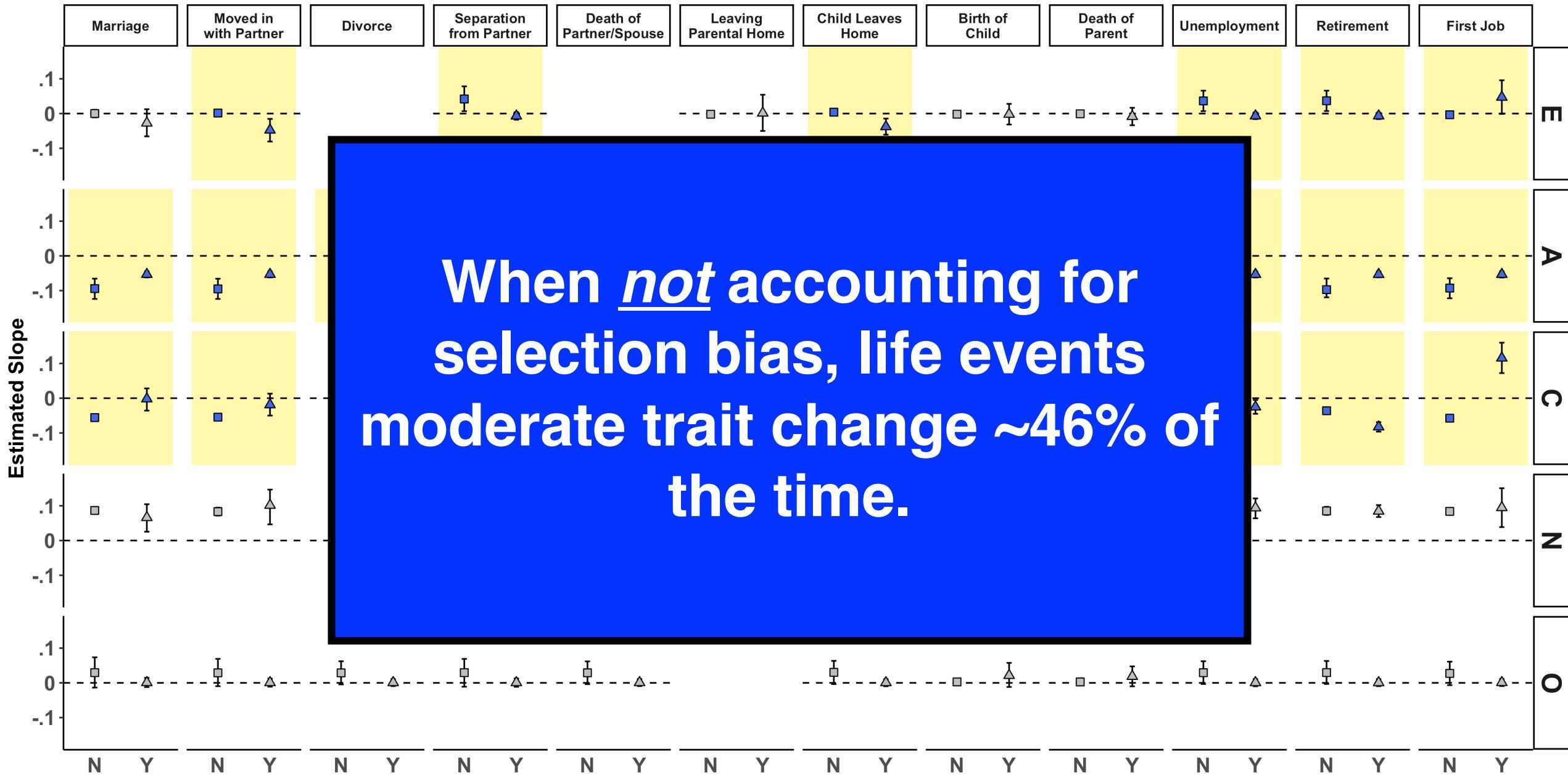
Socialization

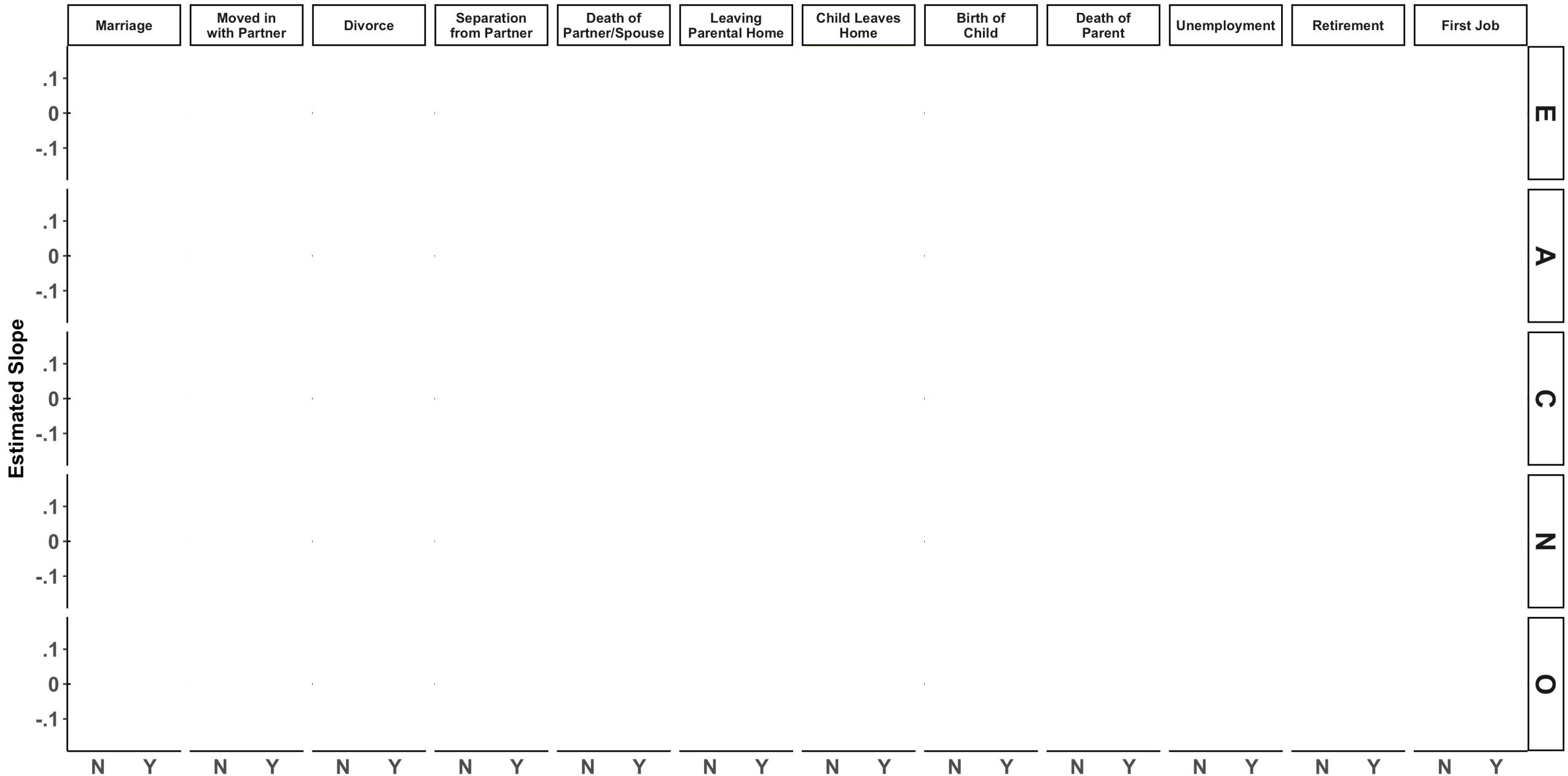
E A C N O

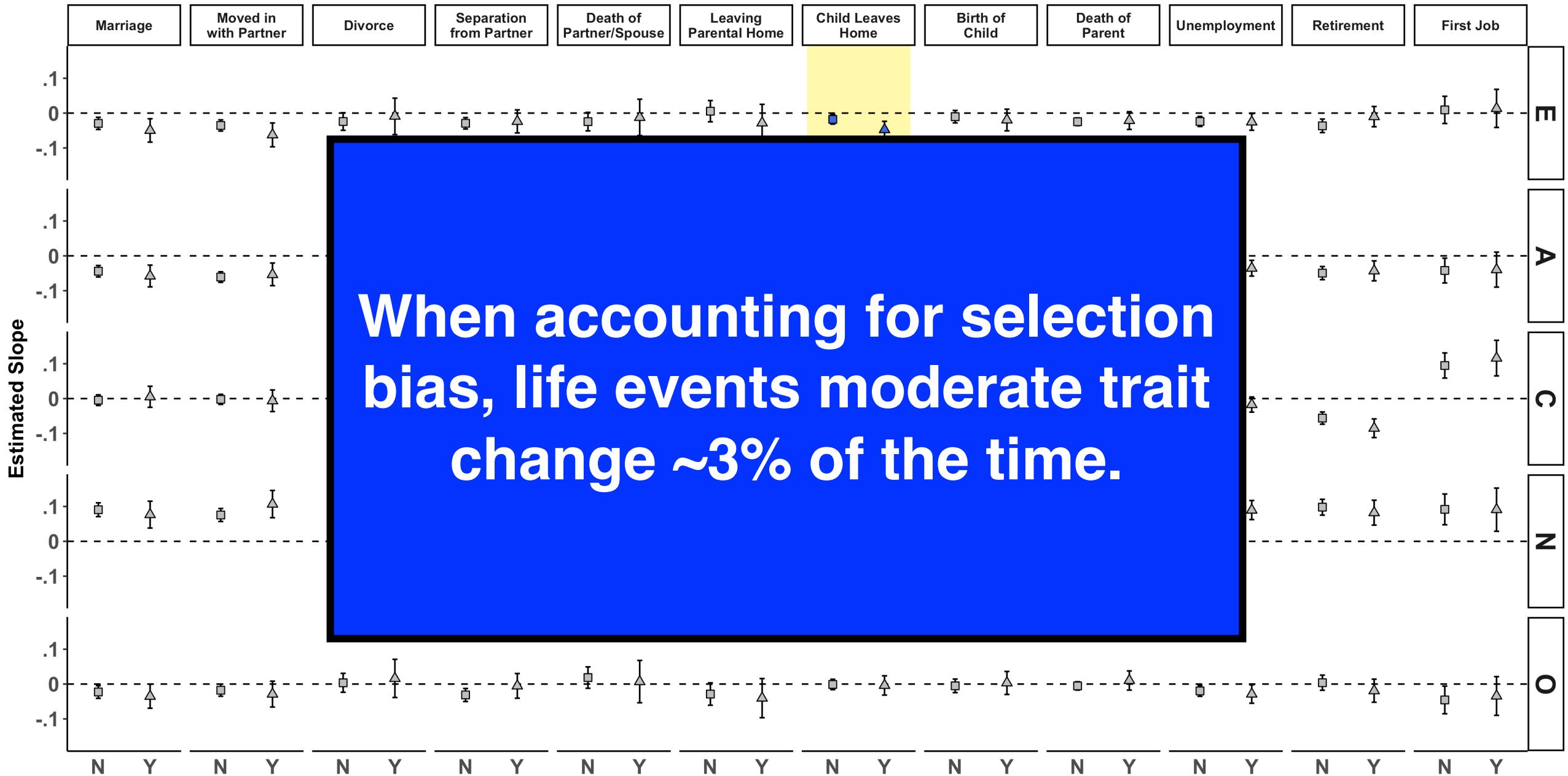


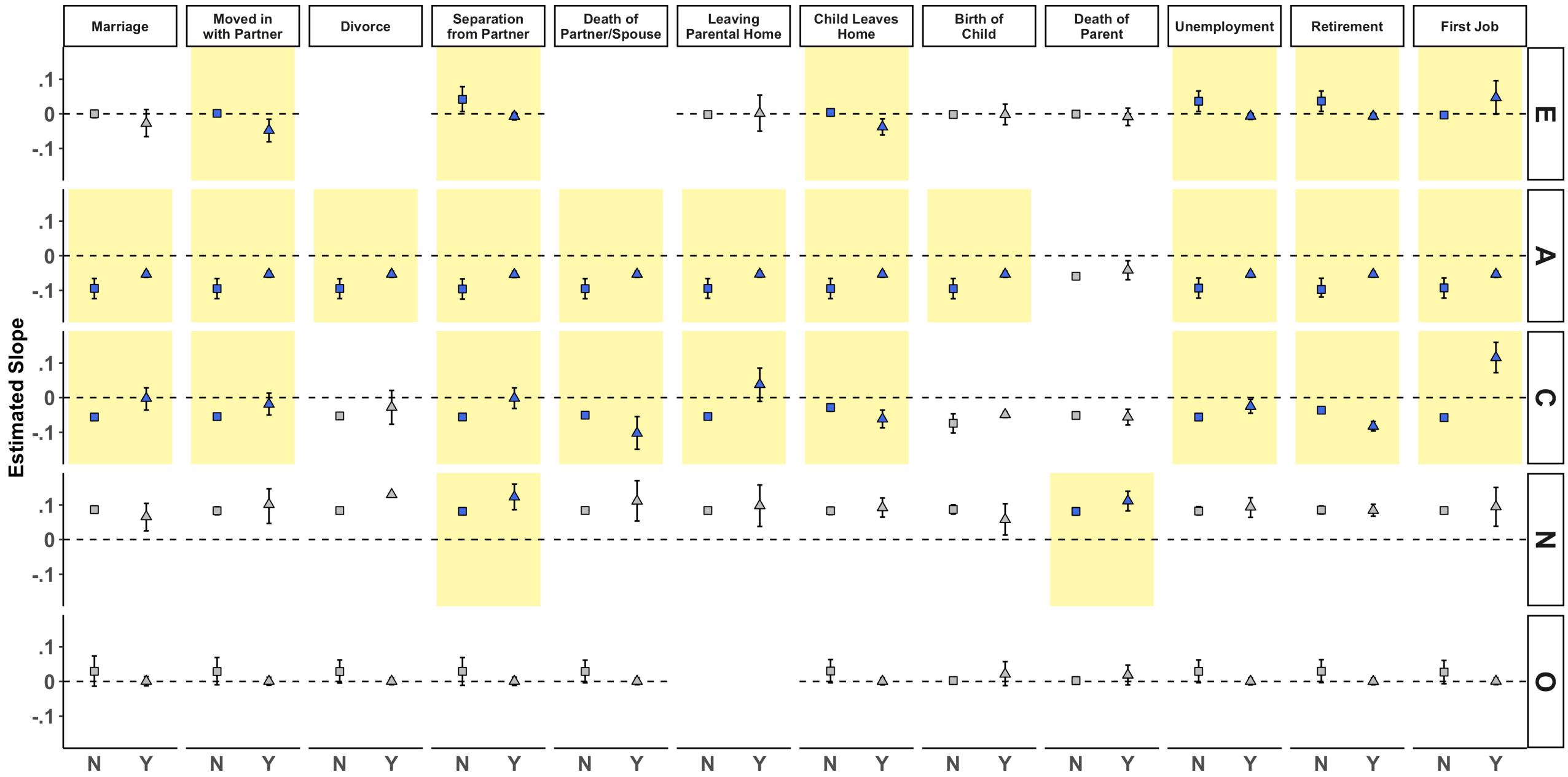
Life Events

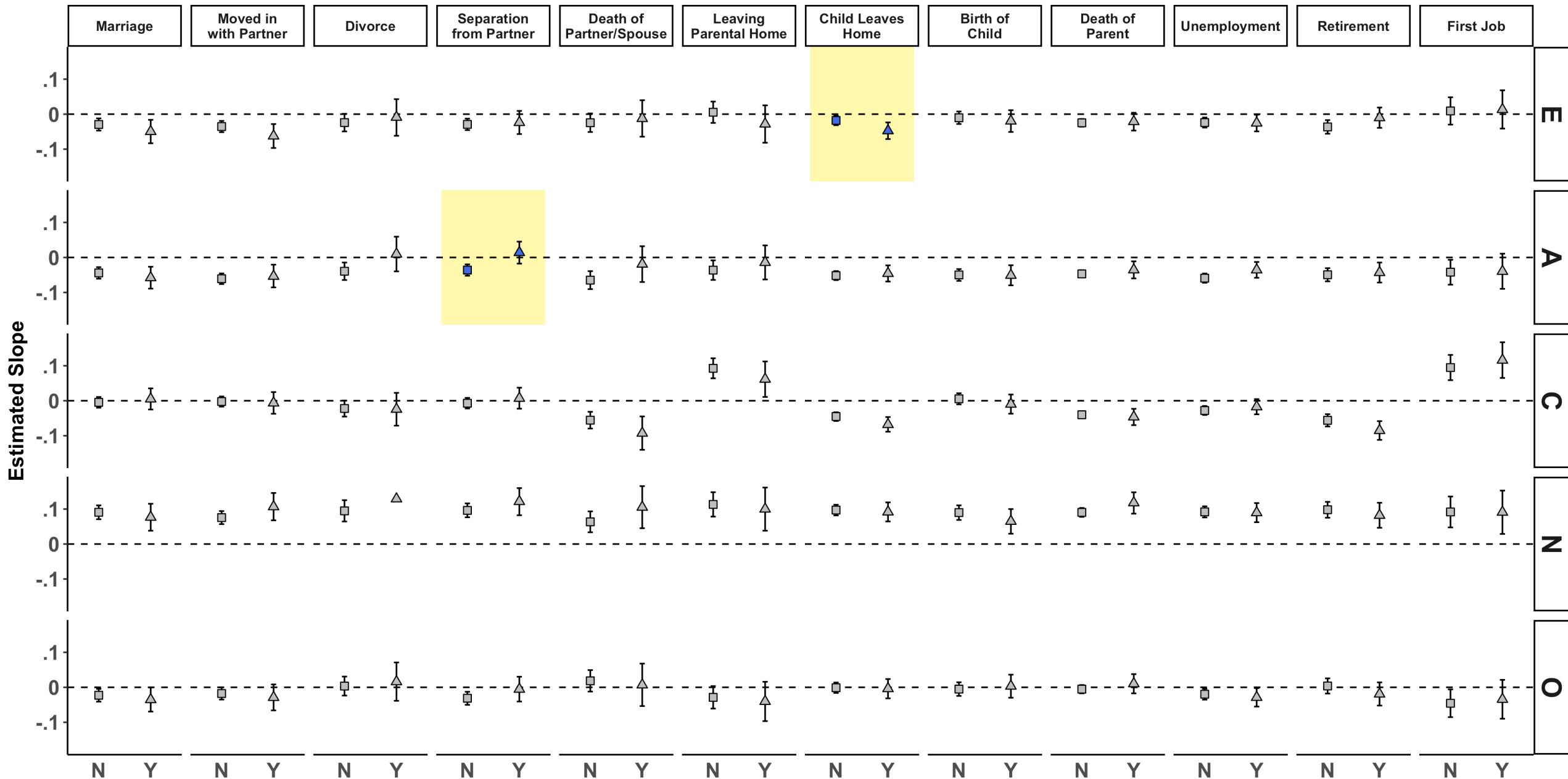












Summary

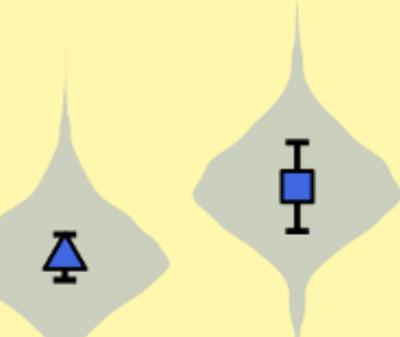
Few and small group differences in change as a function of experiencing life events.

Lots of individual differences in change not explained by experiencing events

So what are we missing about these individuals?

Separation from Partner

$d = 0.08$



-0.04

0.01

Roadmap for Today

Life events as mechanisms of personality trait change



Conceptualizing personality and personality change idiographically



Nonlinear changes in idiographic personality and life events

Roadmap for Today

Life events aren't great proxy mechanisms of personality *trait* change



Conceptualizing personality and personality change idiographically



Nonlinear changes in idiographic personality and life events

Roadmap for Today

Life events aren't great proxy mechanisms of personality trait change



Conceptualizing personality and personality change idiographically



Nonlinear changes in idiographic personality and life events

Change captured at the trait-level

**Answers questions about changes in one
or a small set of traits over time.**

**Between-Person
Variable Centered**



Change captured at the individual-level in patterns of states

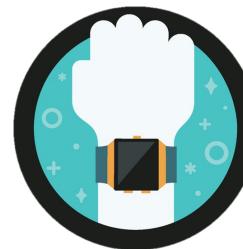
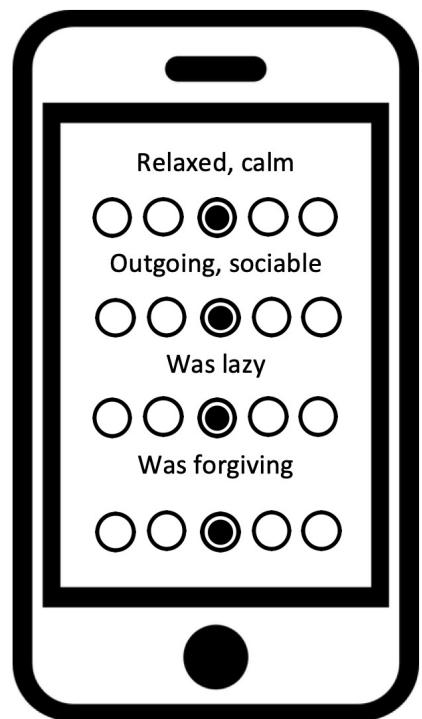
**Answers questions about what it means
for one person to change**

biographic

Person-Centered

ESM / EMA

Mobile Sensing



Methods

2 years of ESM responses from the Personality and Interpersonal Roles Study (PAIRS)

N = 372 Wash U undergrads, total assessments N = 17,715

Measures

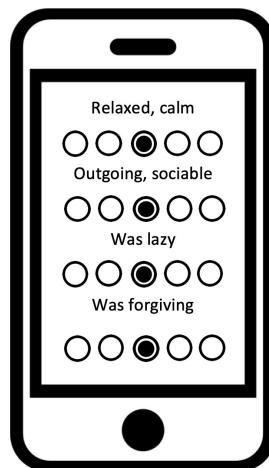
9 items from the Big Five Inventory (BFI)

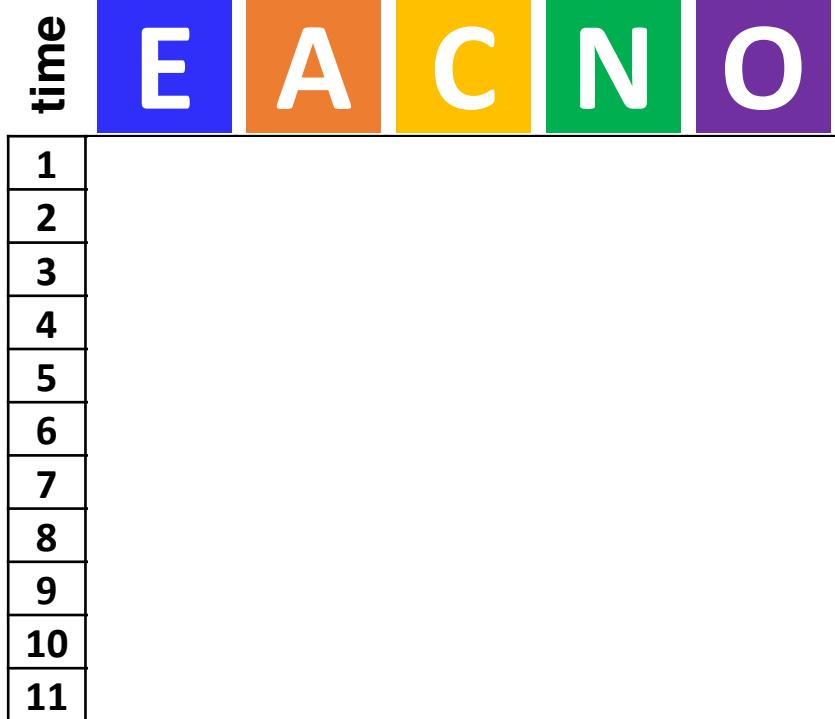
Procedure

4 assessments / day for 15 days

Modeling

Graphical vector autoregression





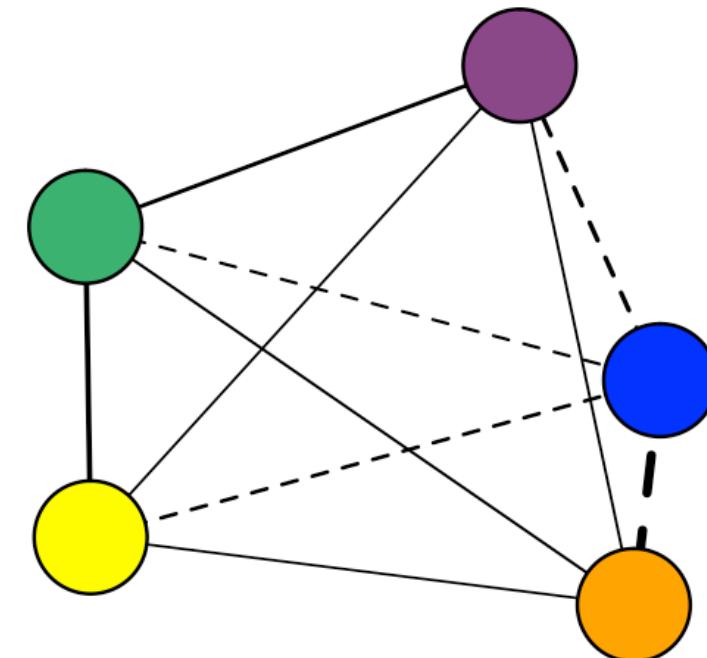
E					
A	0.02				
C	-0.05	0.08			
N	0.64	-0.12	-0.10		
O	0.26	-0.27	0.43	0.07	

Contemporaneous: Within Time-Points
 $X_{it} \leftrightarrow X_{jt}$

(Beck & Jackson, 2020a)



time	E	A	C	N	O
1	4	2	3	2	4
2	2	3	4	1	4
3	3	3	2	2	4
4	3	1	3	2	3
5	4	4	3	2	2
6	4	1	2	3	4
7	2	2	2	2	1
8	4	2	3	3	4
9	3	2	2	1	2
10	4	2	3	3	3
11	3	1	3	2	5

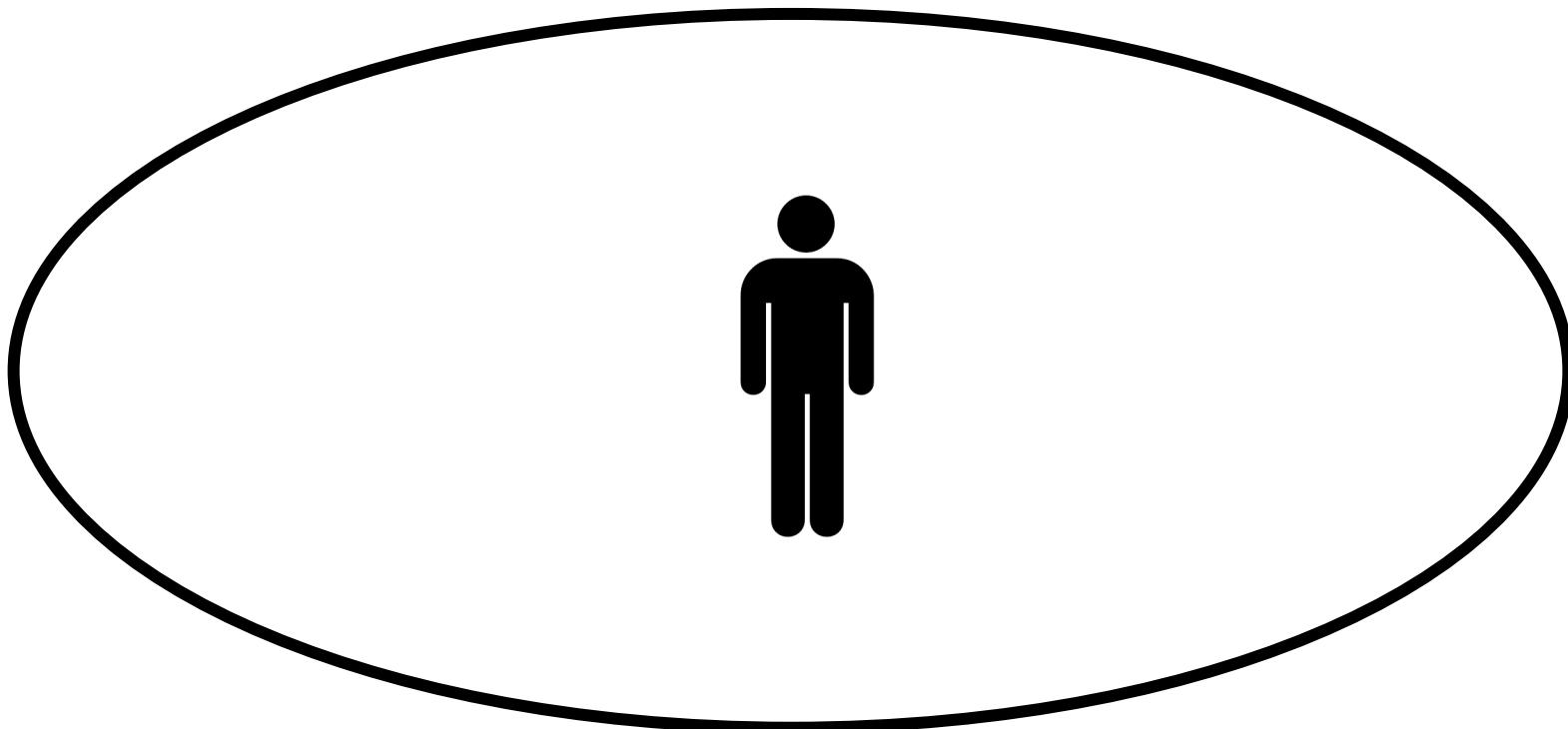


Contemporaneous: Within Time-Points

$$X_{it} \leftrightarrow X_{jt}$$

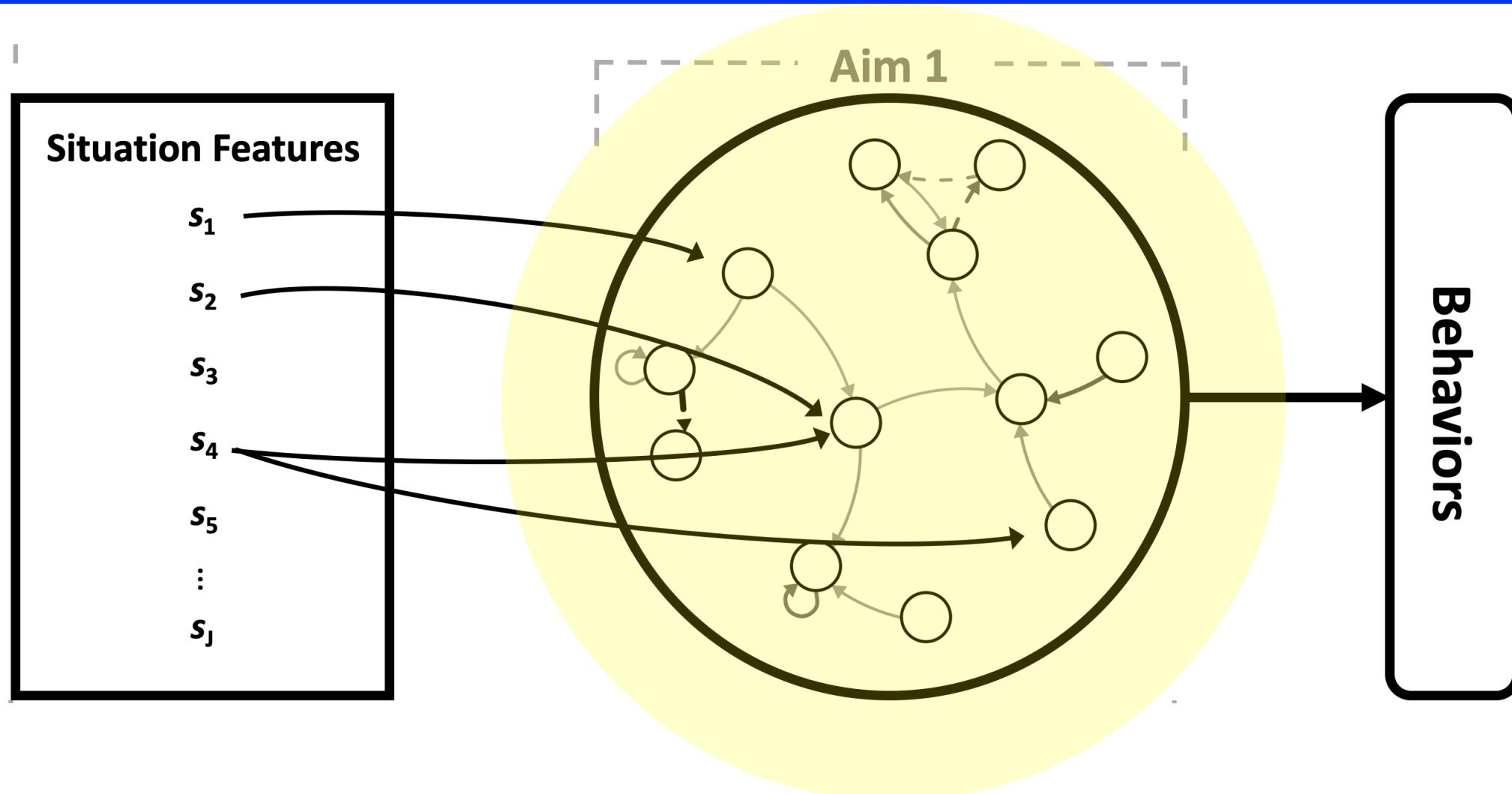
(Beck & Jackson, 2020a)

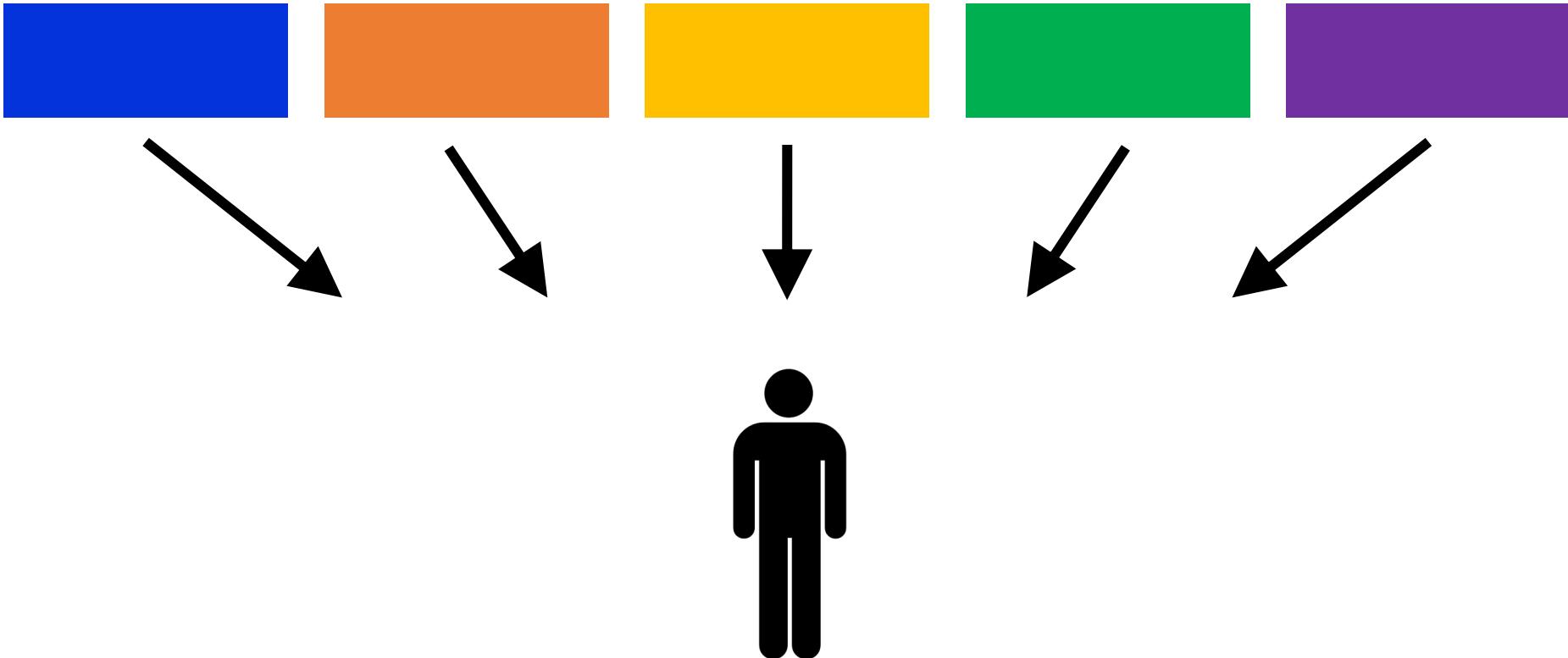
Persons in Context



e.g., Lewin, 1936

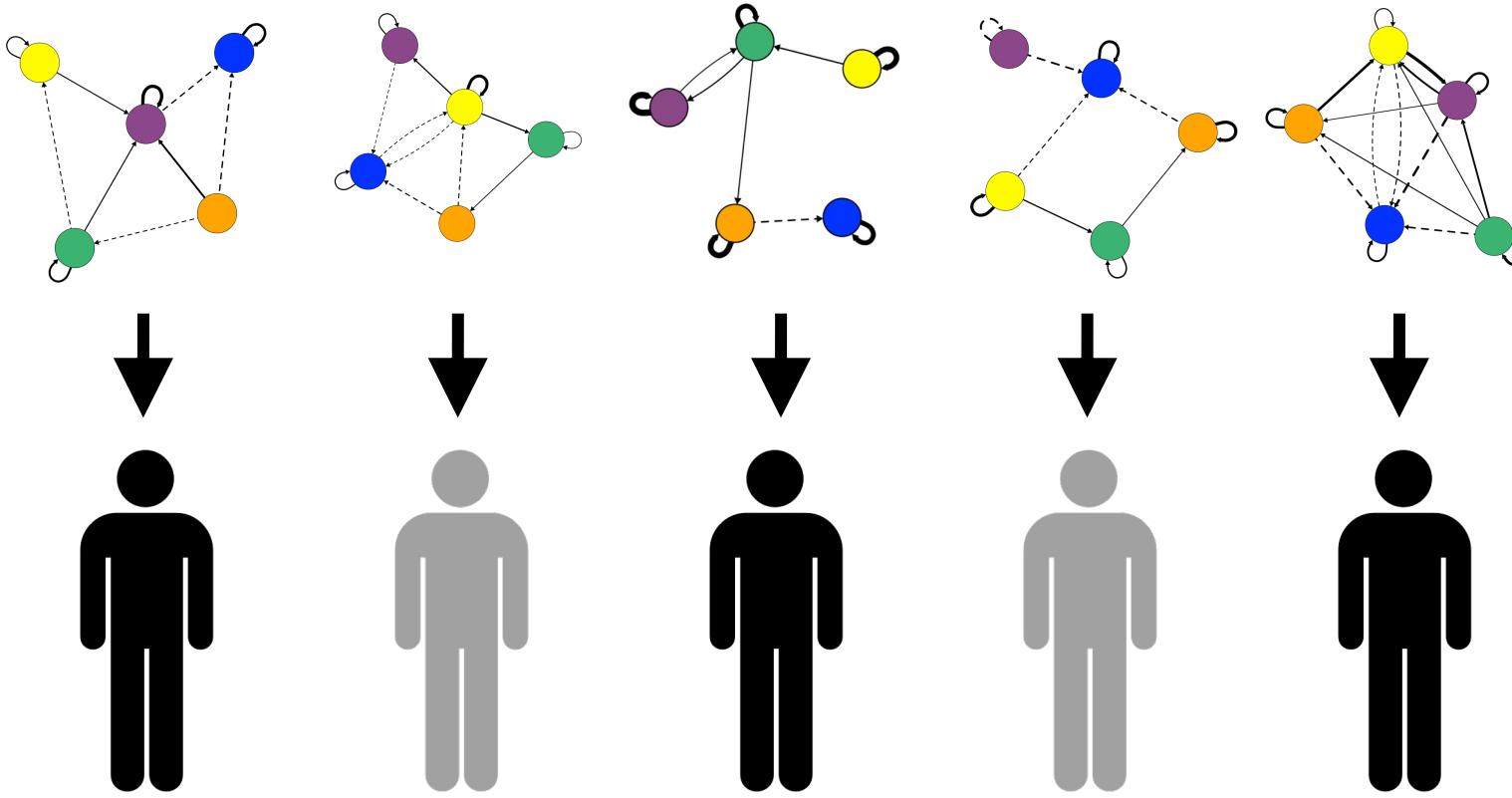
Personality as a Cognitive Affective Personality System (CAPS)





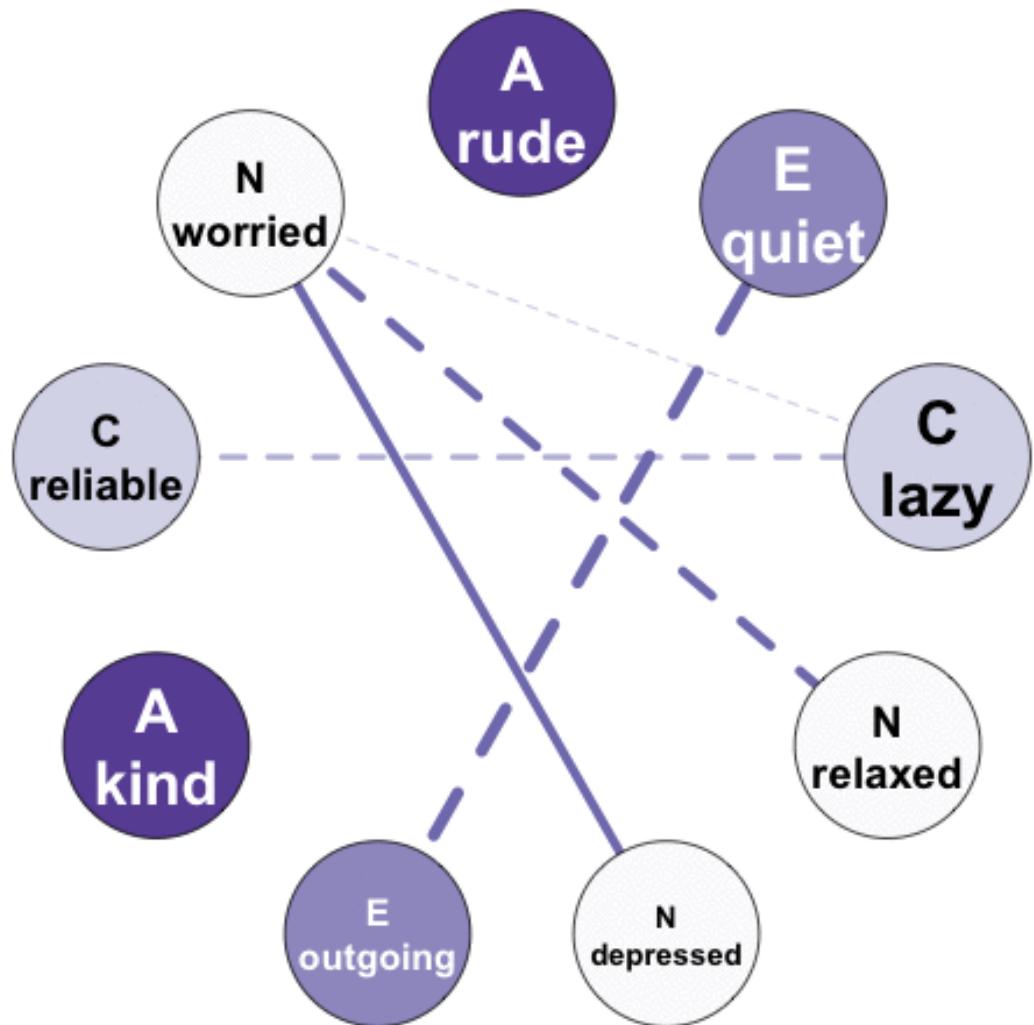
Idiographic Person-Centered

e.g., Beck & Jackson, 2020a, *JPSP*; 2020b, *CDPS*



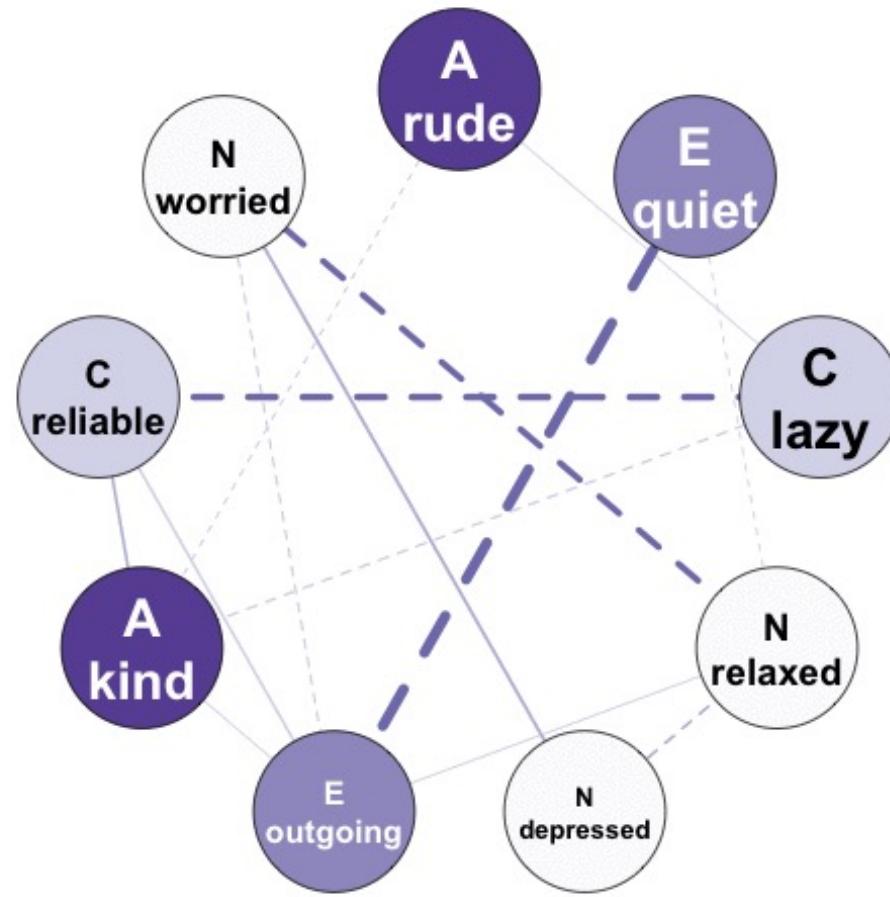
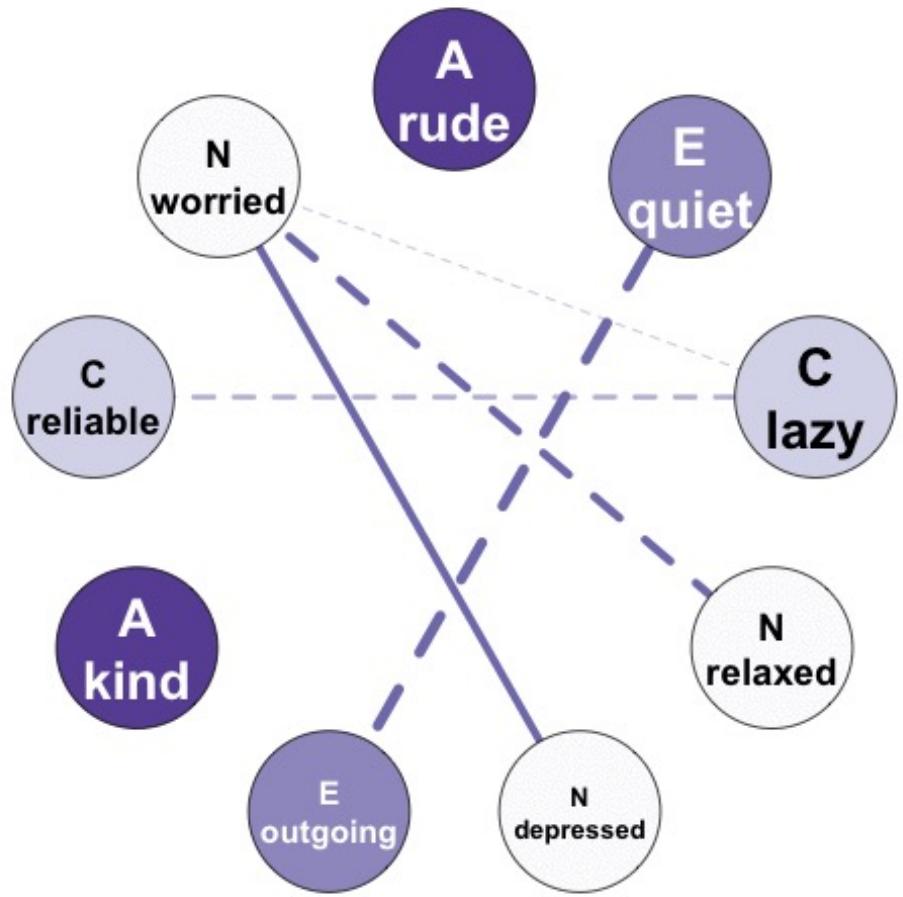
**Idiographic
Person-Centered**

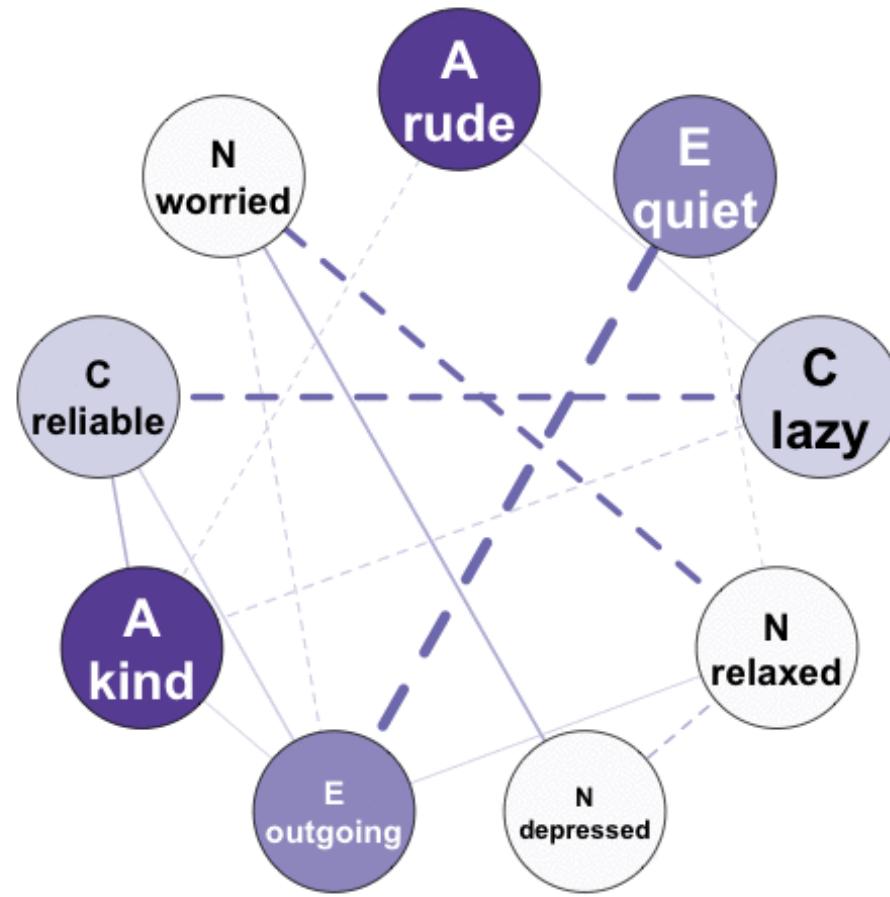
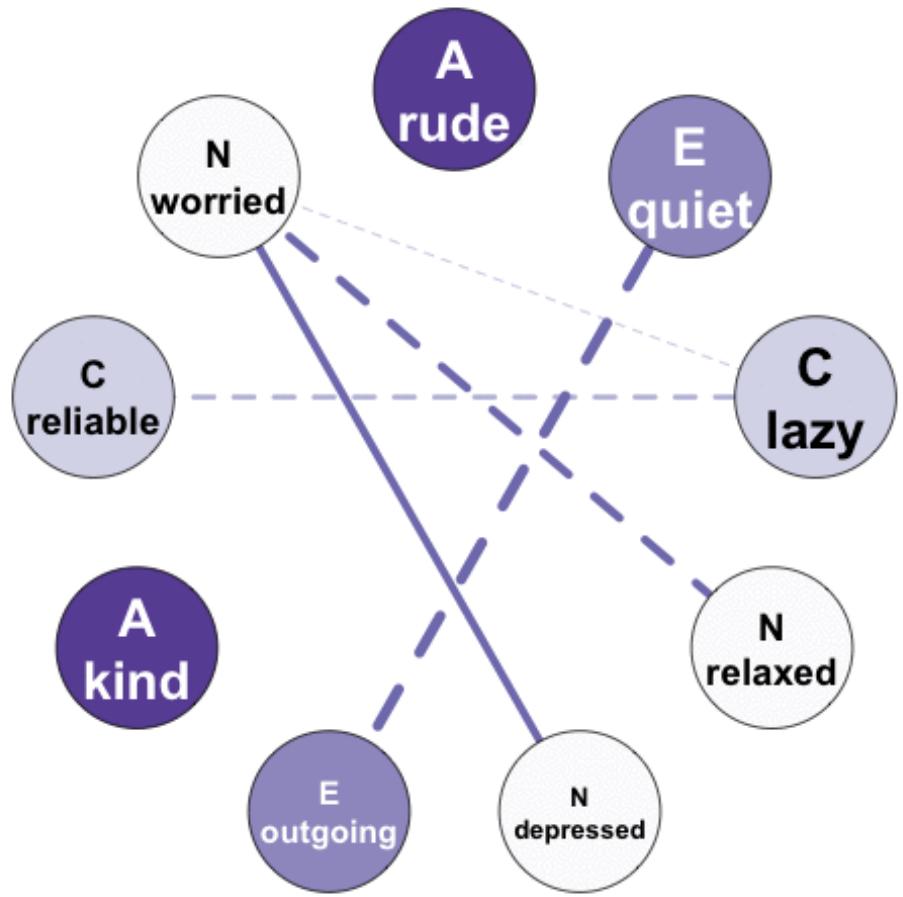
Research Question:
**Do idiographic personality structures (i.e.
measures of persons in contexts)
demonstrate consistency over two-years?**

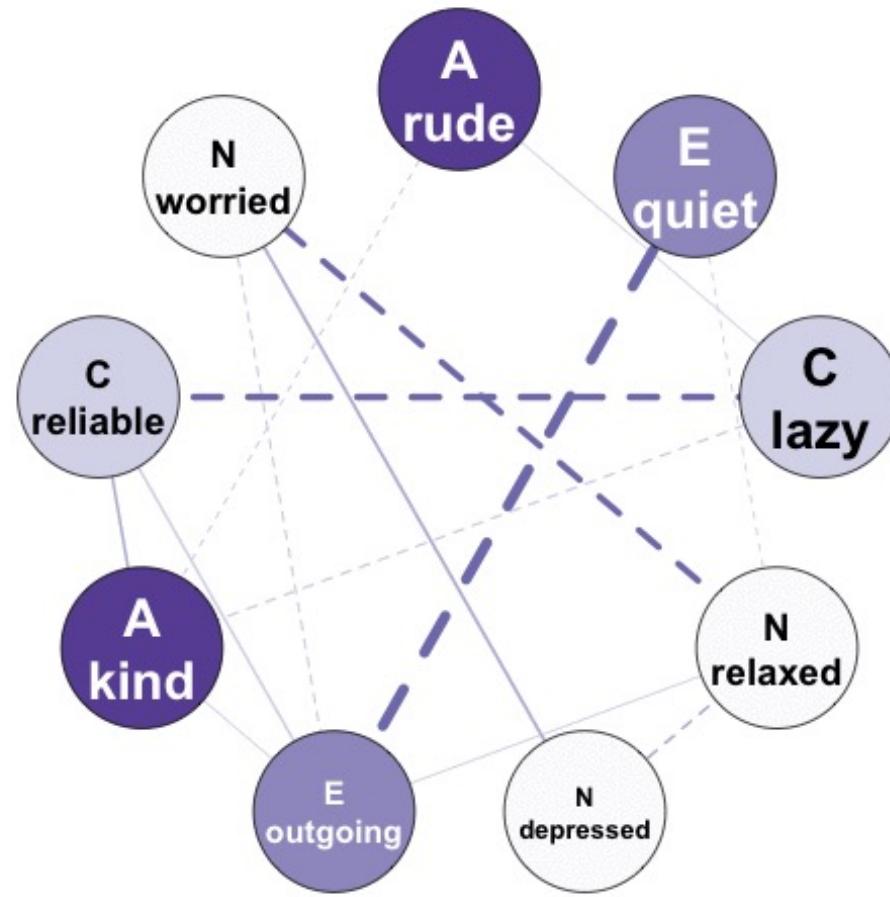
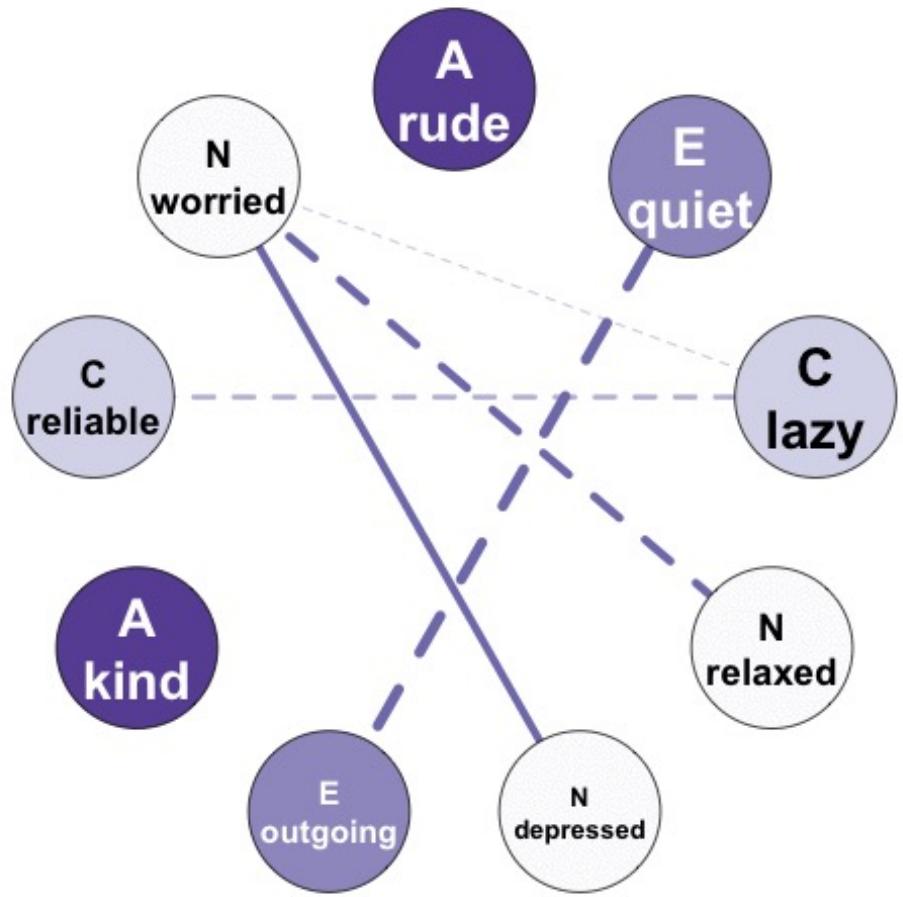


The structures differ
across people.

But do they show
expected longitudinal
consistency?

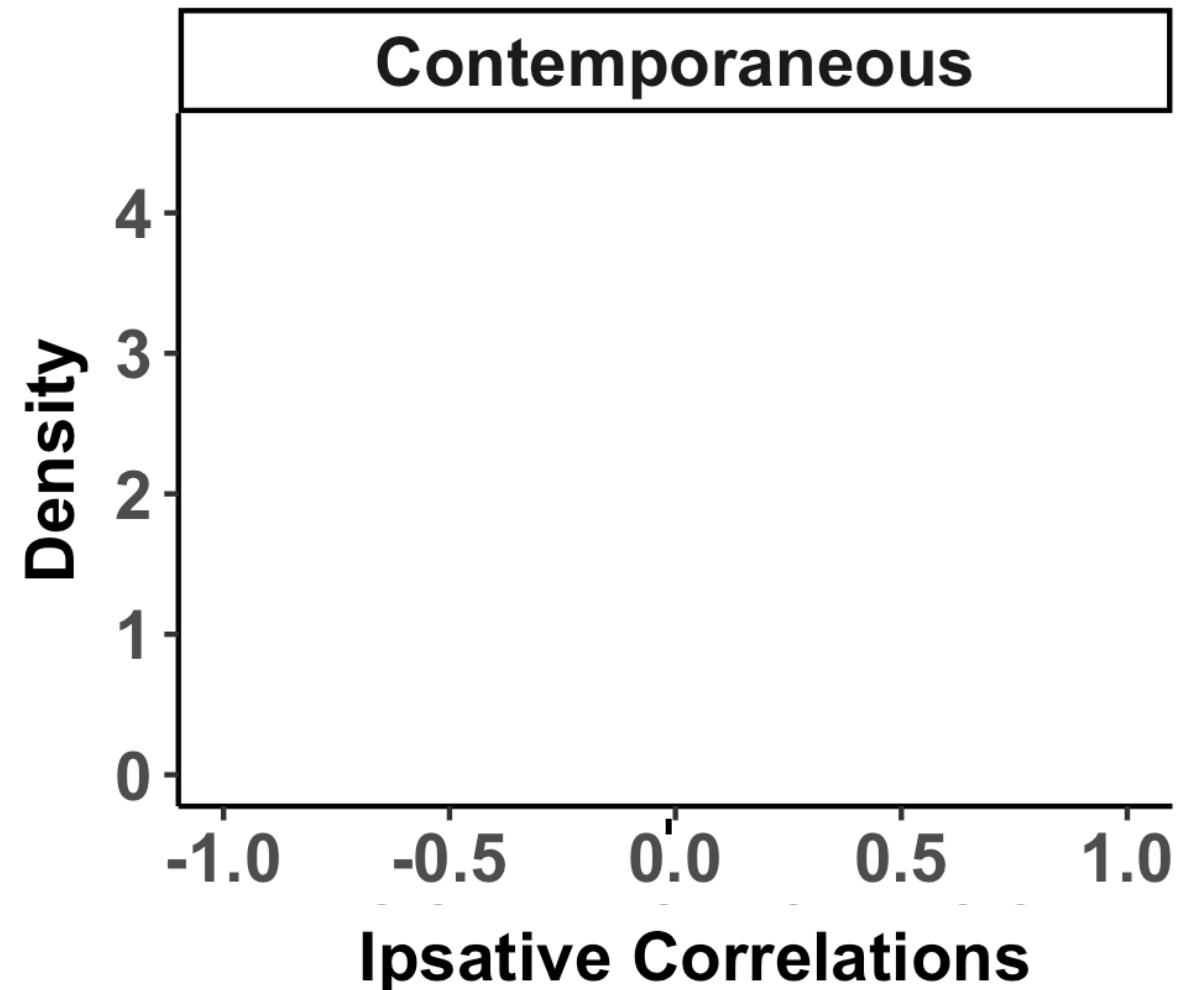






How consistent is
idiographic personality
across two
years?

Ipsative Network Consistency

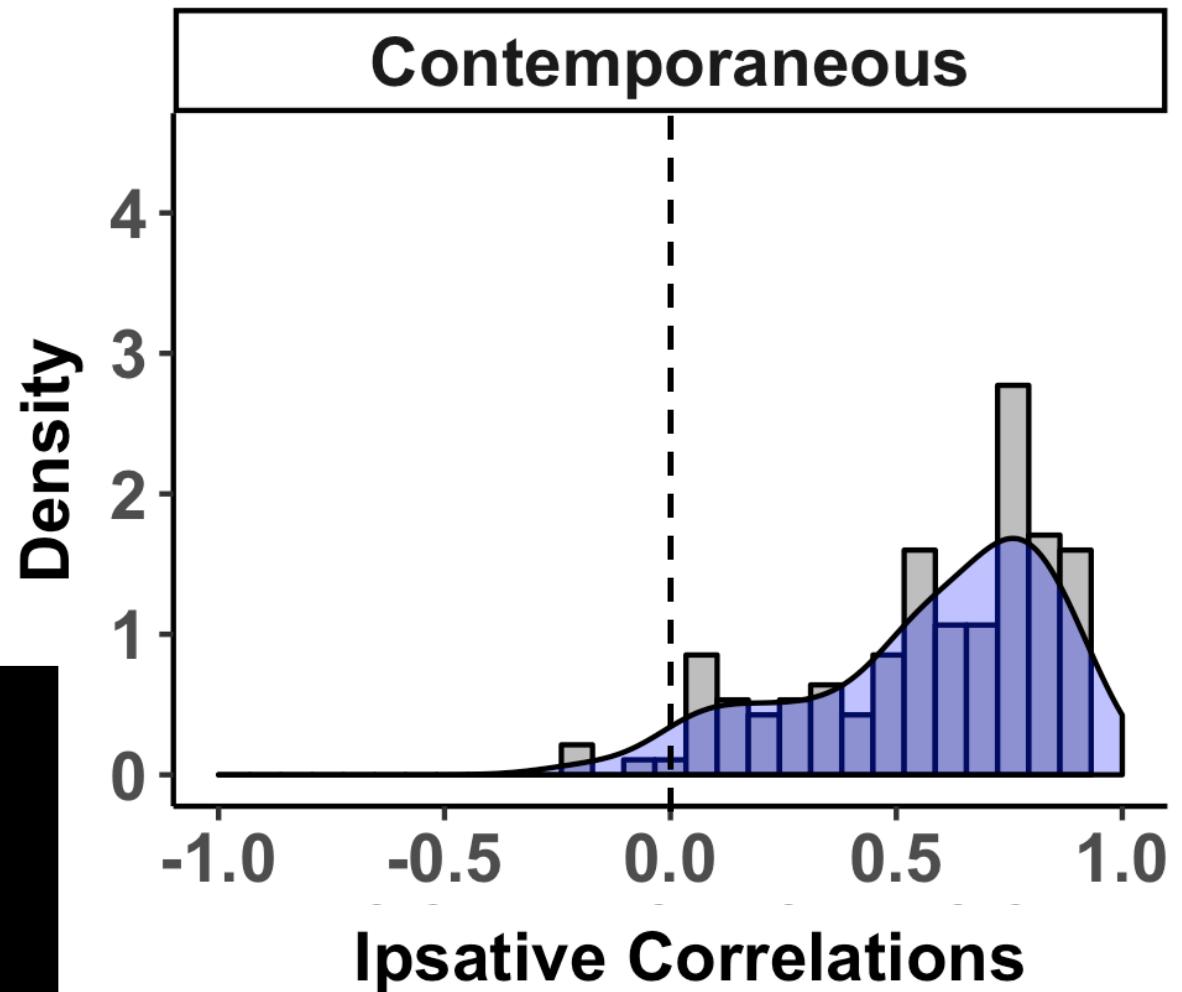


How consistent is
idiographic personality
across two
years?

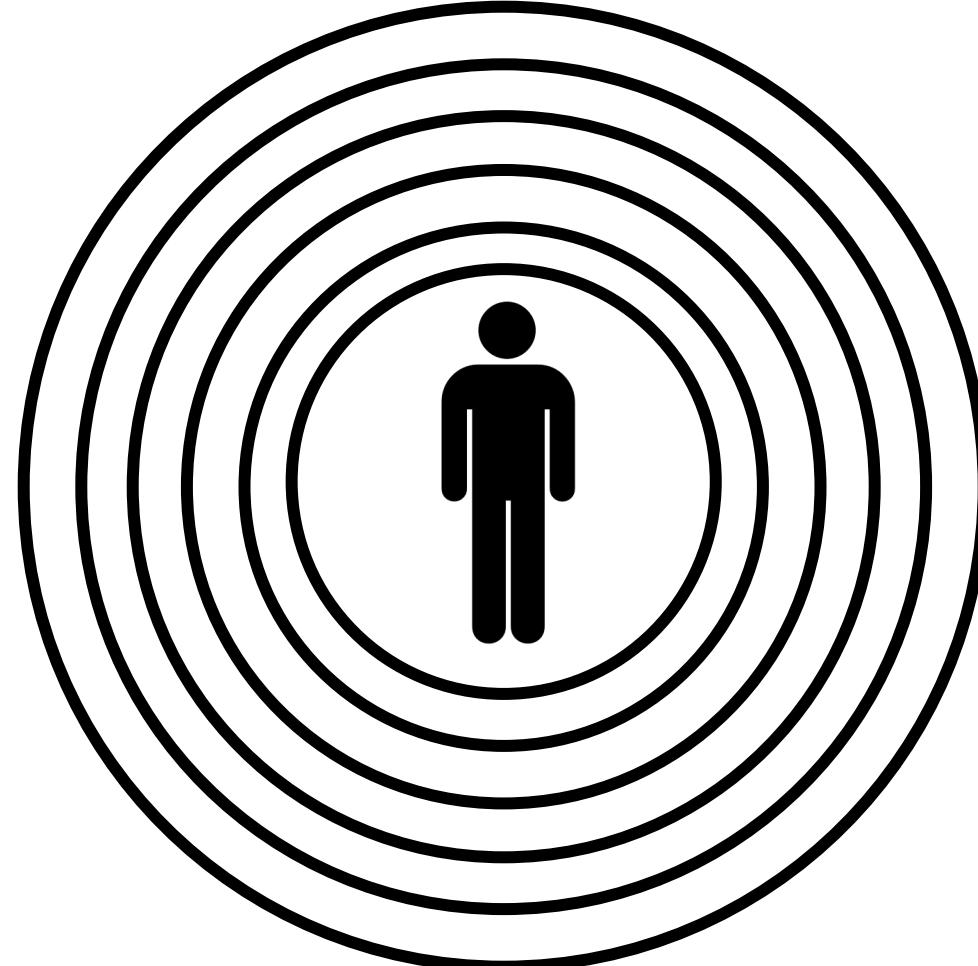
Idiographic Personality is
consistent over two years.

Ipsative Network Consistency

Contemporaneous



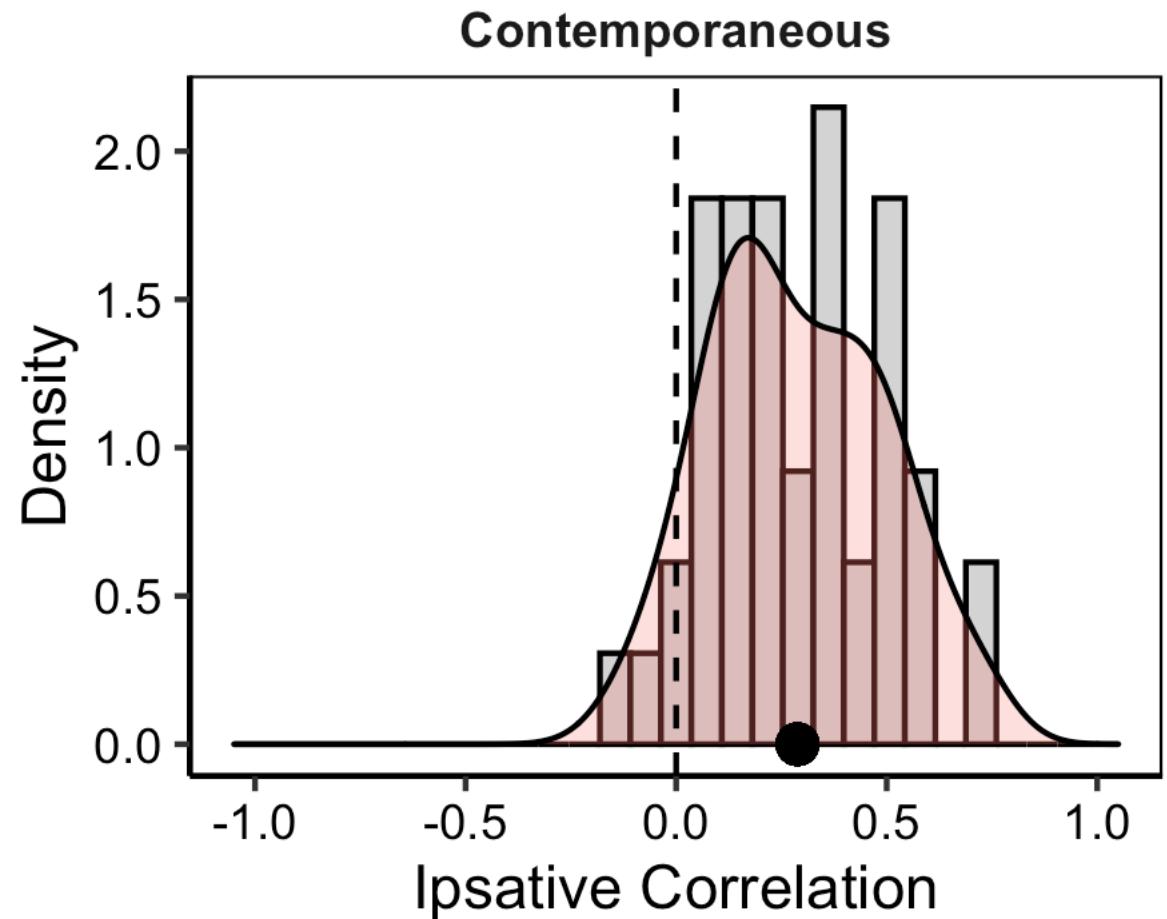
Persons in Context



e.g., Bronfenbrenner, 1979

**How consistent is
idiographic personality
across two
years?**

**Idiographic Personality is
consistent over two years AND
global events.**

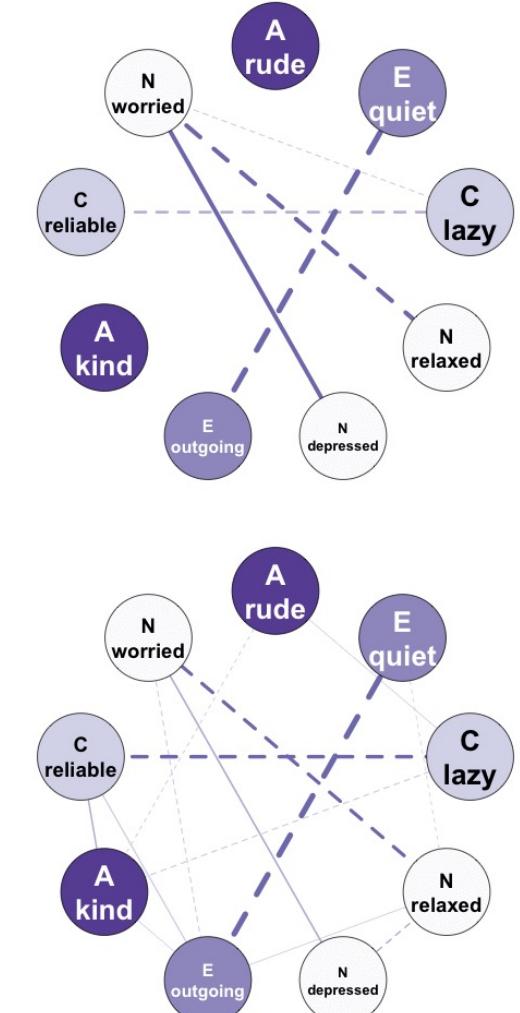


Summary: Idiographic personality structures are...

Unique (i.e. differ across people).

Relatively consistent over time.

Relatively consistent across global events.



Roadmap for Today

Life events aren't great proxy mechanisms of personality trait change



Conceptualizing personality and personality change idiographically



Nonlinear changes in idiographic personality and life events

Roadmap for Today

Life events aren't great proxy mechanisms of personality trait change



Idiographic personality structures differ across people and show consistency over years



Nonlinear changes in idiographic personality and life events

Roadmap for Today

Life events aren't great proxy mechanisms of personality trait change

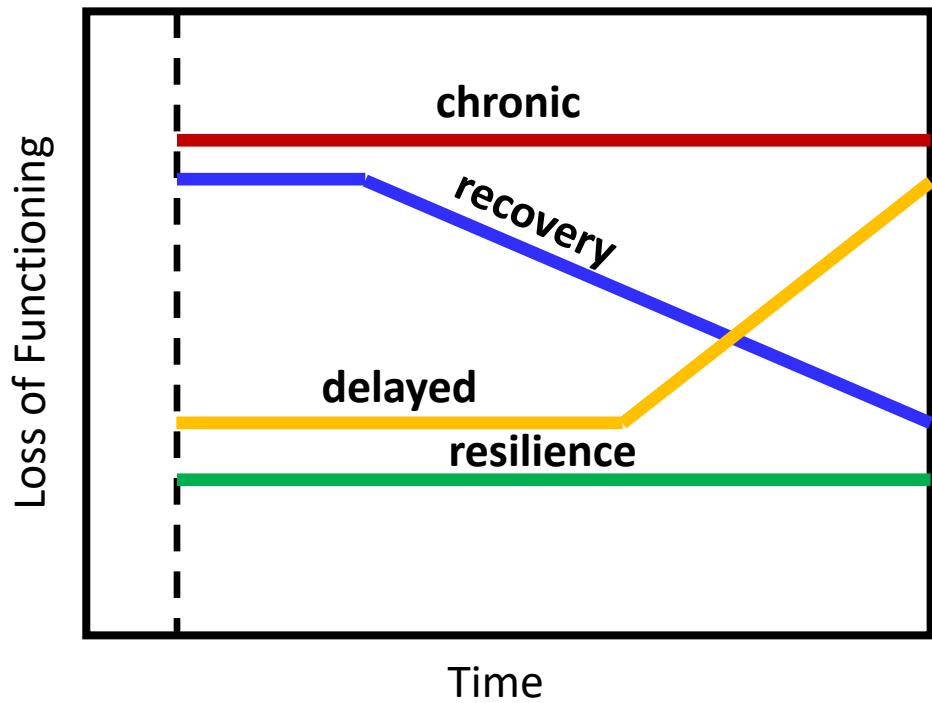


Idiographic personality structures differ across people and show consistency over years

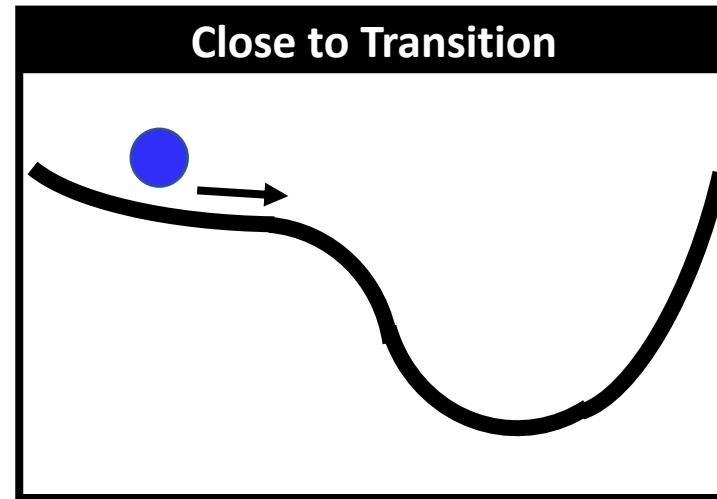


Nonlinear changes in idiographic personality and life events

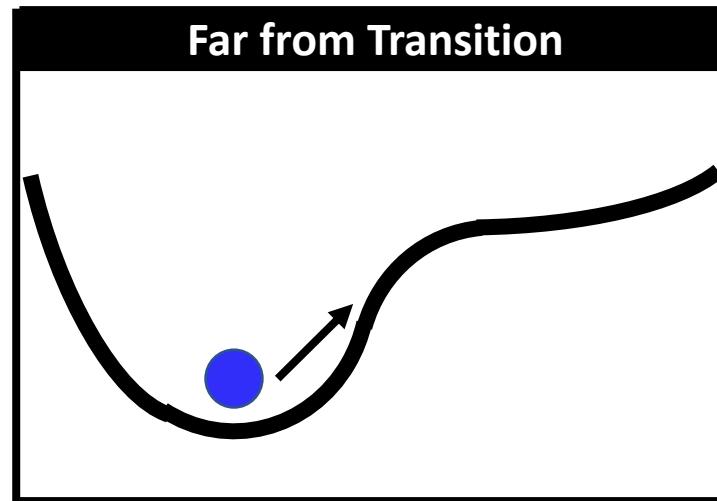
“Tipping Points”



Close to Transition



Far from Transition

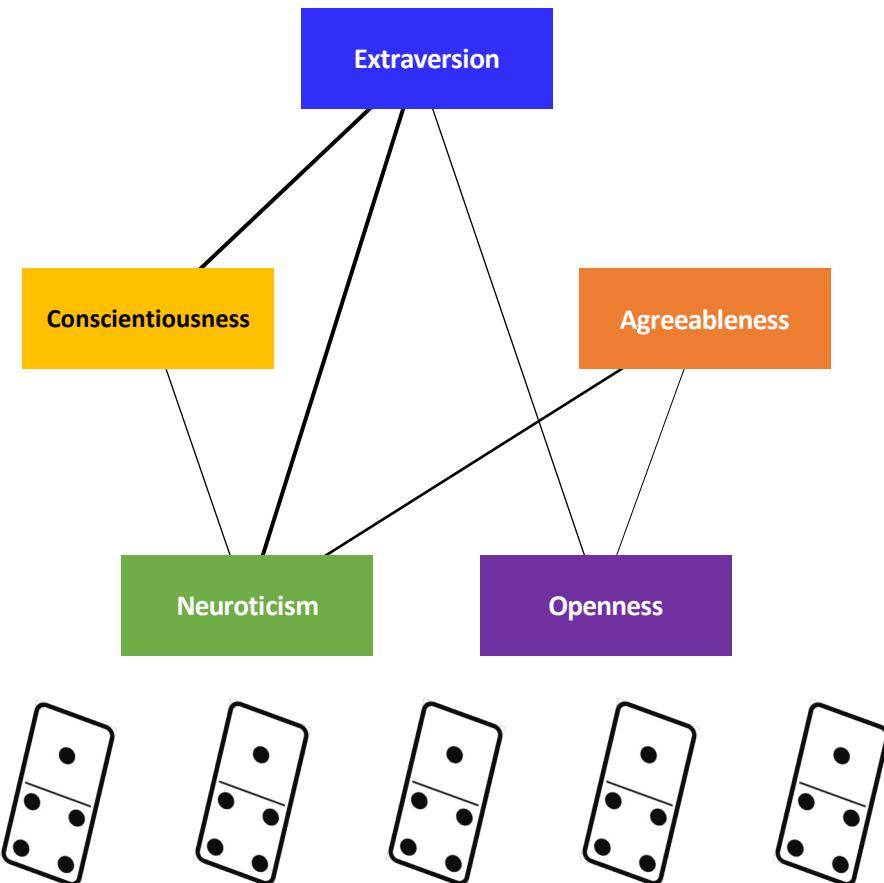


“No trait operates alone”

Allport, 1937, p. 330

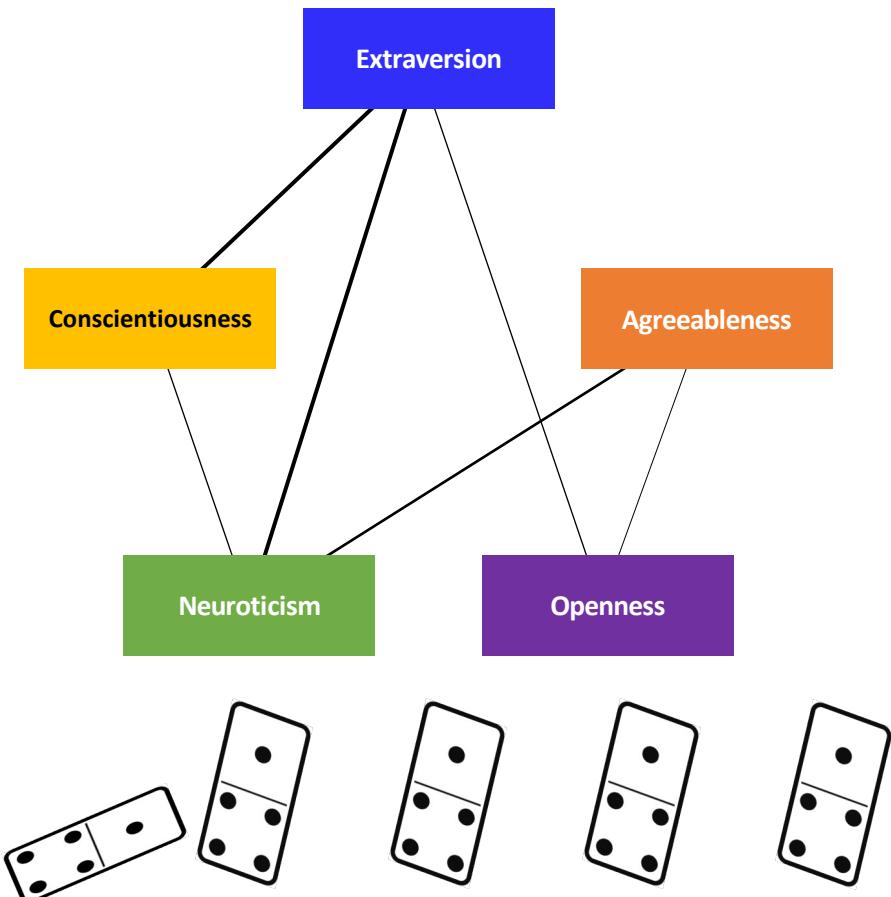
“No trait operates alone”

Allport, 1937, p. 330



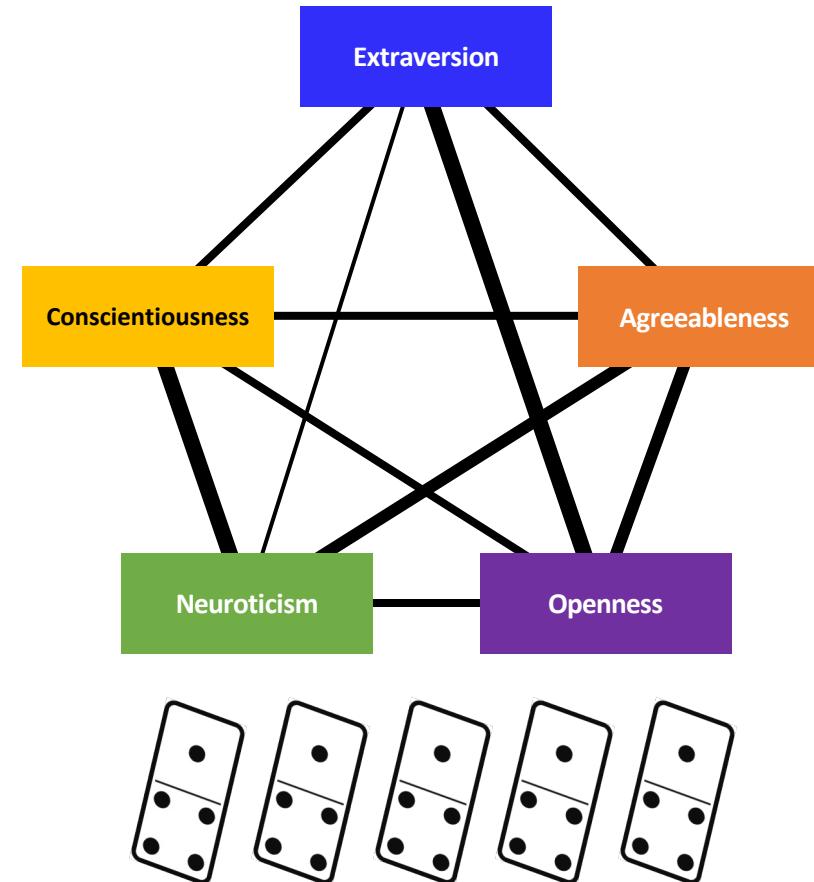
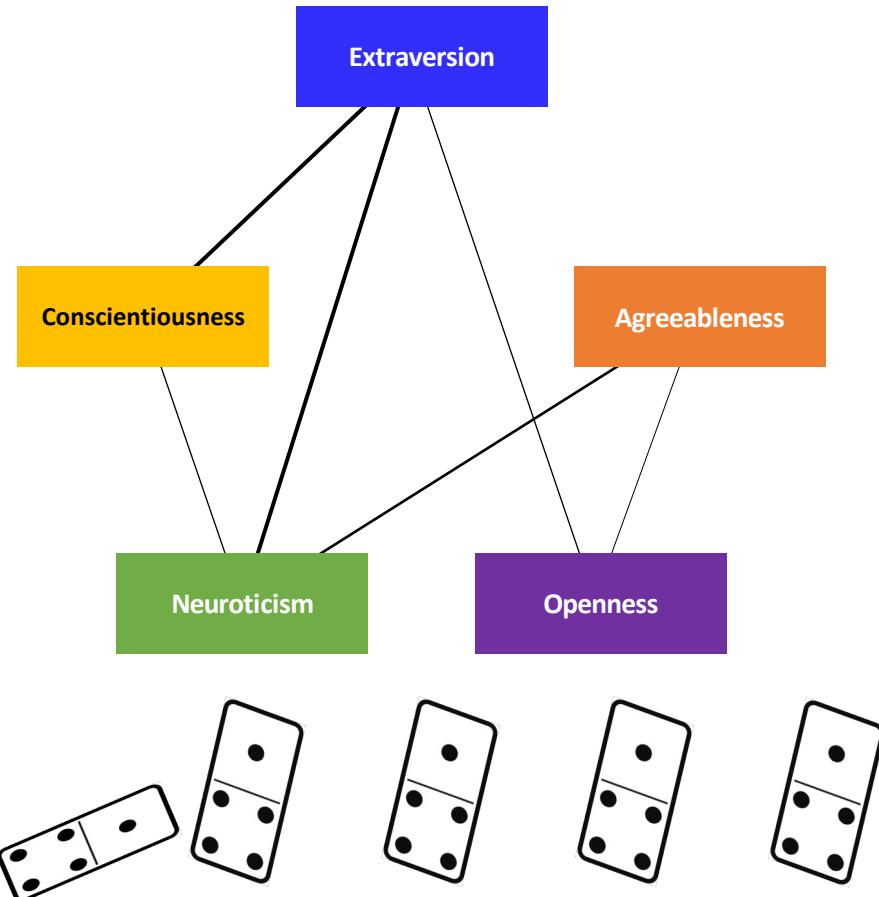
“No trait operates alone”

Allport, 1937, p. 330



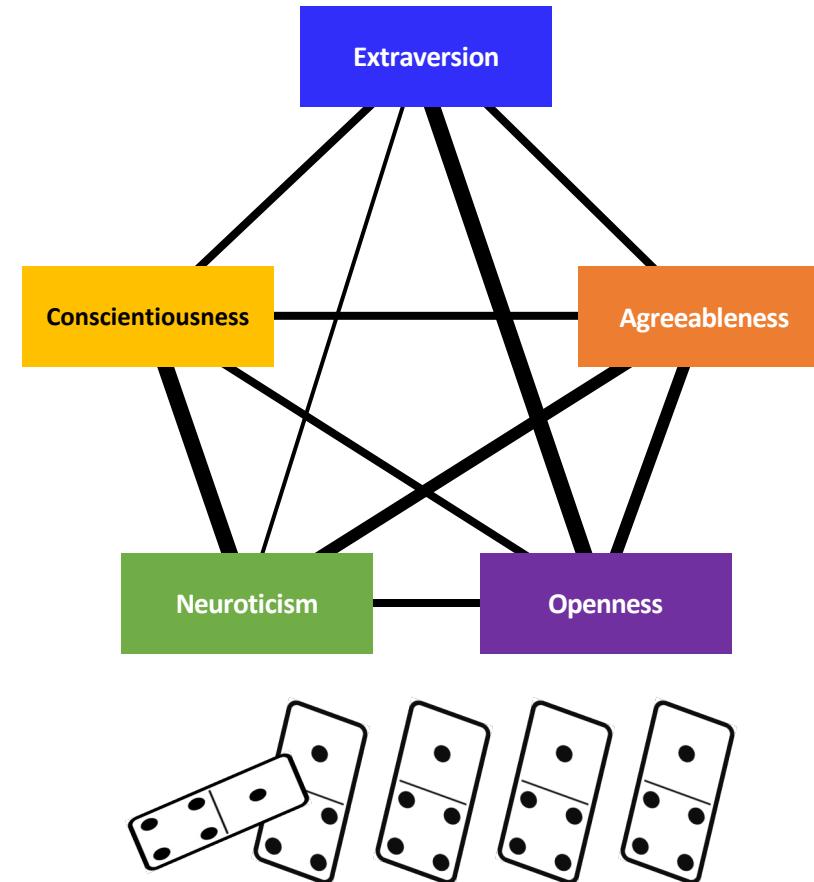
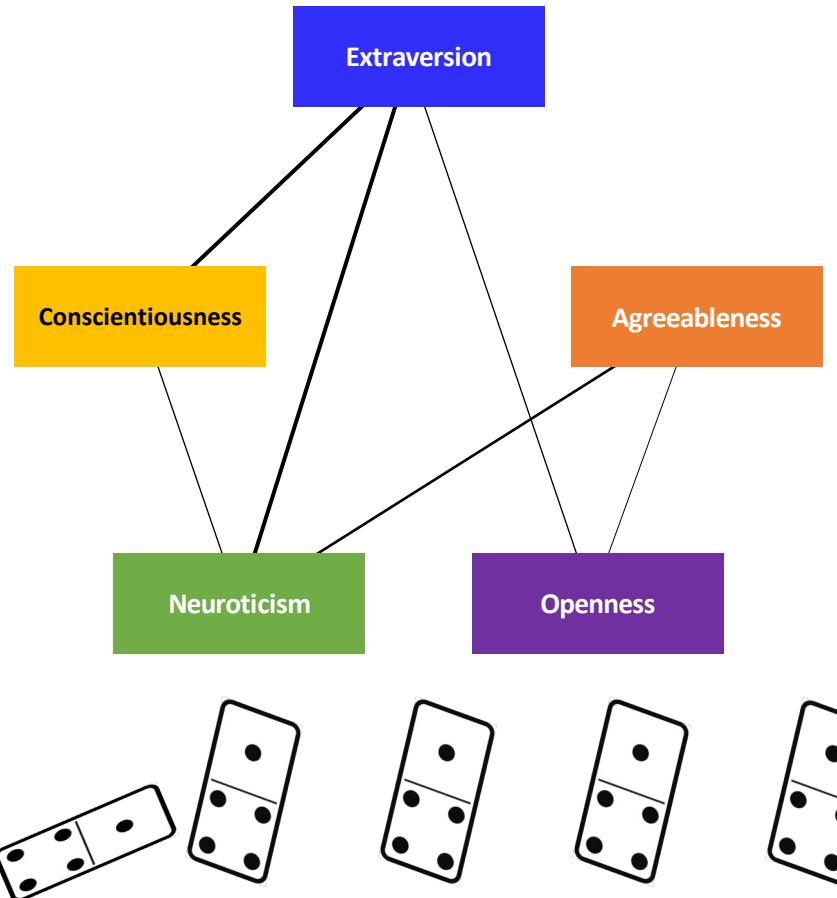
“No trait operates alone”

Allport, 1937, p. 330



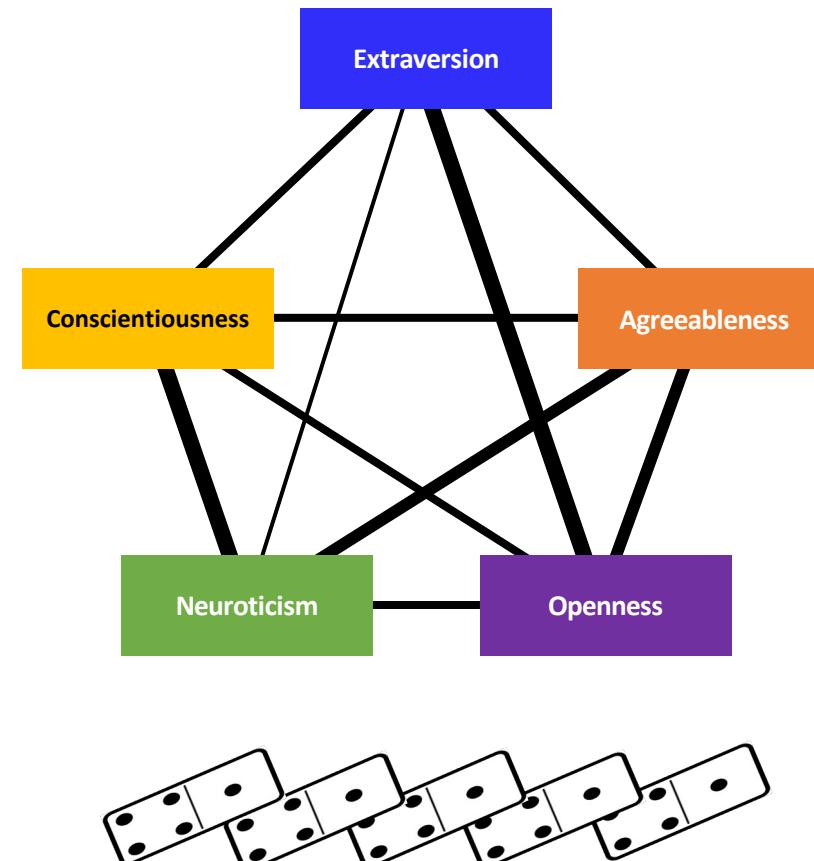
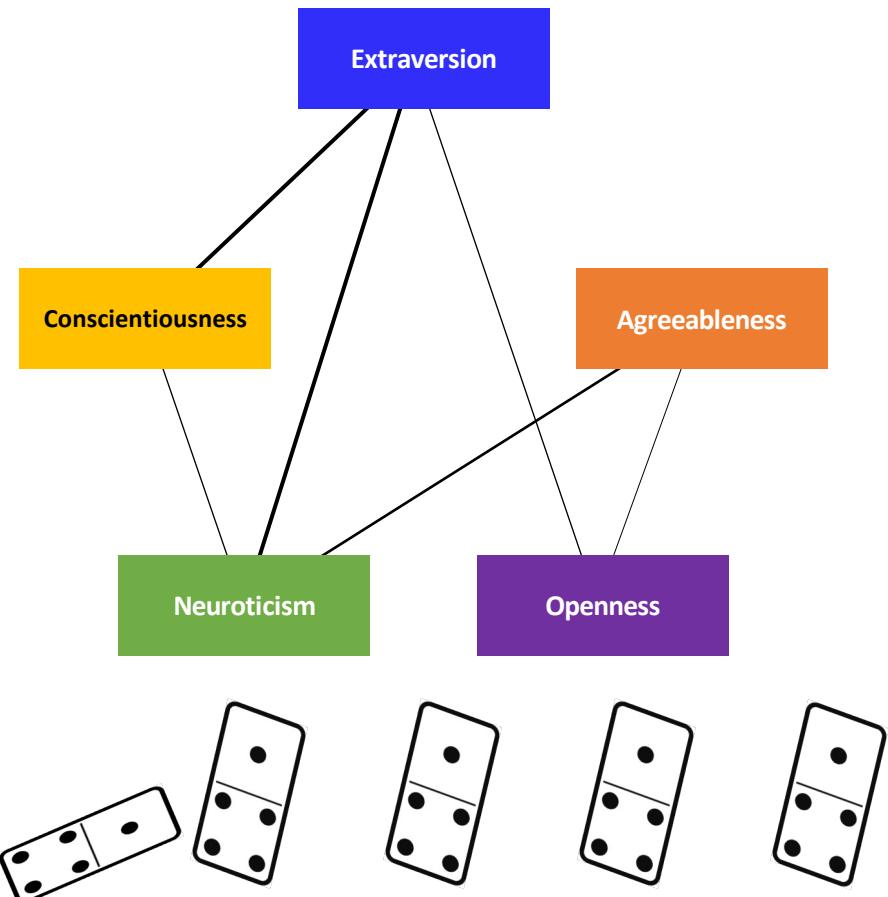
“No trait operates alone”

Allport, 1937, p. 330



“No trait operates alone”

Allport, 1937, p. 330





OPEN

Testing for the Presence of Correlation Changes in a Multivariate Time Series: A Permutation Based Approach

Jedelyn Cabrieto¹, Francis Tuerlinckx¹, Peter Kuppens¹, Borbála Hunyadi^{2,3} & Eva Ceulemans¹

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Fraley Longitudinal Project

E Extraverted, enthusiastic

Reserved, quiet (-)

A Critical, quarrelsome (-)

Sympathetic, warm

C Dependable, self-disciplined

Disorganized, careless (-)

N Anxious, easily upset

Calm, emotionally stable (-)

O Open to new experiences, complex

Conventional, uncreative (-)

Baseline



60 weeks

Personality

Life Events

Preregistration: <https://osf.io/mfn8w/>

1

Moving Window Correlations

2

Gaussian Similarity between all possible phases for different k

3

Calculate average within-phase Variance of Gaussian Similarity

4

Repeat steps 1 and 2 for 1000 permuted data sets

5

Perform the variance test

6

Perform the variance drop test

7

Declare significance if either the variance or variance drop tests passes

8

Keep k of minimum penalized average within-phase variance

$$Gk(\mathbf{R}_i, \mathbf{R}_j) = \exp\left(-\frac{\|\mathbf{R}_i - \mathbf{R}_j\|^2}{2h_R^2}\right)$$

$$\mathbf{R}_i = \begin{bmatrix} w_{i,1} \\ w_{i,2} \\ \vdots \\ w_{i,\frac{V(V-1)}{2}} \end{bmatrix}$$

$$\hat{R}(\tau_1, \tau_2, \dots, \tau_K) = \frac{1}{n} \sum_{p=1}^{K+1} \hat{V}_p, \tau_1, \tau_2, \dots, \tau_K$$

$$\hat{V}_{p,\tau_1,\tau_2,\dots,\tau_K} = (\tau_p - \tau_{p-1}) - \frac{1}{\tau_p - \tau_{p-1}} \sum_{i=\tau_{p-1}+1}^{\tau_p} \sum_{j=\tau_{p-1}+1}^{\tau_p} Gk(\mathbf{R}_i, \mathbf{R}_j)$$

$$p_{variancetest} = \frac{\#(\hat{R}_{min,K=0,perm} > \hat{R}_{min,K=0})}{B}$$

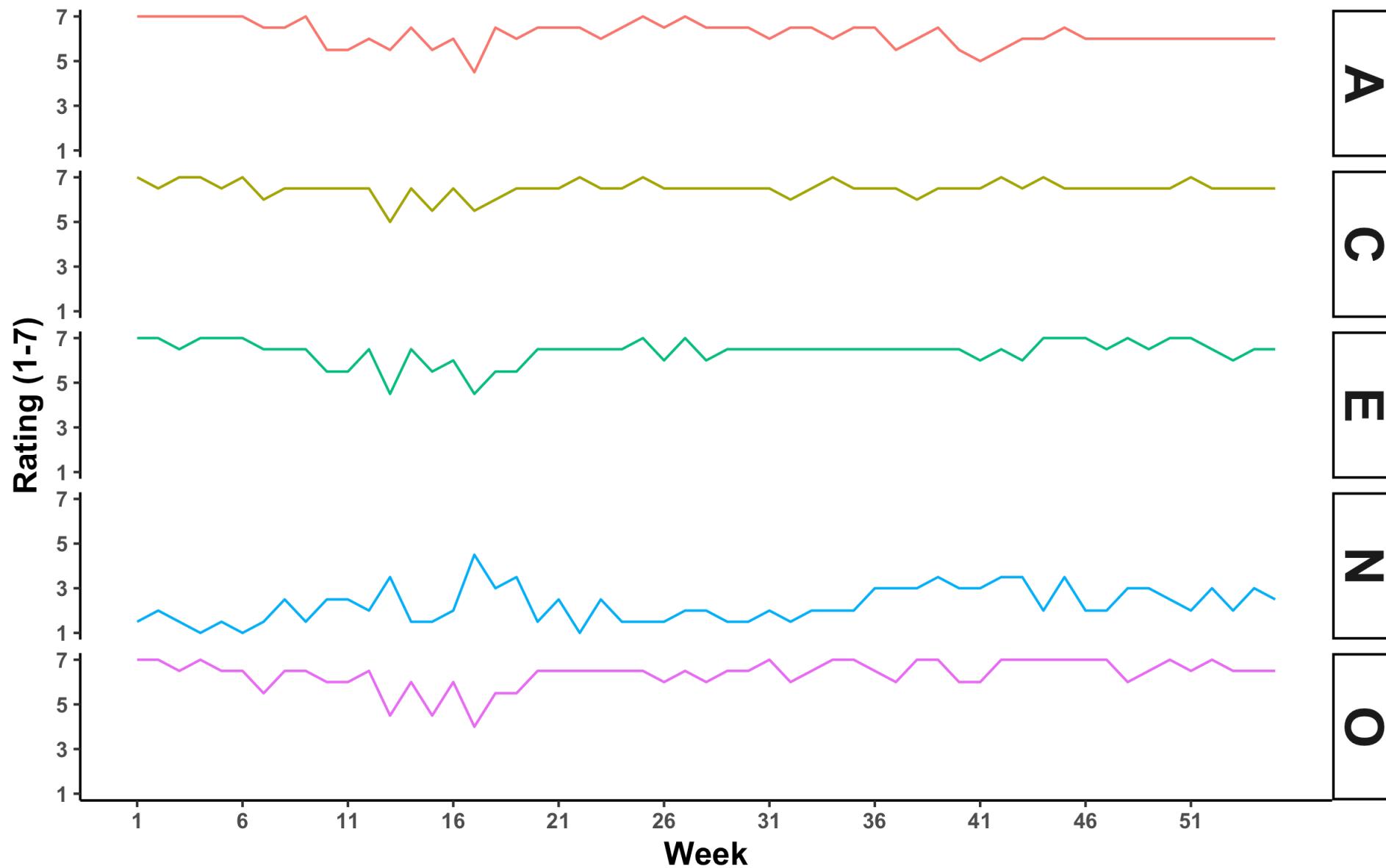
$$p_{variancedrop} = \frac{\#(\max variance drop_{perm} > \max variance drop)}{B}$$

$$pen_K = C \frac{V_{max}}{n} (K+1) [1 + \log(\frac{n}{K+1})]$$

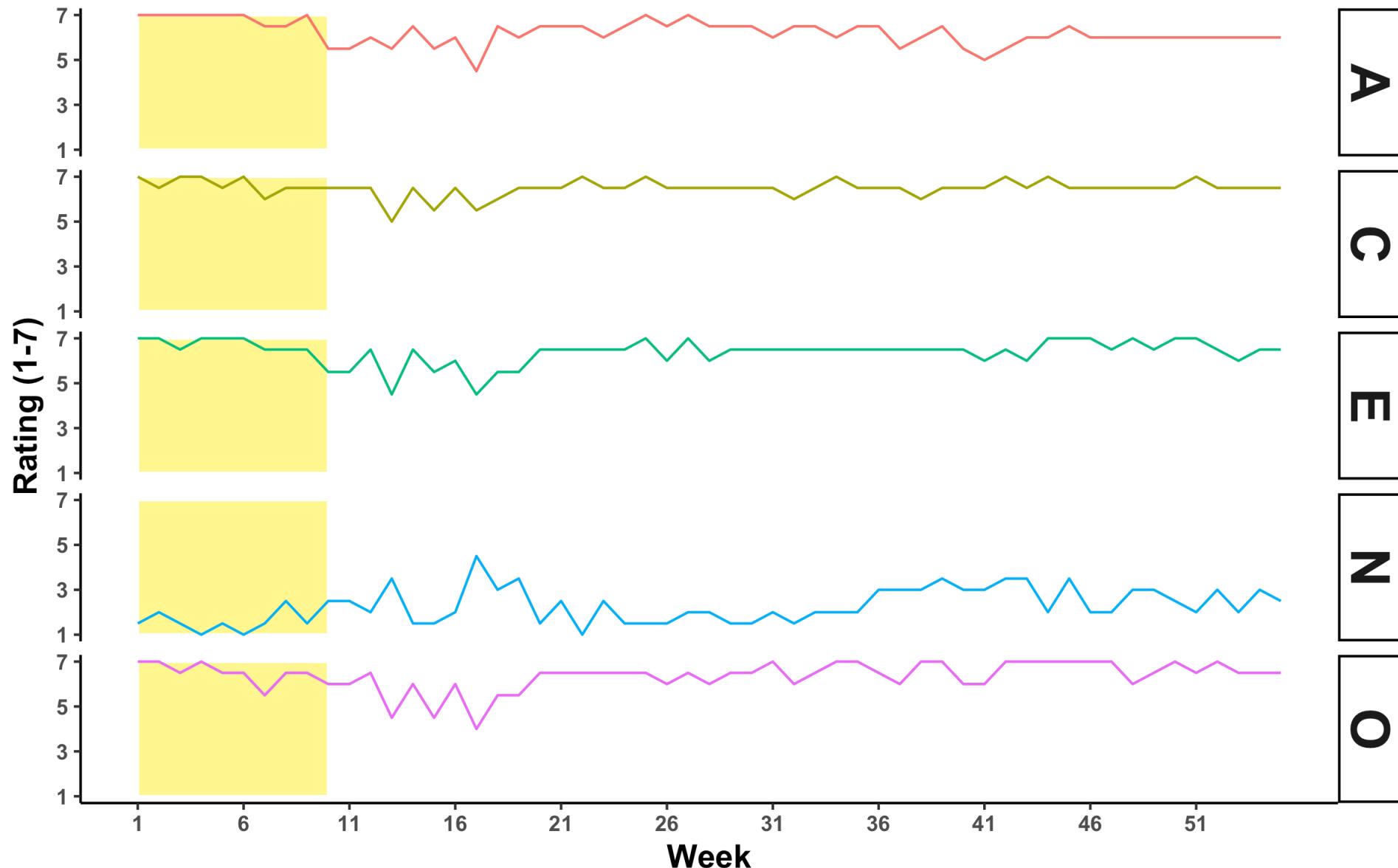
$$\hat{K} = \arg \min \hat{R}_{min,K} + pen_K,$$

Preregistration: <https://osf.io/mfn8w/>

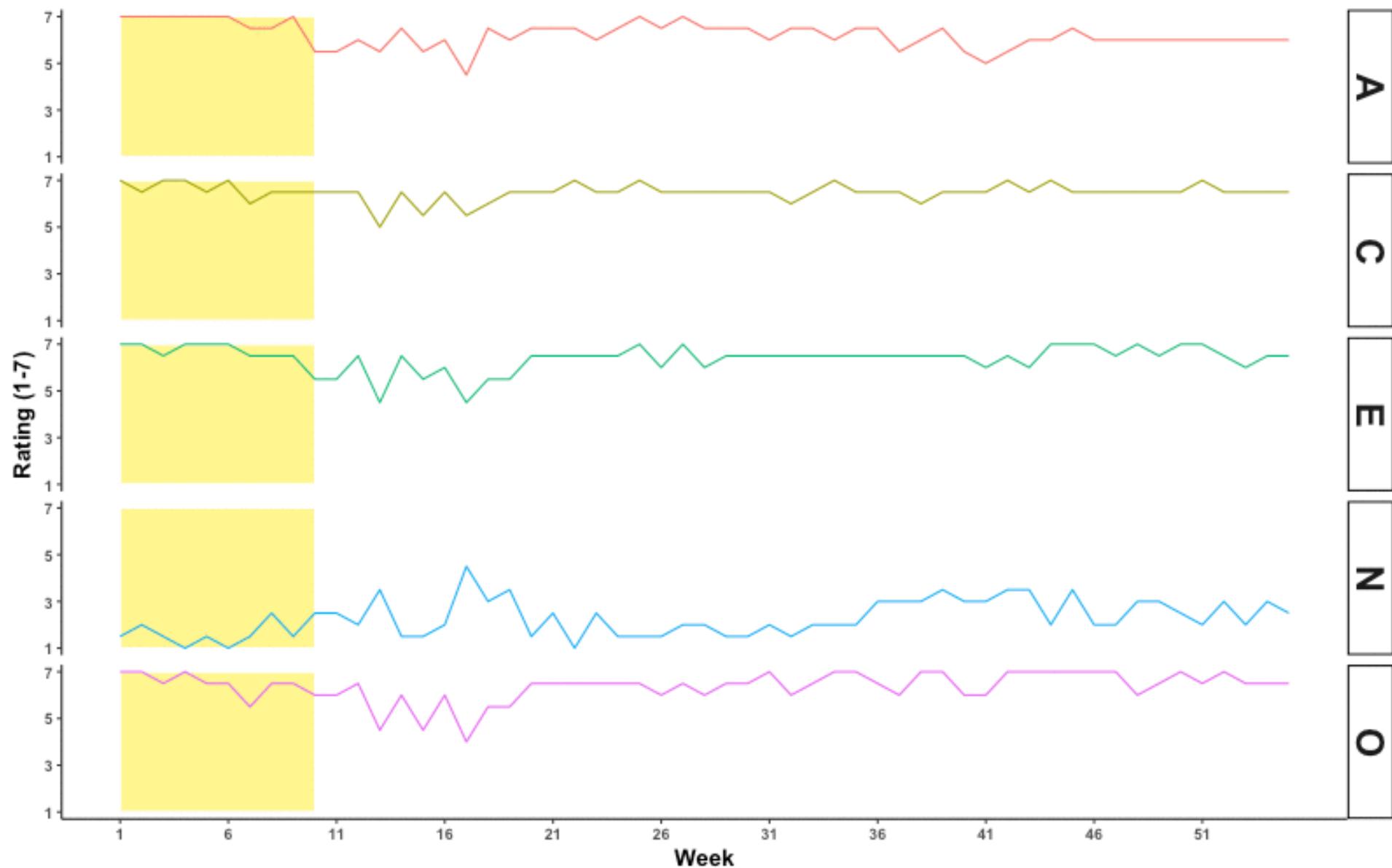
Idiographic Time Series



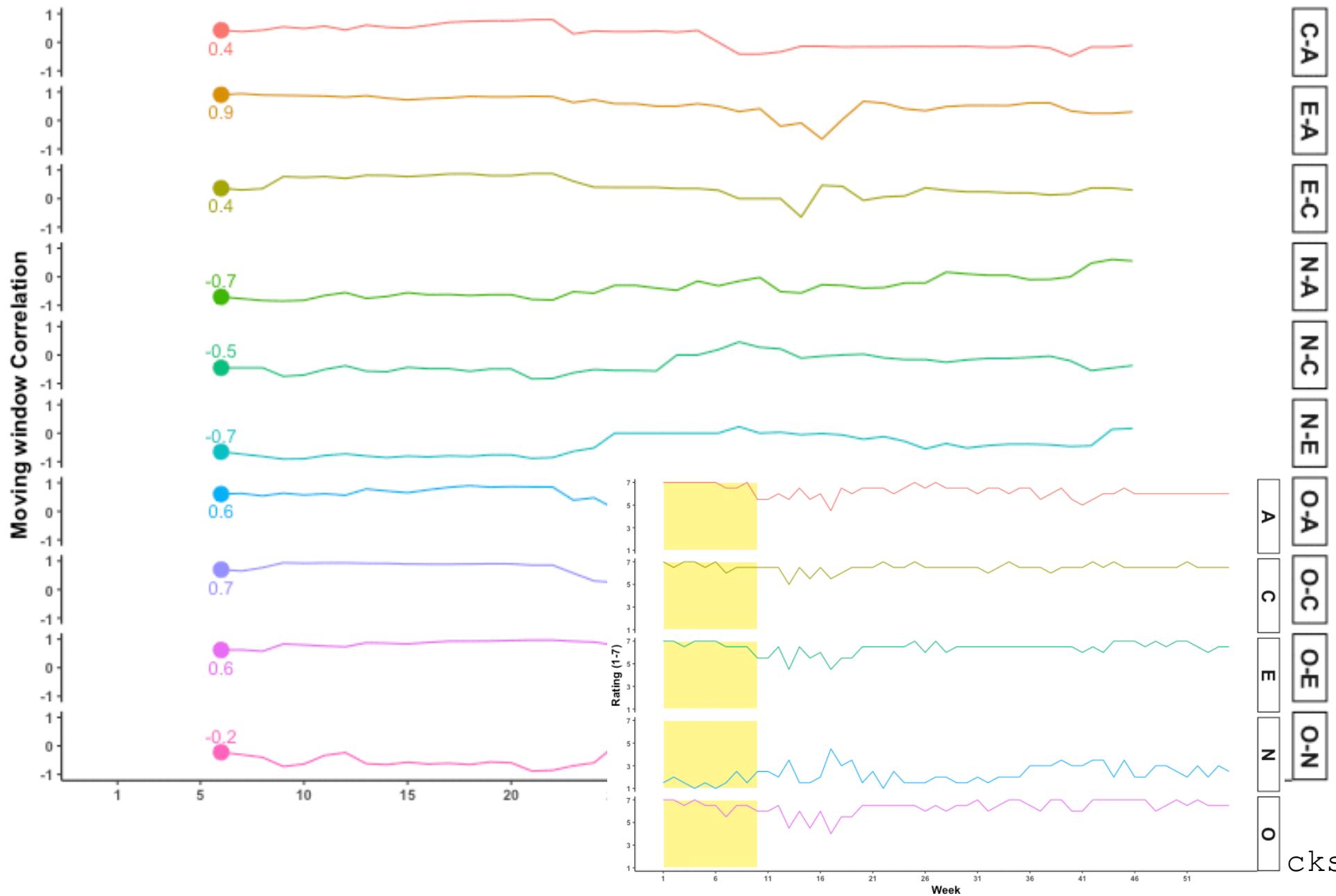
Idiographic Time Series



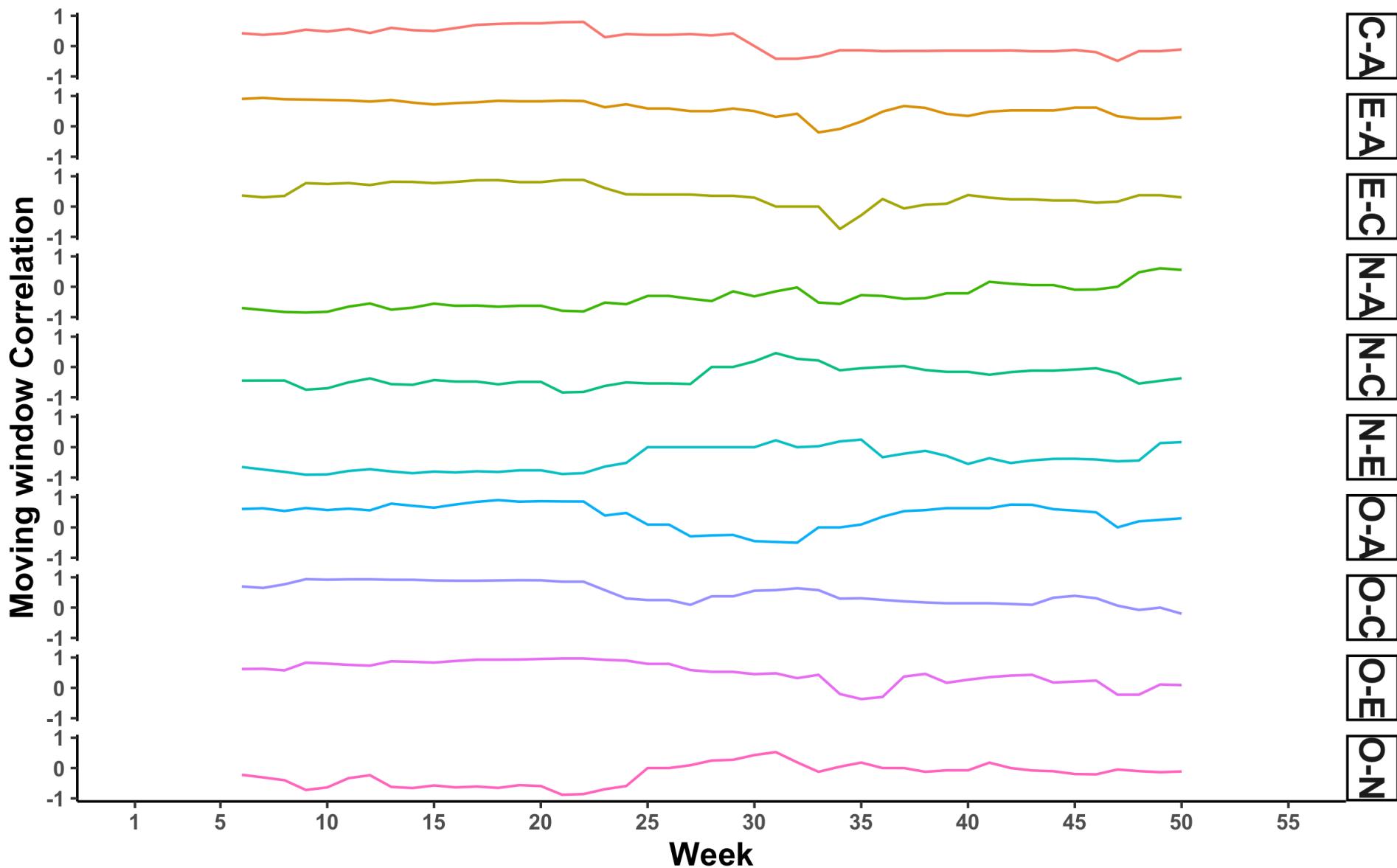
Idiographic Time Series



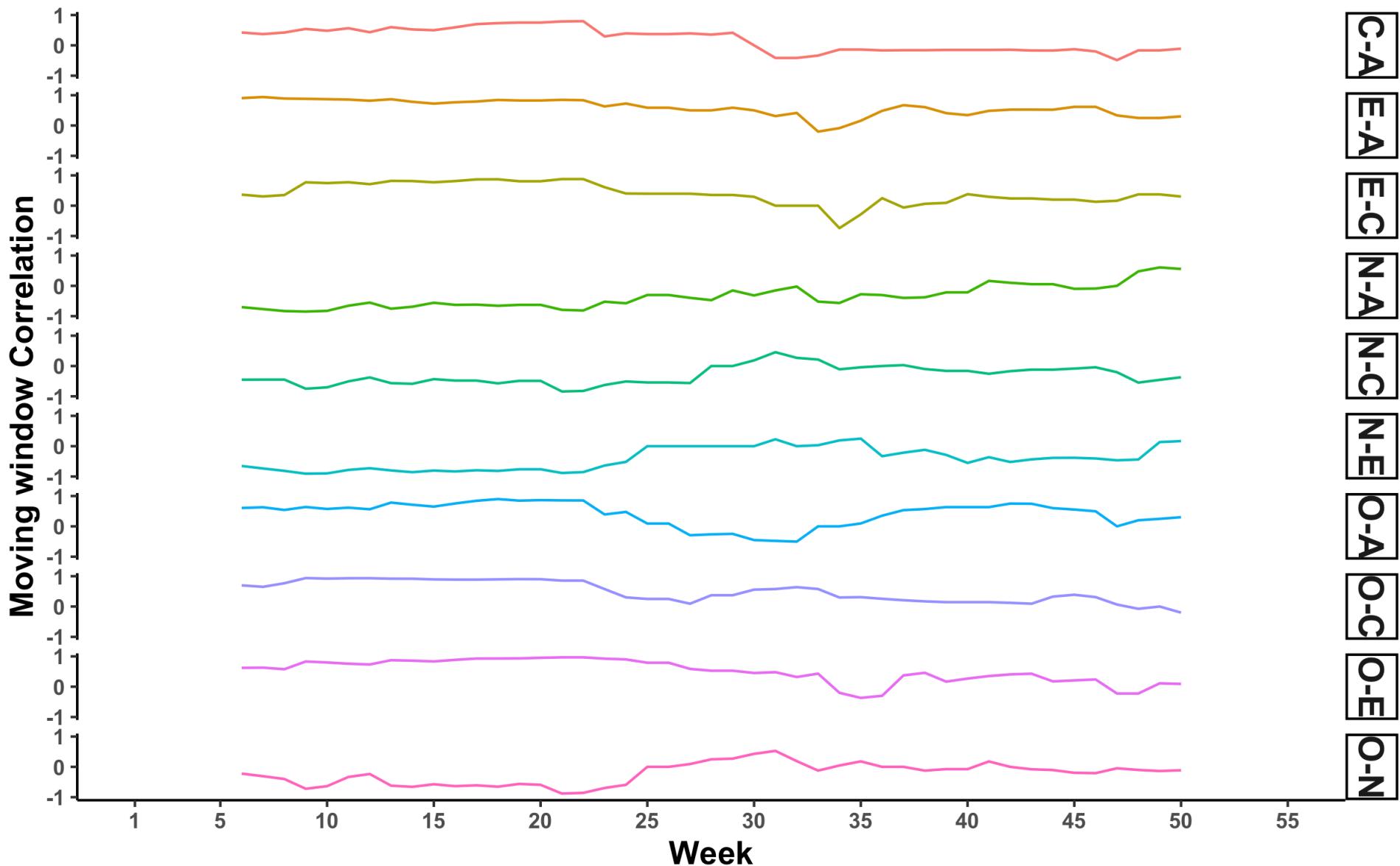
Moving Window Correlation Time Series



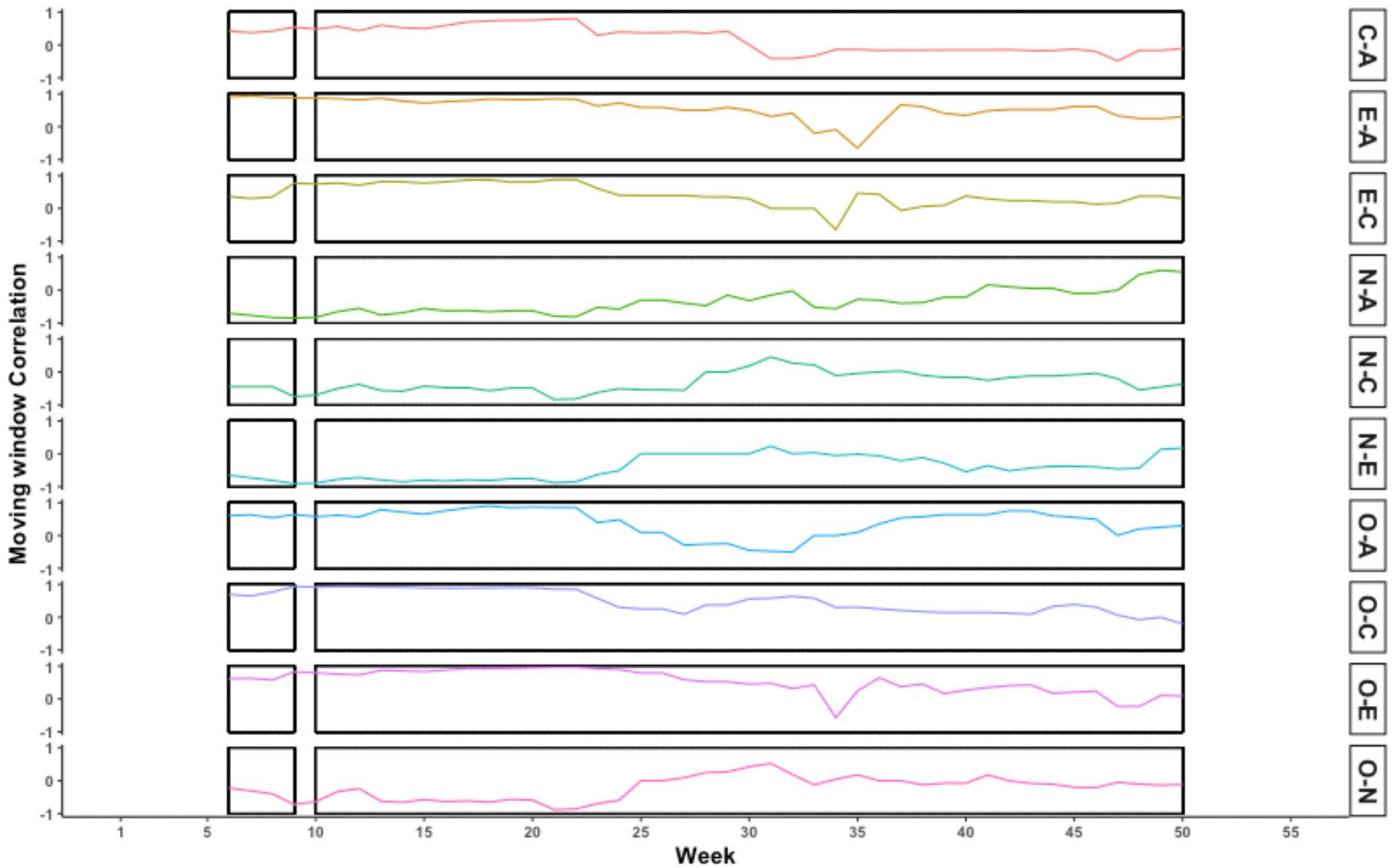
Moving Window Correlation Time Series



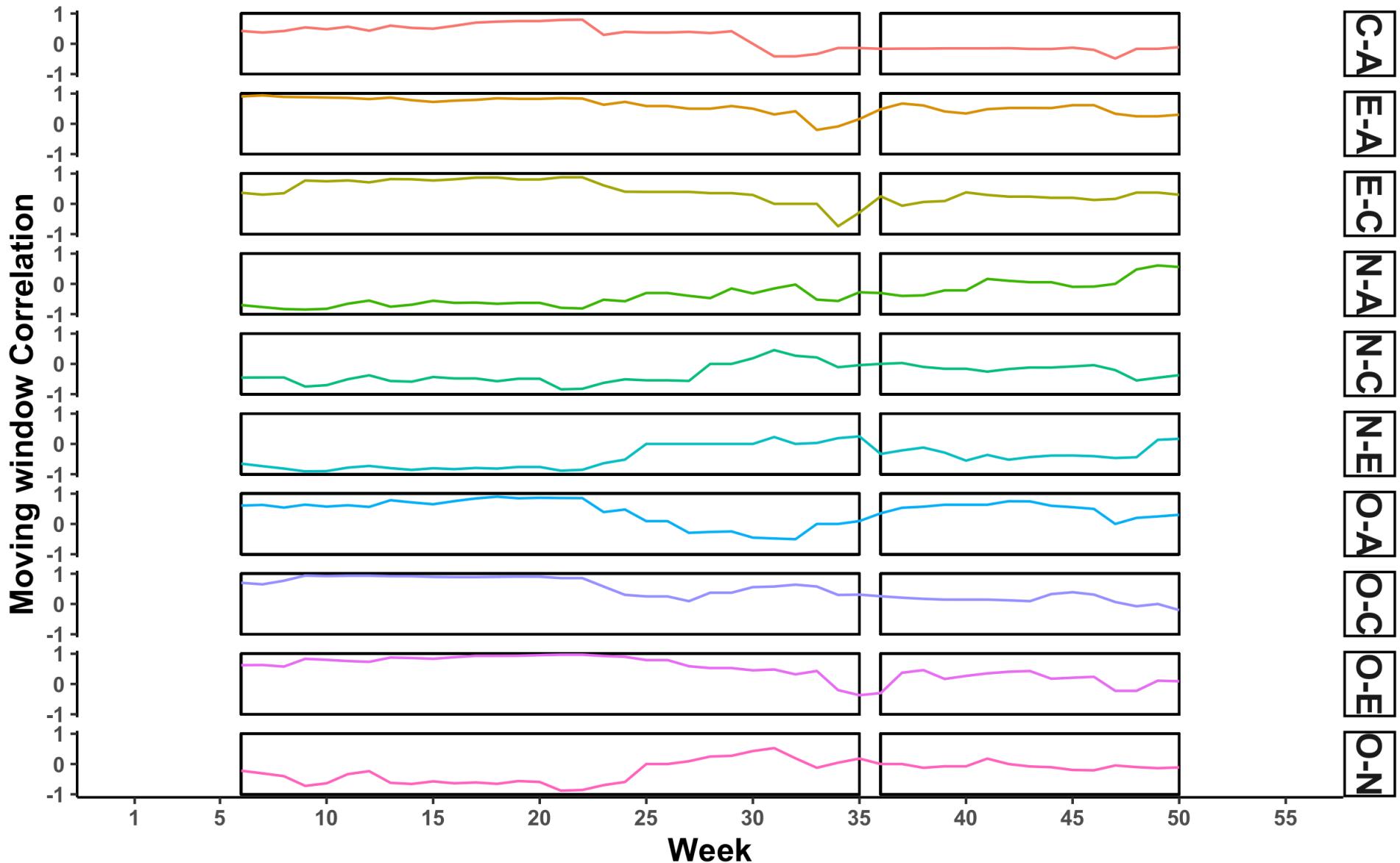
Phases: $k = 0$



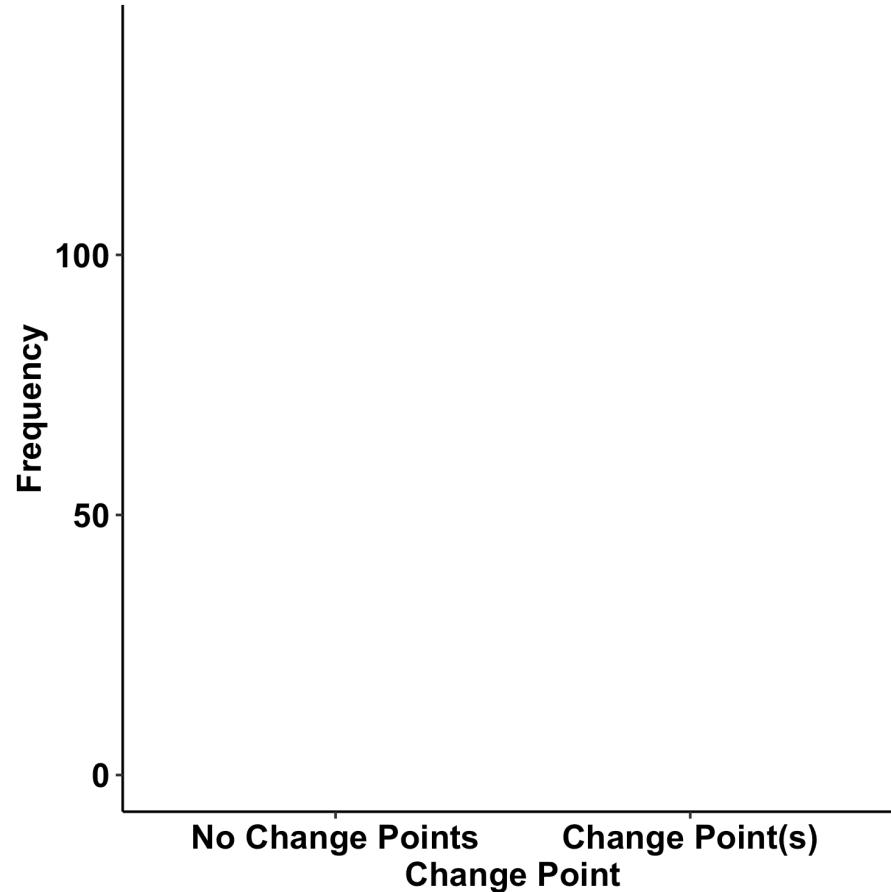
Phases: $k = 1$



Phases: $k = 1$

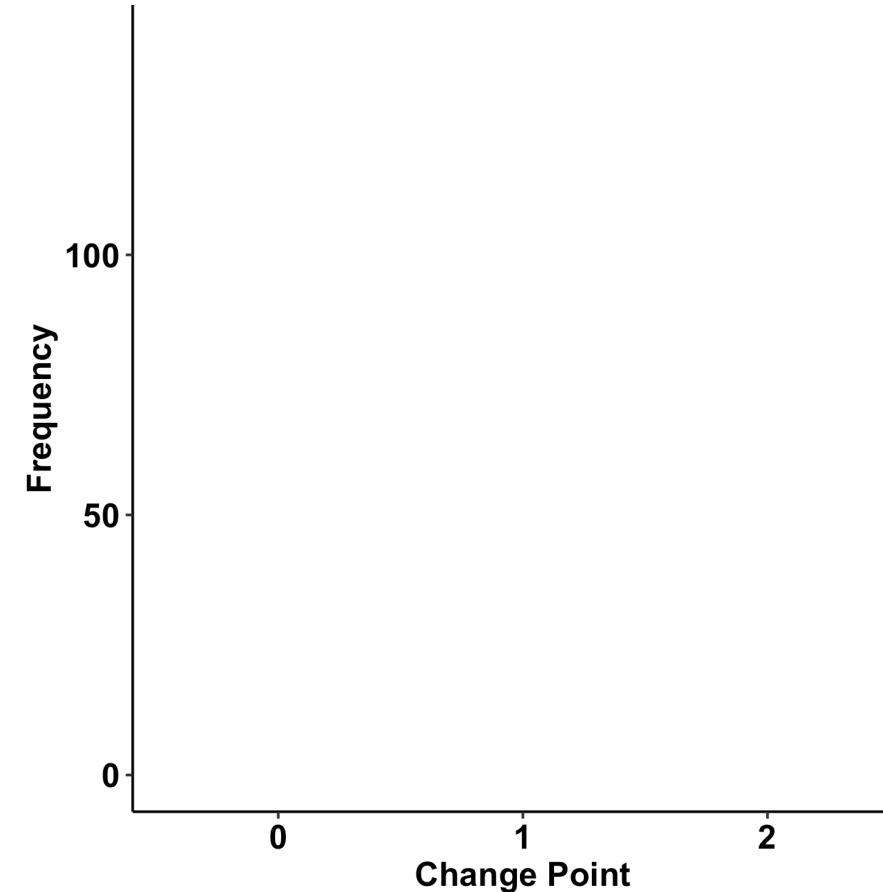
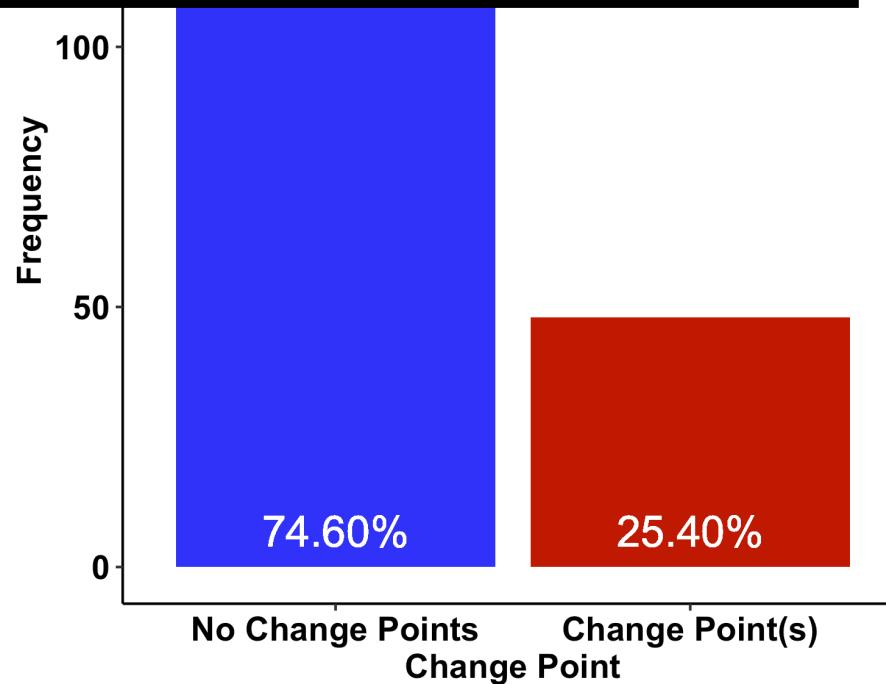


Did people show correlational changes?



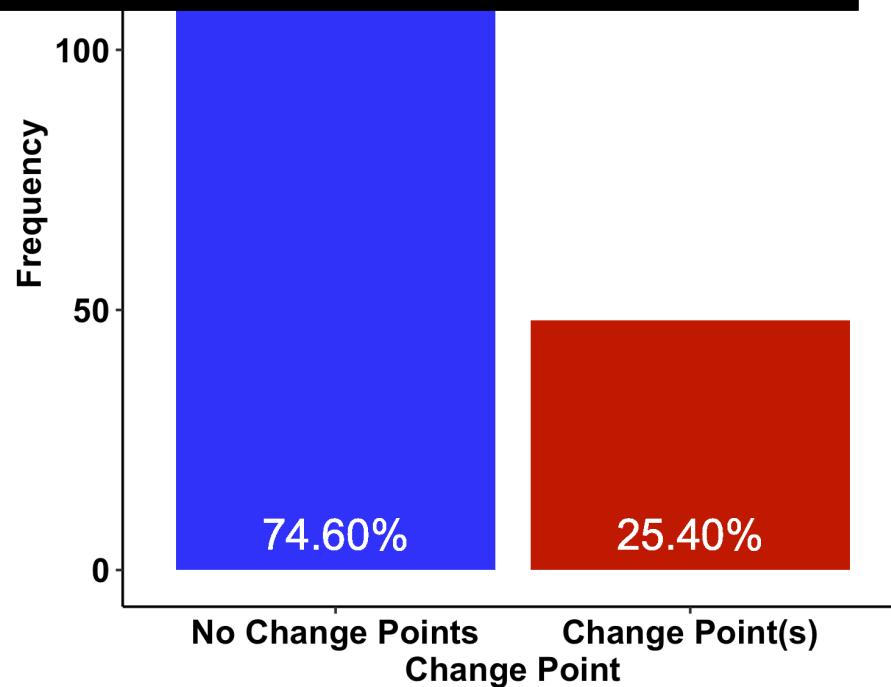
Did people show correlational changes?

A minority of participants showed correlational changes

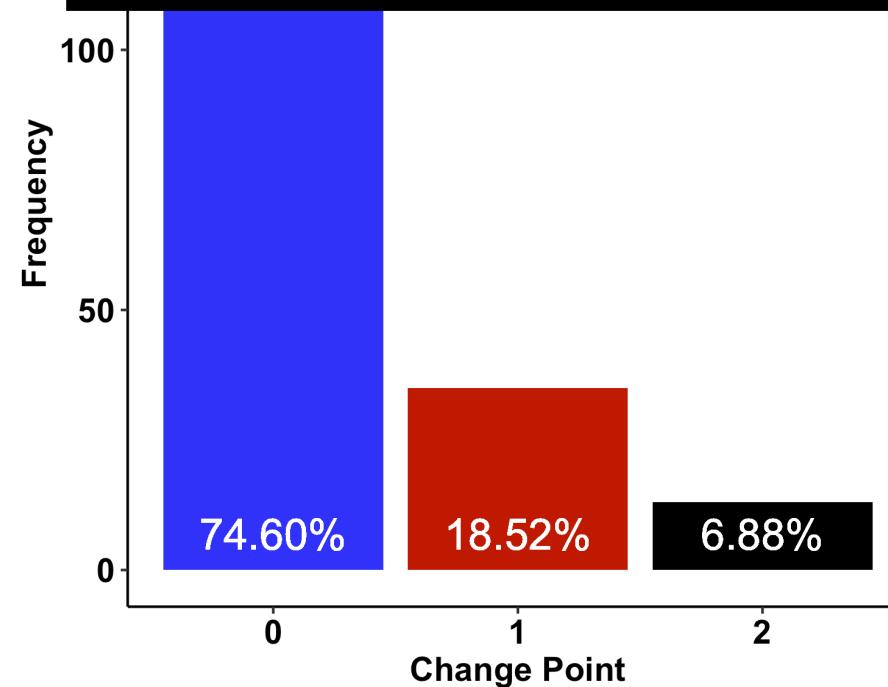


Did people show correlational changes?

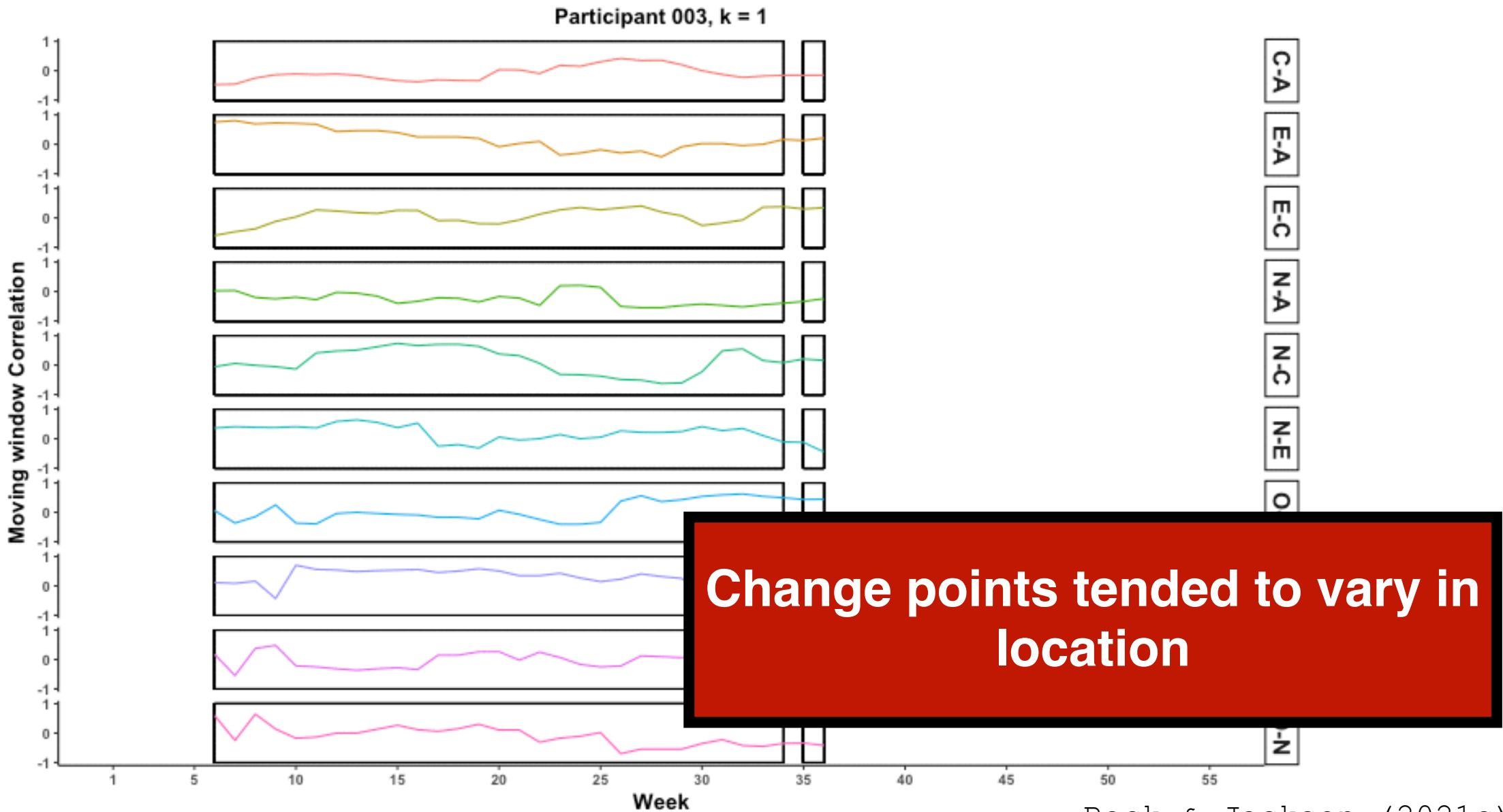
A minority of participants showed correlational changes



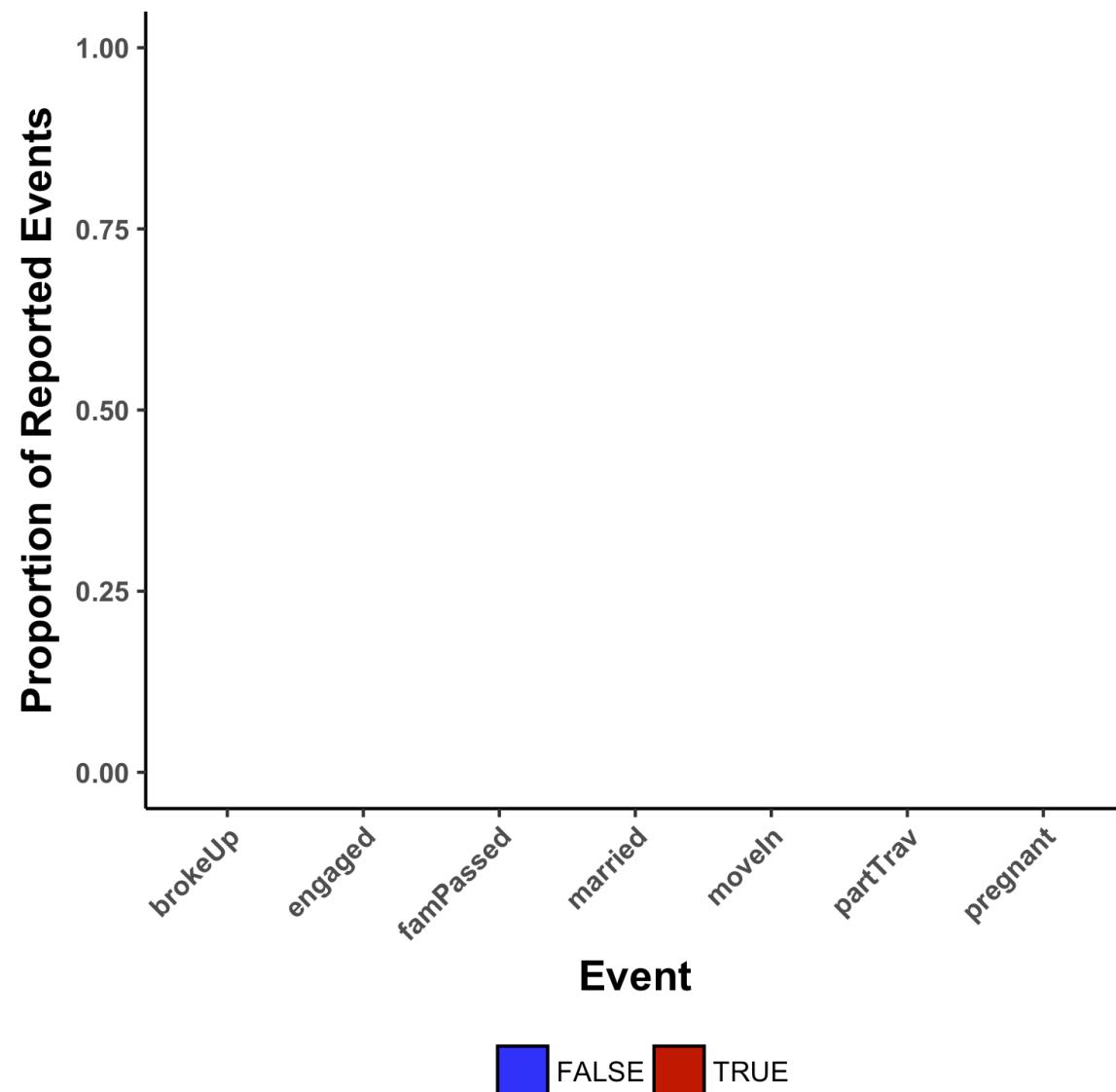
Those who showed change tended to show it only once



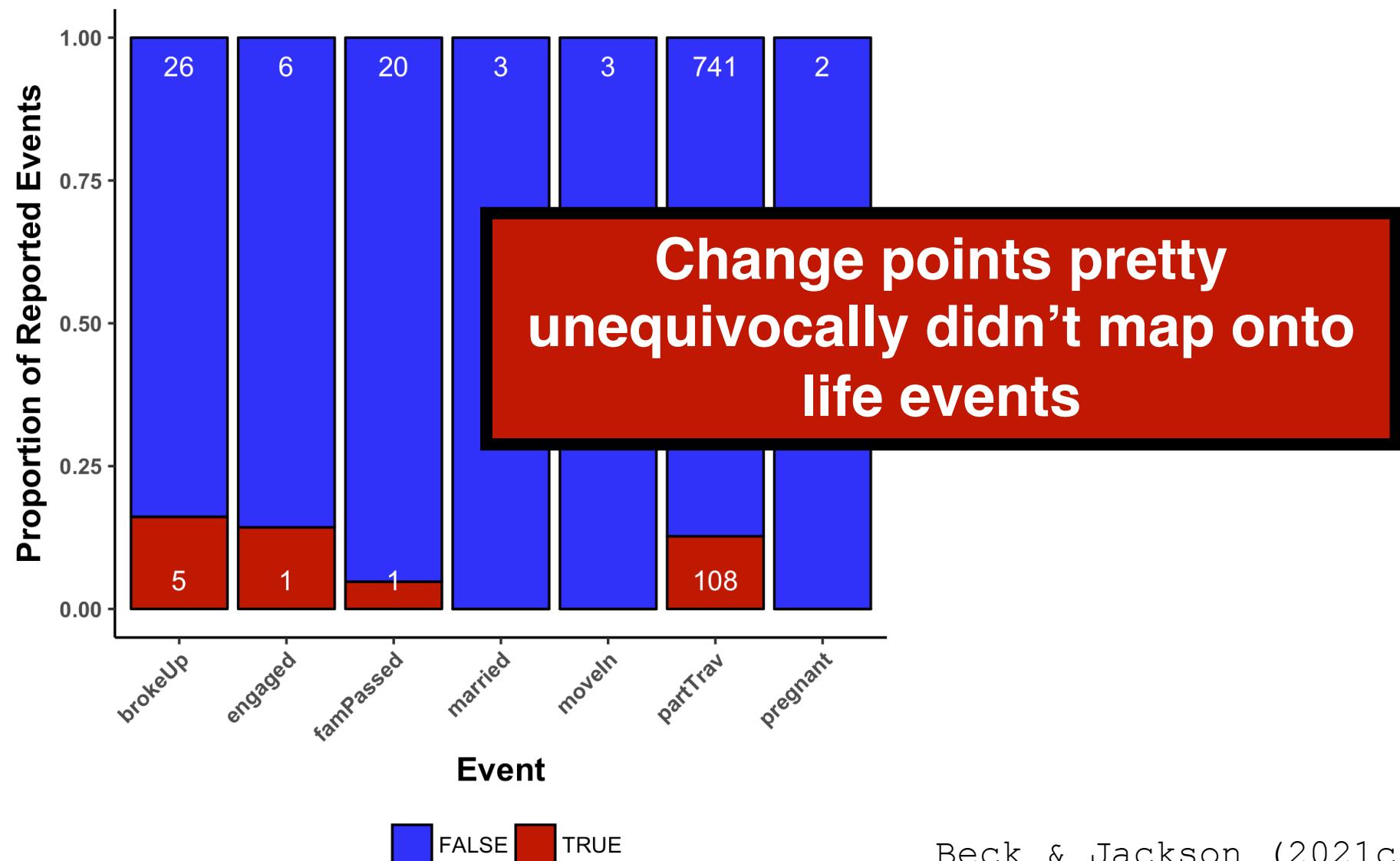
Did people show correlational changes?



Did changes map onto events?



Did changes map onto events?



Roadmap for Today

Life events aren't great proxy mechanisms of personality trait change



Idiographic personality structures differ across people and show consistency over years



Nonlinear changes in idiographic personality and life events

Roadmap for Today

Life events aren't great proxy mechanisms of personality trait change



Idiographic personality structures differ across people and show consistency over years



Nonlinear changes in idiographic personality aren't associated with life events

Summary for today

Life events aren't great proxy mechanisms of personality trait change



Idiographic personality structures differ across people and show consistency over years



Nonlinear changes in idiographic personality aren't associated with life events

Ongoing Work & Future Directions

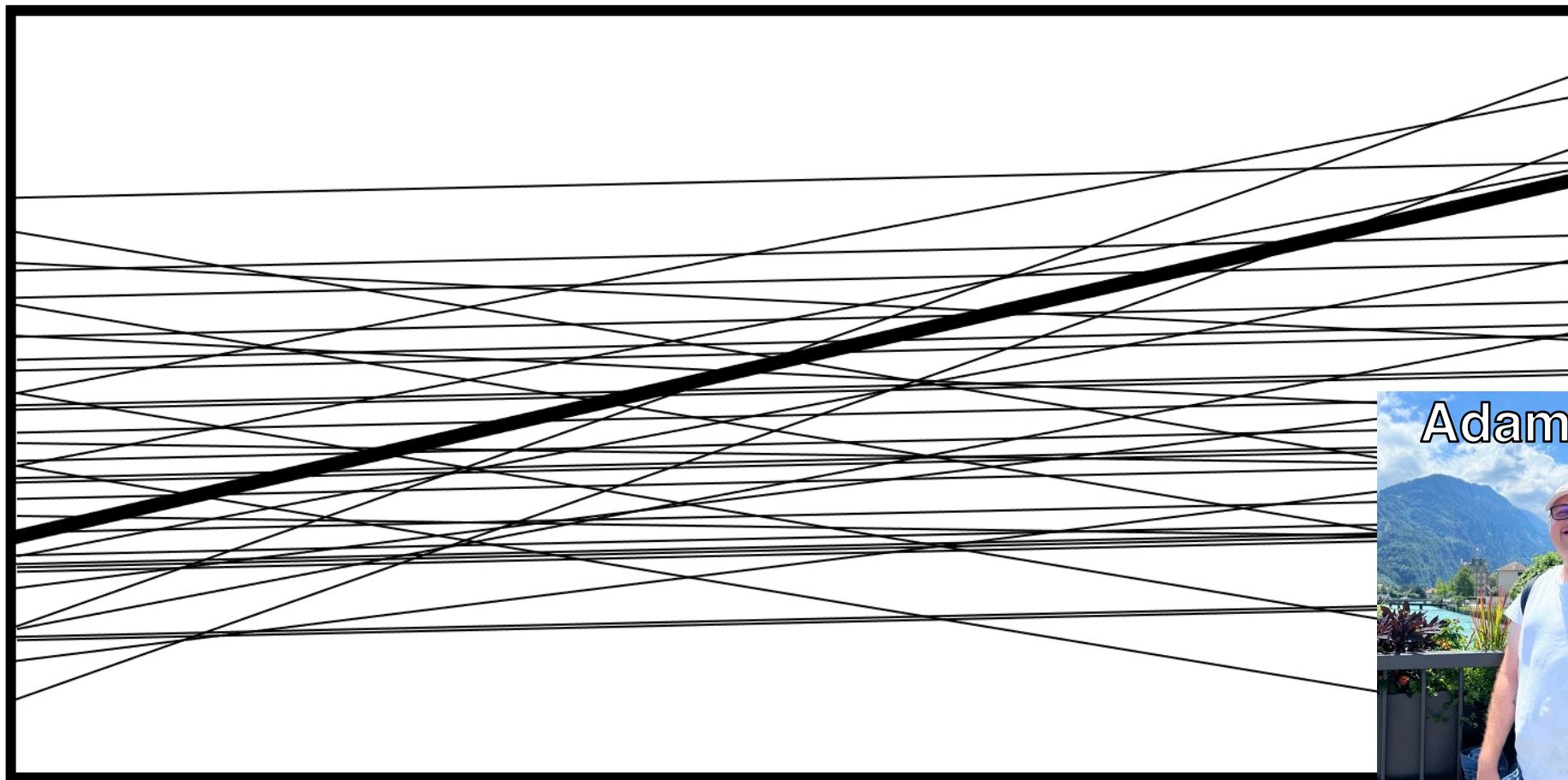
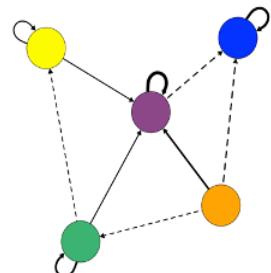
Measurement

Optimizing measures to detect change

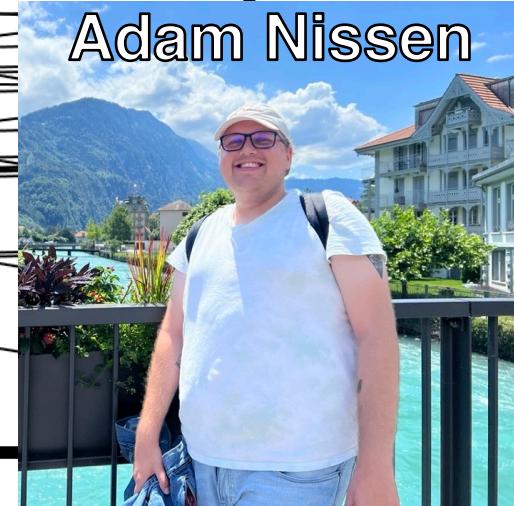
Longitudinal Burst Designs

Longitudinal burst designs to for short- and long-term change

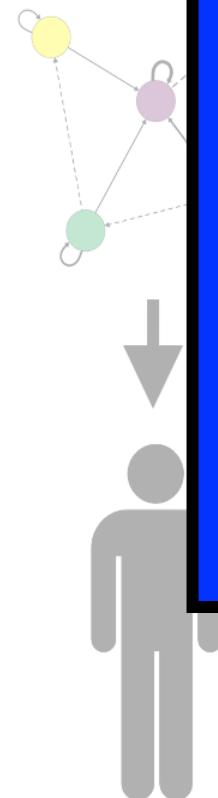
Linking Idiographic and Nomothetic Change



Adam Nissen



Linking Idiographic and Nomothetic Change



Do characteristics of idiographic networks (e.g., density, complexity) predict individual differences in trait change?



Nissen



Ongoing Work & Future Directions

Measurement

Optimizing measures to detect change

Longitudinal Burst Designs

Longitudinal burst designs to for short- and long-term change

Experimental Designs

Tailored interventions

Qualitative Methods: Folk Theories of Change

Open ended surveys and narrative methods

The Personalizing Personality Pilot Study

Study Design

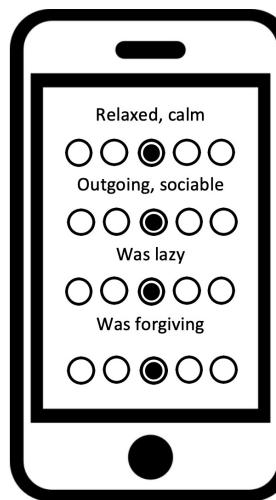
UCDAVIS

 N = 200



Baseline Surveys

- Big Five Personality
- Cardinal Traits
- Demographics
- **Unique Item Generation**
- ...
- etc.



Experience Sampling Method (ESM)

- 5 x / day for 3 weeks (*max n = 105*)
- Big Five Personality States
 - Unique, participant generated “Cardinal States”
 - DIAMONDS Situation Characteristics
 - Binary Behavior Indicators
 - Passive Sensing

What are we missing when we use the same measures for everyone?

Content

Hypothesis: People will generate content that doesn't overlap with the Big Five or other typical shared indicators we measure.

Variability

Hypothesis: People will show more variability and use the full scale more for unique items than shared items, on average.

Predictive Utility

Hypothesis: Unique items will improve predictive utility and play important roles in personalized prediction models.

Ongoing Work & Future Directions

Measurement

Optimizing measures to detect change

Longitudinal Burst Designs

Longitudinal burst designs to for short- and long-term change

Experimental Designs

Tailored interventions

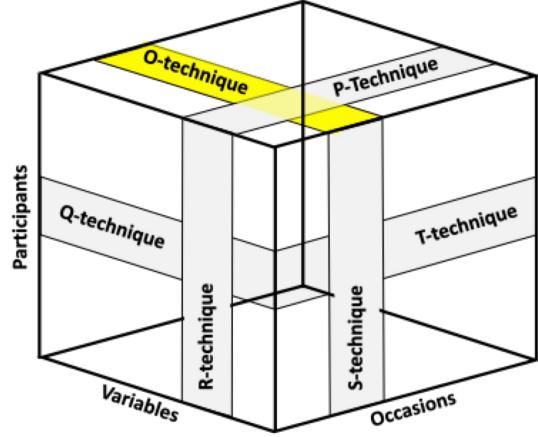
Qualitative Methods: Folk Theories of Change

Open ended surveys and narrative methods

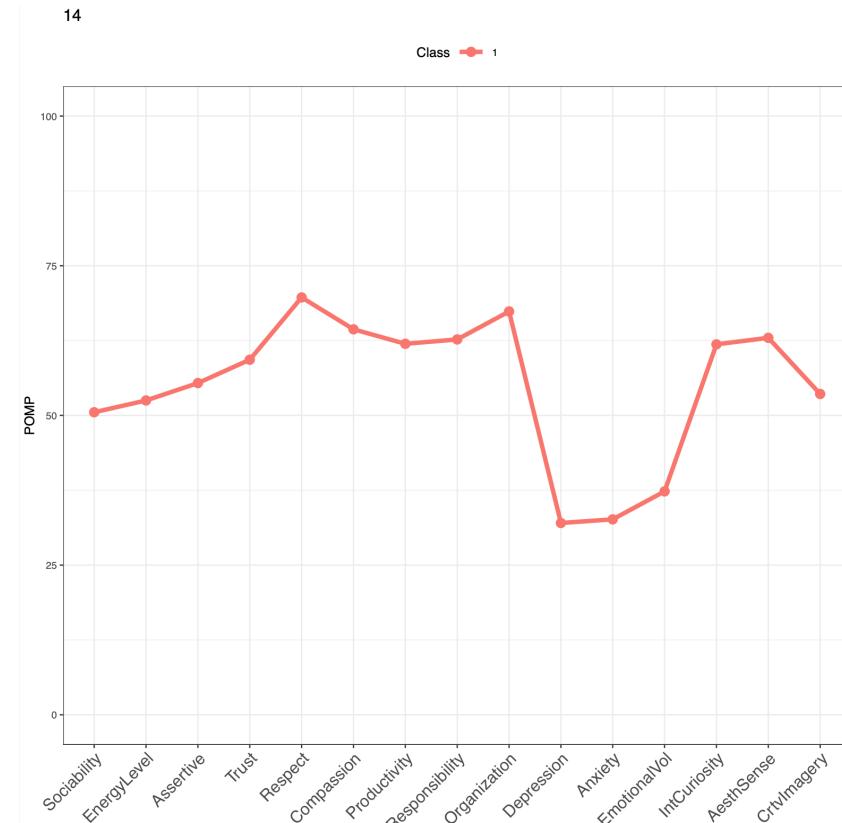
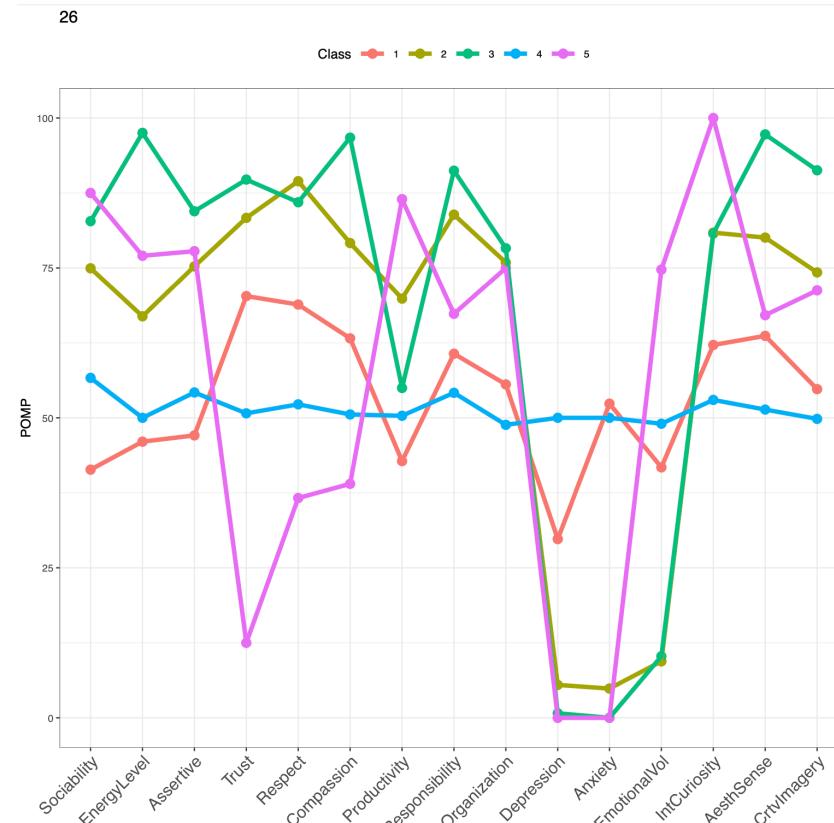
Statistical Models

Capturing complementary dynamics using cutting-edge statistical models

Understanding Dynamics from New Perspectives



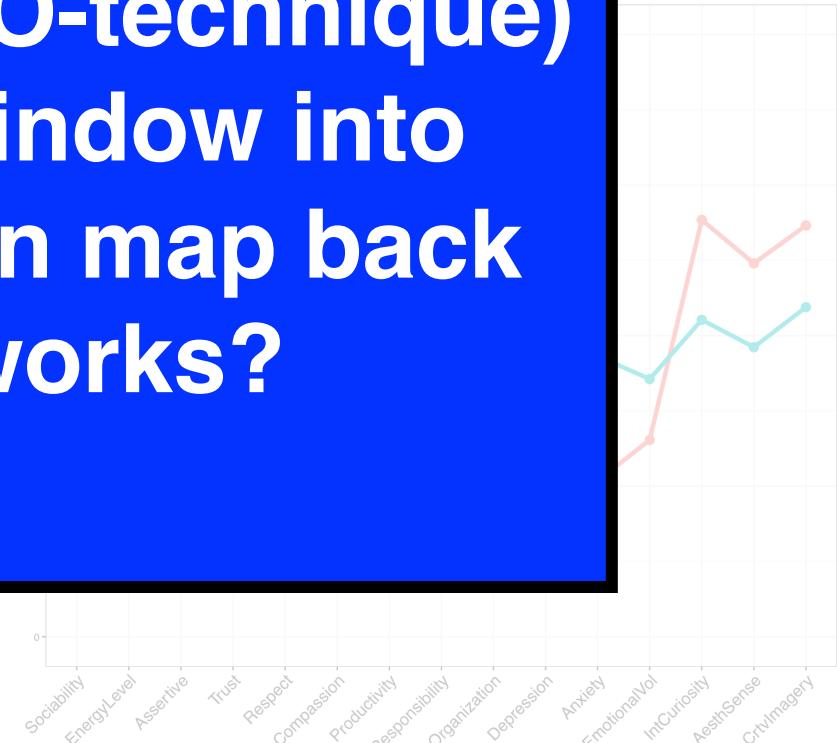
Colin Lee



Understanding Dynamics from New Perspectives

Can Latent Profile Analysis (O-technique)
provide an interpretable window into
idiographic equilibria we can map back
onto time-varying networks?

Colin



Thank You & Questions

Study 1: <https://osf.io/g52hz/>

Study 2: <https://osf.io/fyxza/> &
<https://osf.io/qwtu3/>

Study 3: <https://osf.io/mfn8w/>



Funding Sources: National Institute on Aging Grant T32 AG00030-32; National Institute on Aging Grant 1R01AG067622

