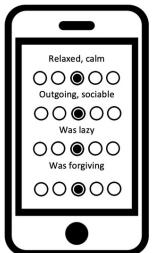


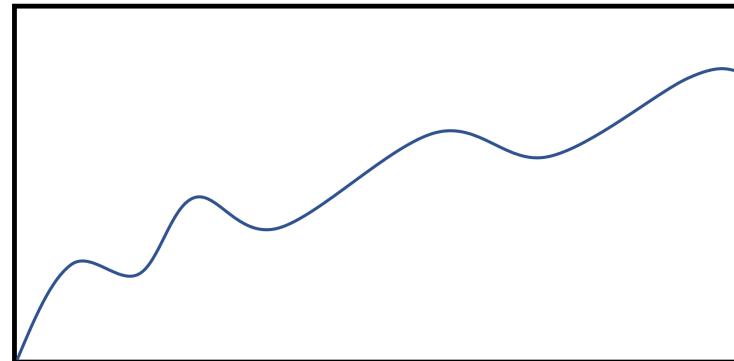
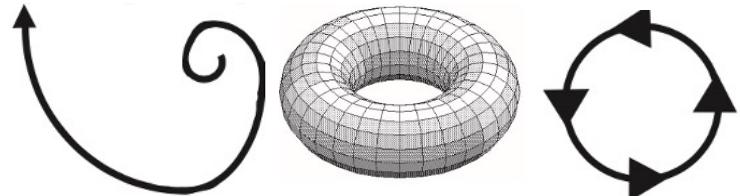
Personality Change: Traits, States, and Individual Lives

Emorie D. Beck, Ph.D.
University of California, Davis
 @EmorieBeck



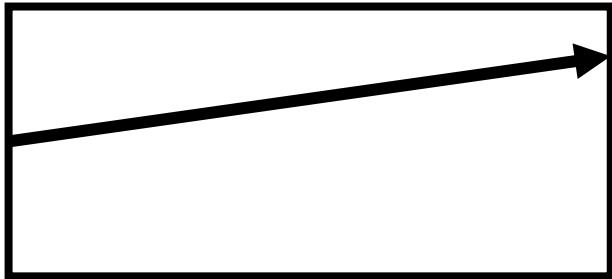


Assessment



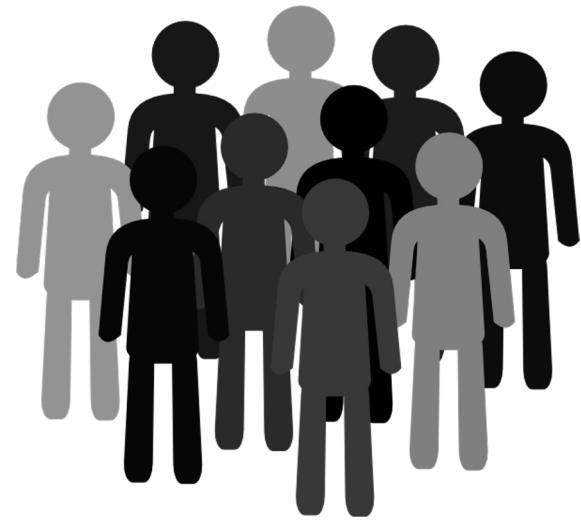
Time (Years)

Process



Time (Days)

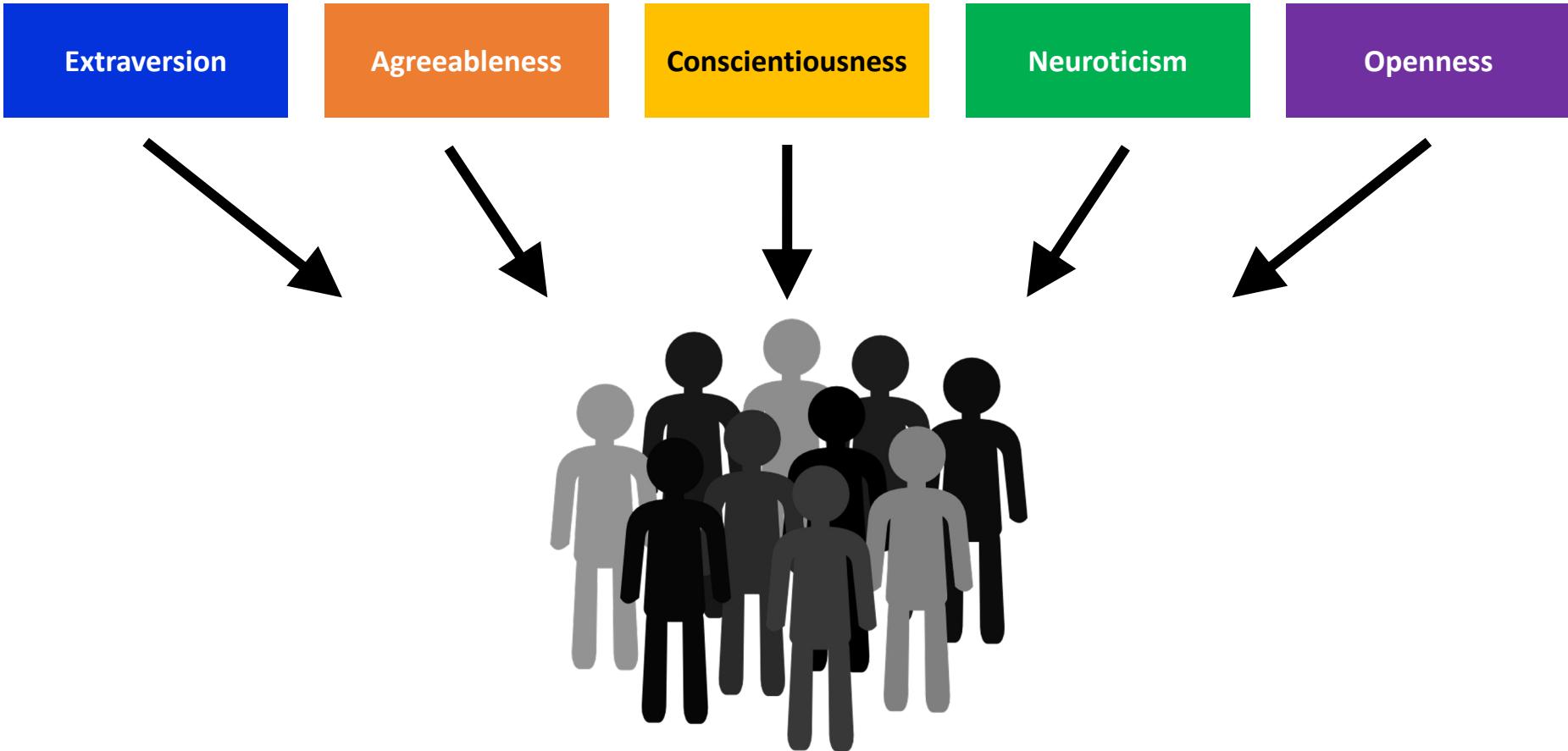
Change



Populations

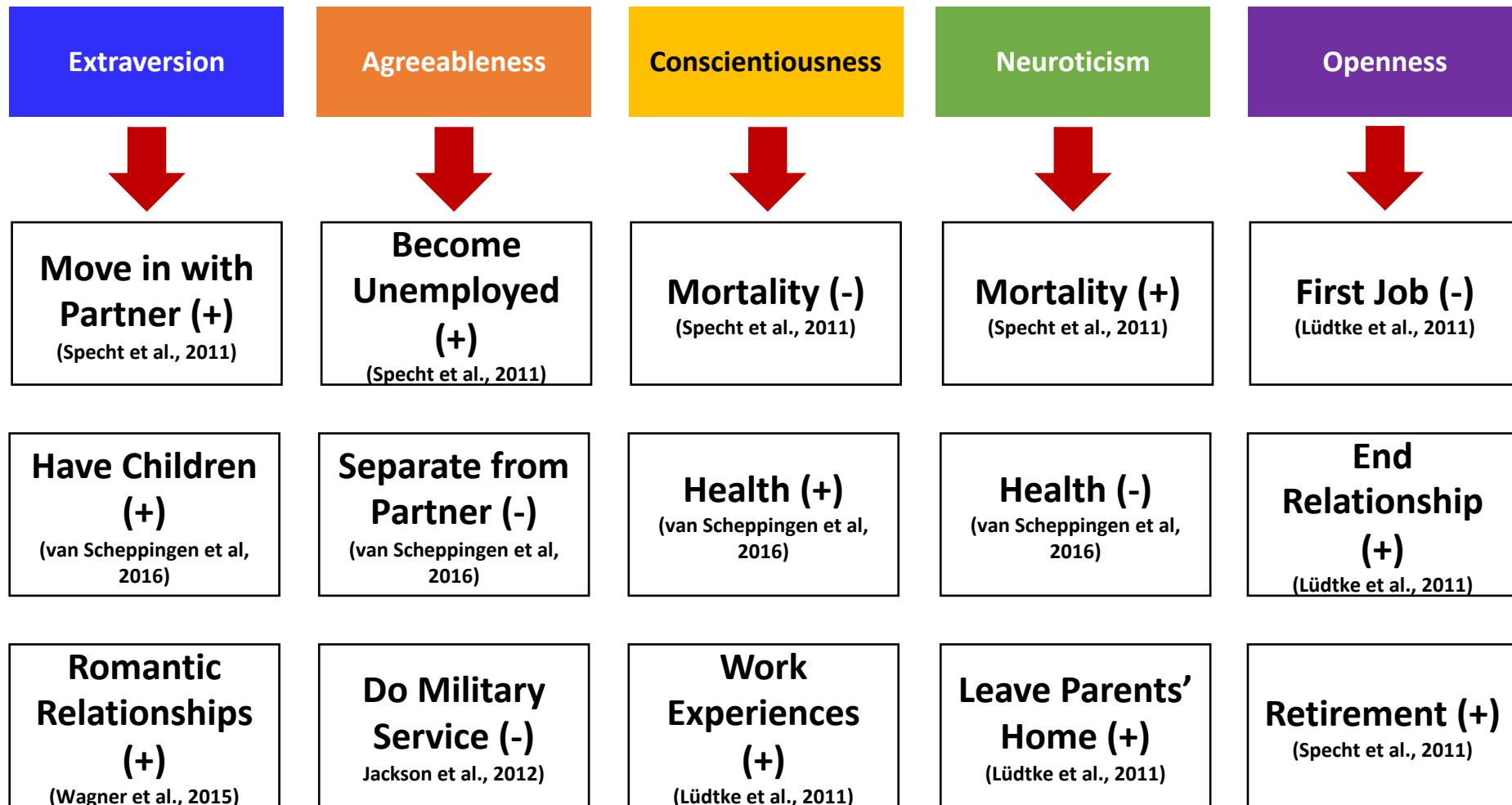


Persons



Nomothetic
Between-Person
Variable Centered

Selection



Con

But *how* do we
change personality
traits?

al
:

The Big 5

Extraversion

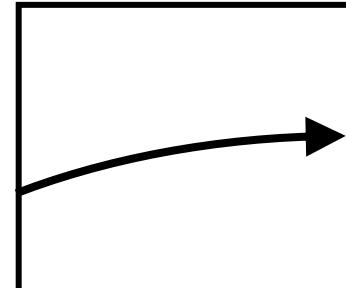
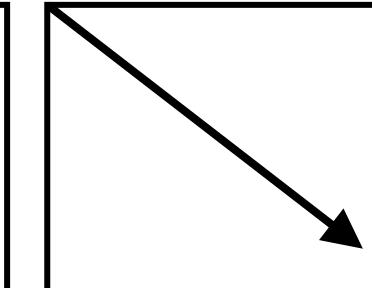
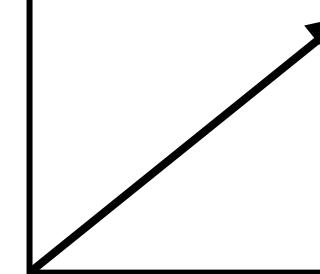
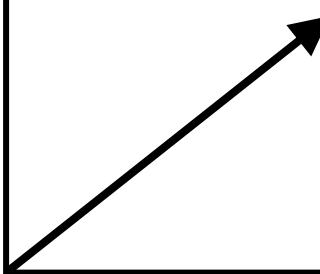
Agreeableness

Conscientiousness

Neuroticism

Openness

Direction



Magnitude

--

.6 SD

1 SD

-.8 SD

.4 SD

Timing

--

Lifespan

Lifespan

10-35

10-20

The Big 5

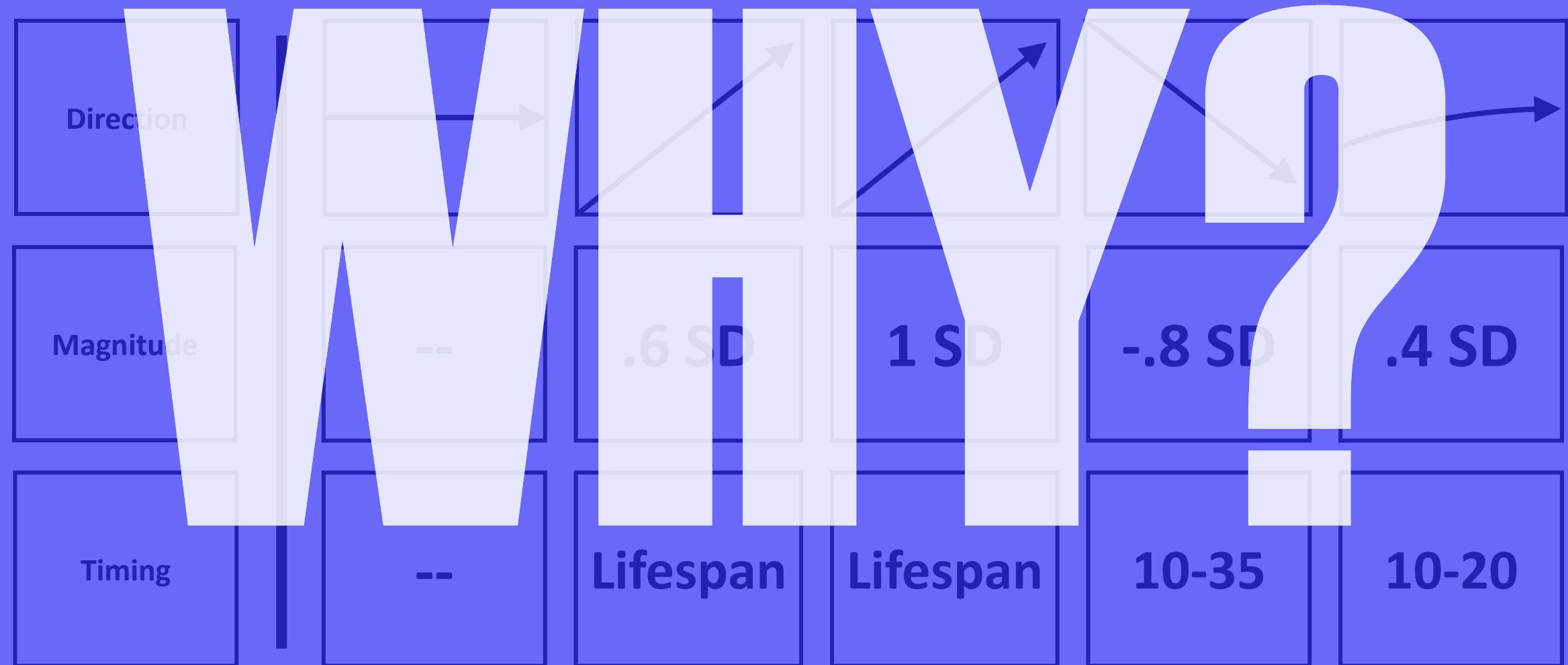
Extraversion

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

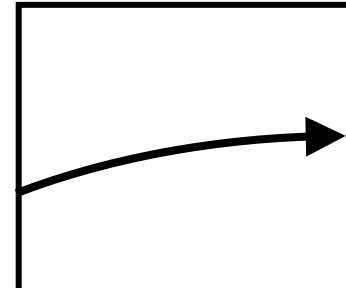
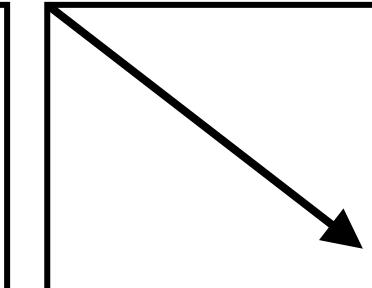
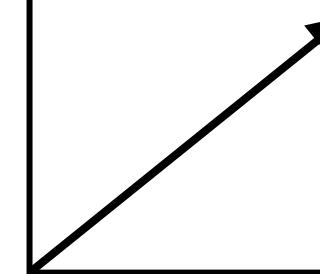
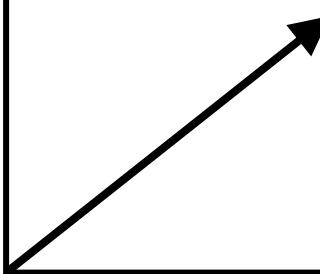
Agreeableness

Conscientiousness

Neuroticism

Openness

Direction



Magnitude

--

.6 SD

1 SD

-.8 SD

.4 SD

Timing

--

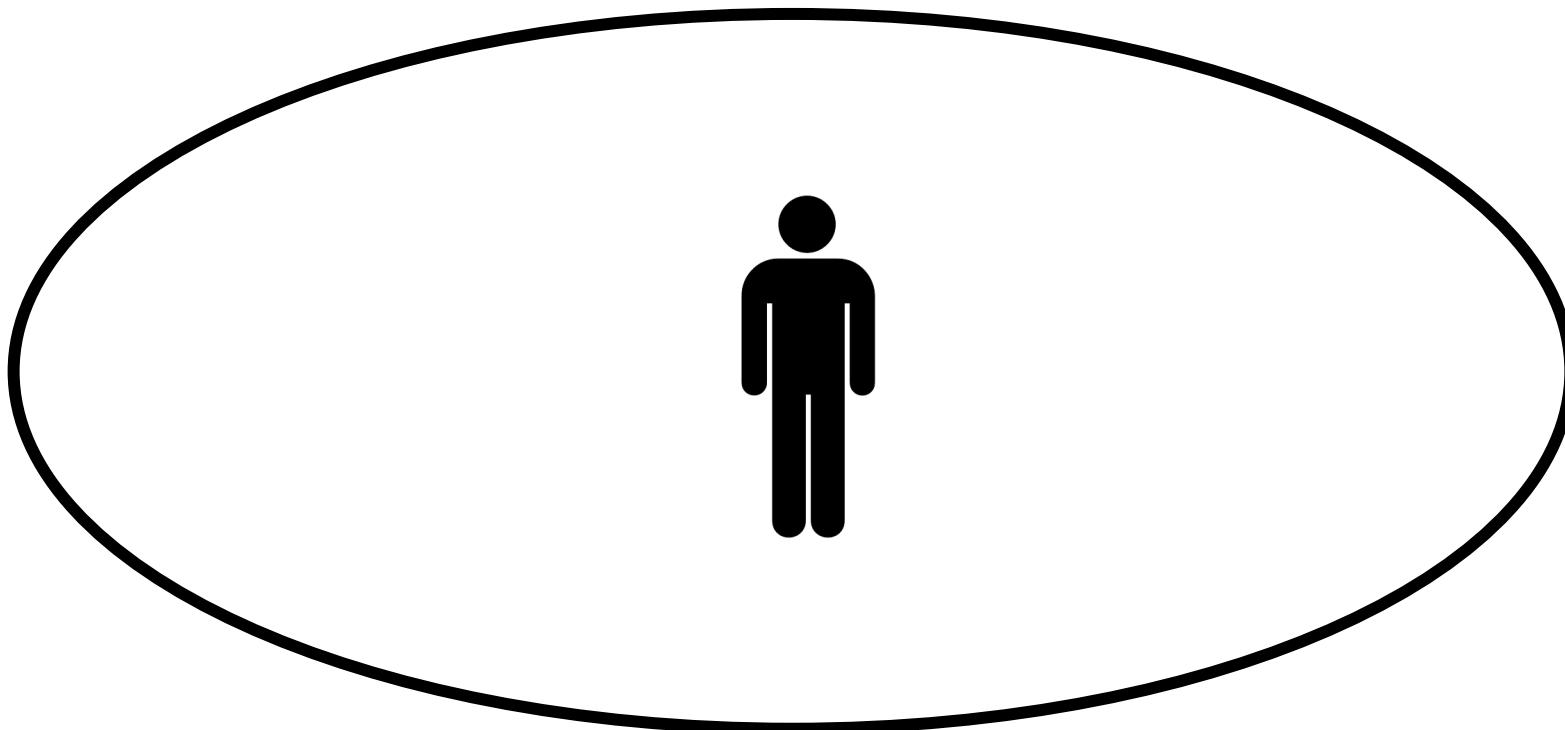
Lifespan

Lifespan

10-35

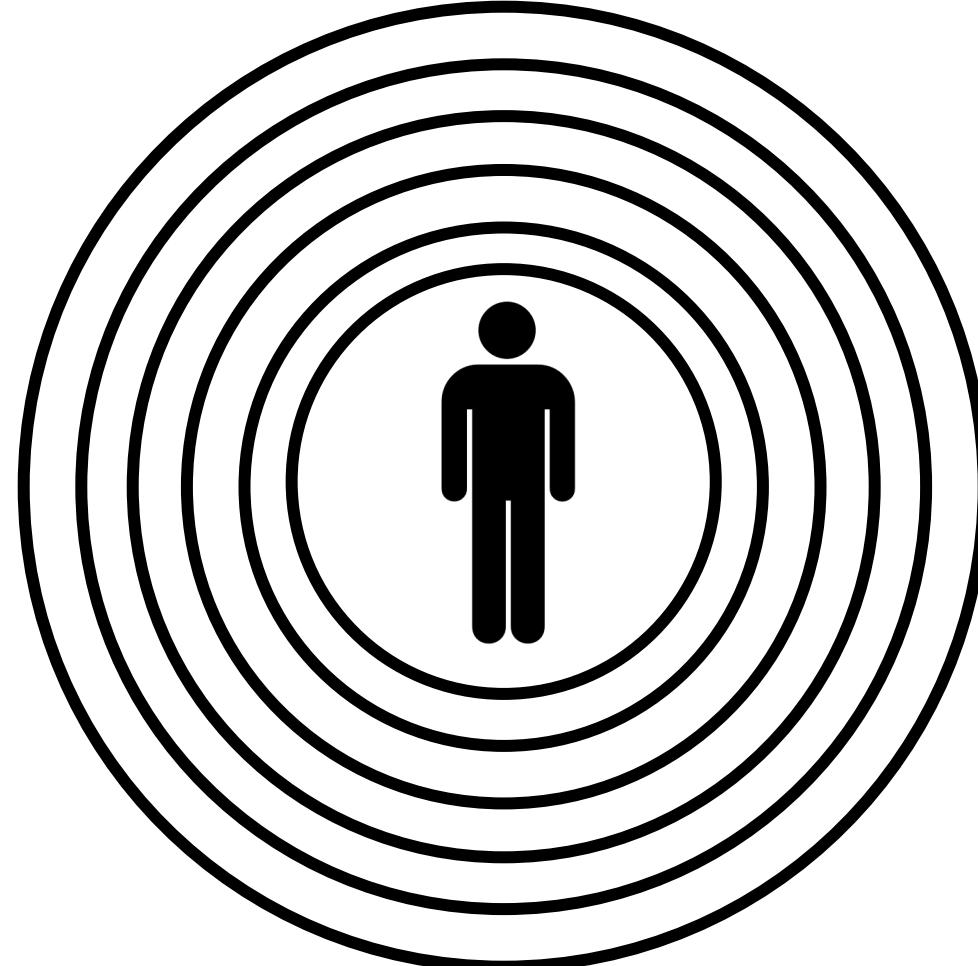
10-20

Persons in Context

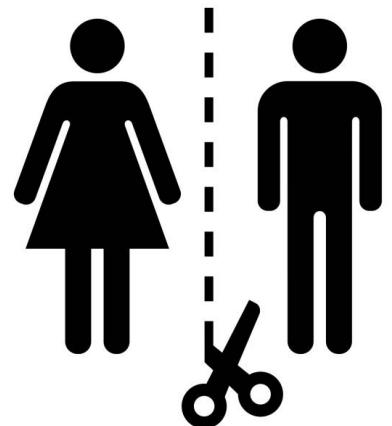


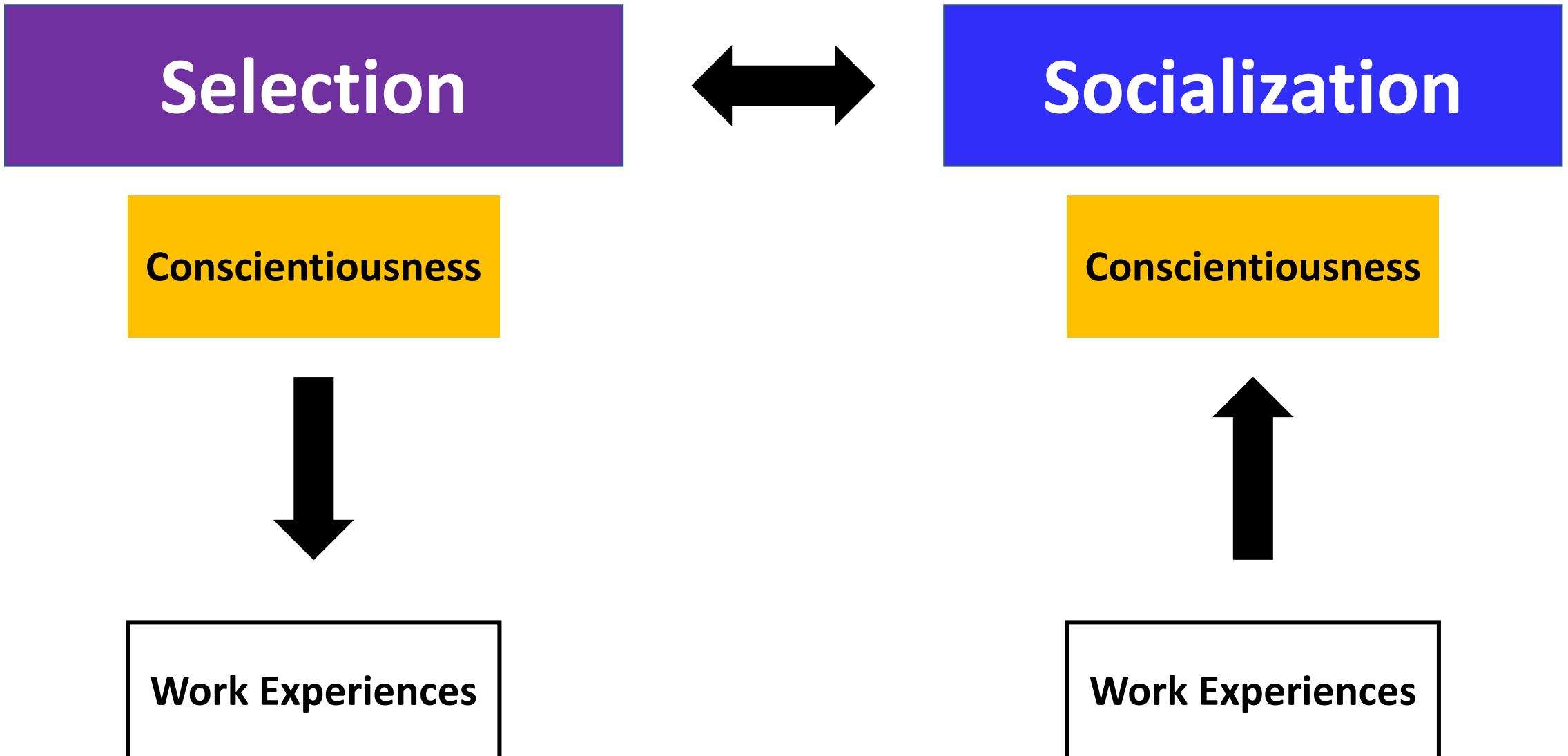
e.g., Lewin, 1936

Persons in Context



e.g., Bronfenbrenner, 1979



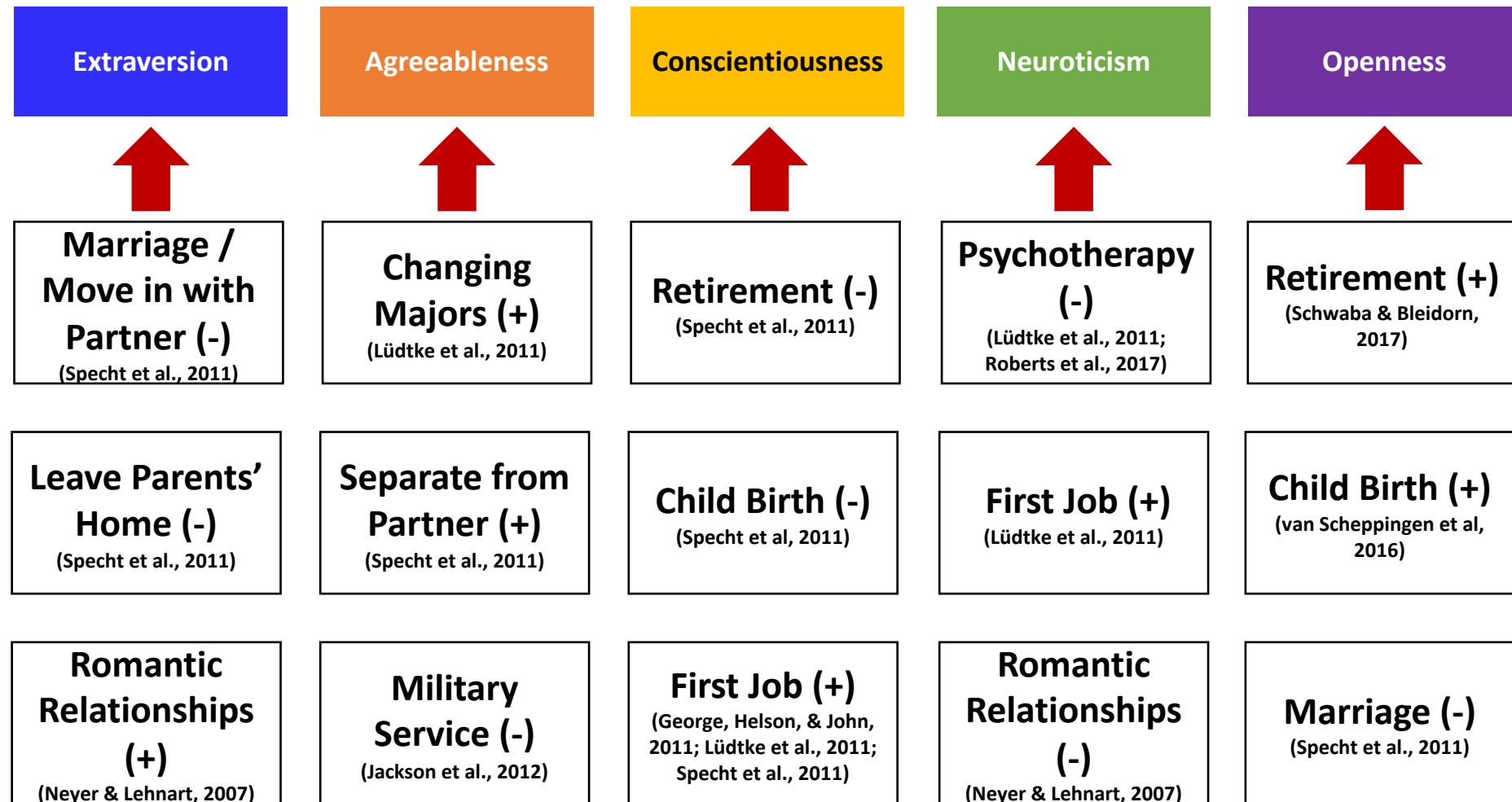


Barrick, Mount, & Judge, 2001

Roberts, Caspi, & Moffitt, 2003

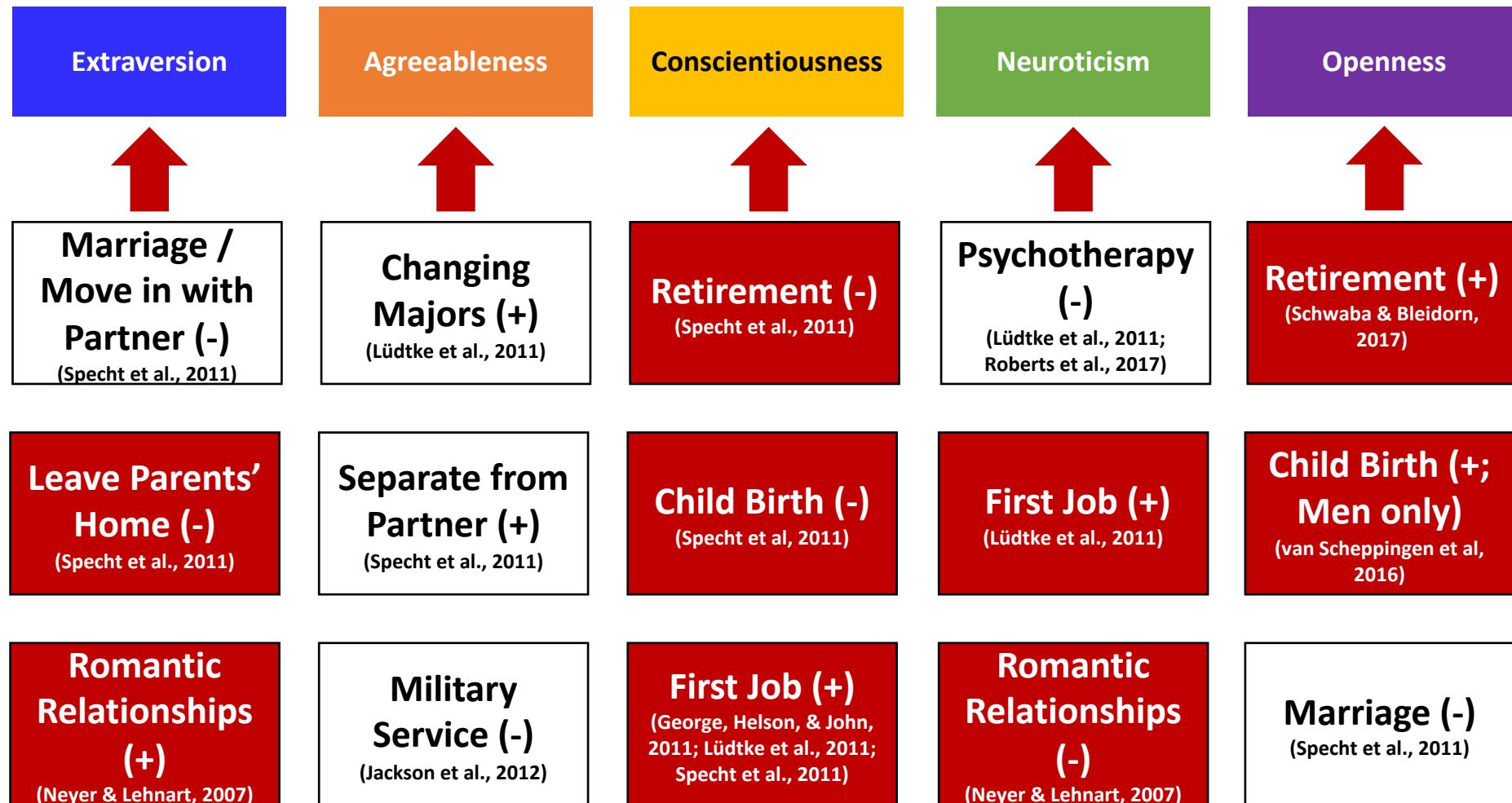
Socialization

Limitations



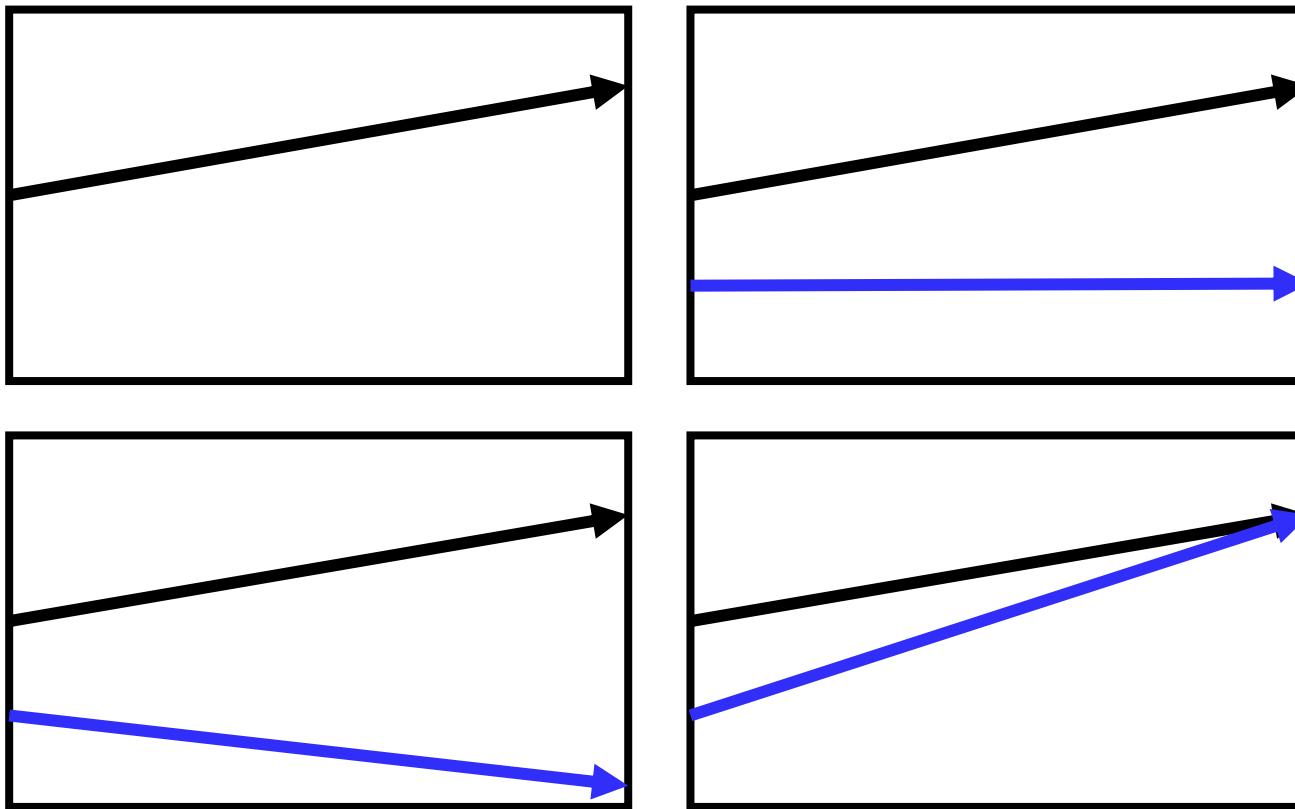
Socialization

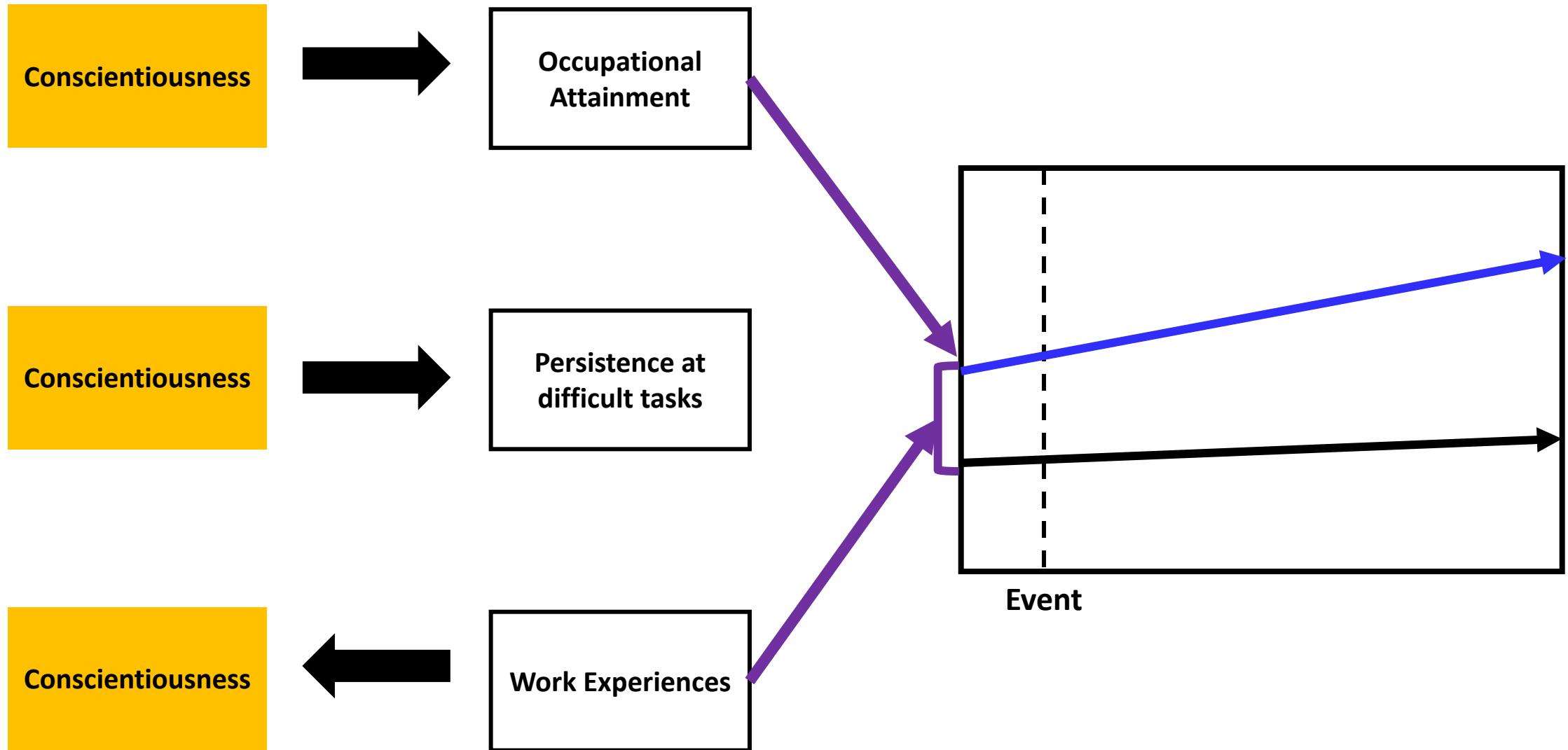
Limitations



Socialization

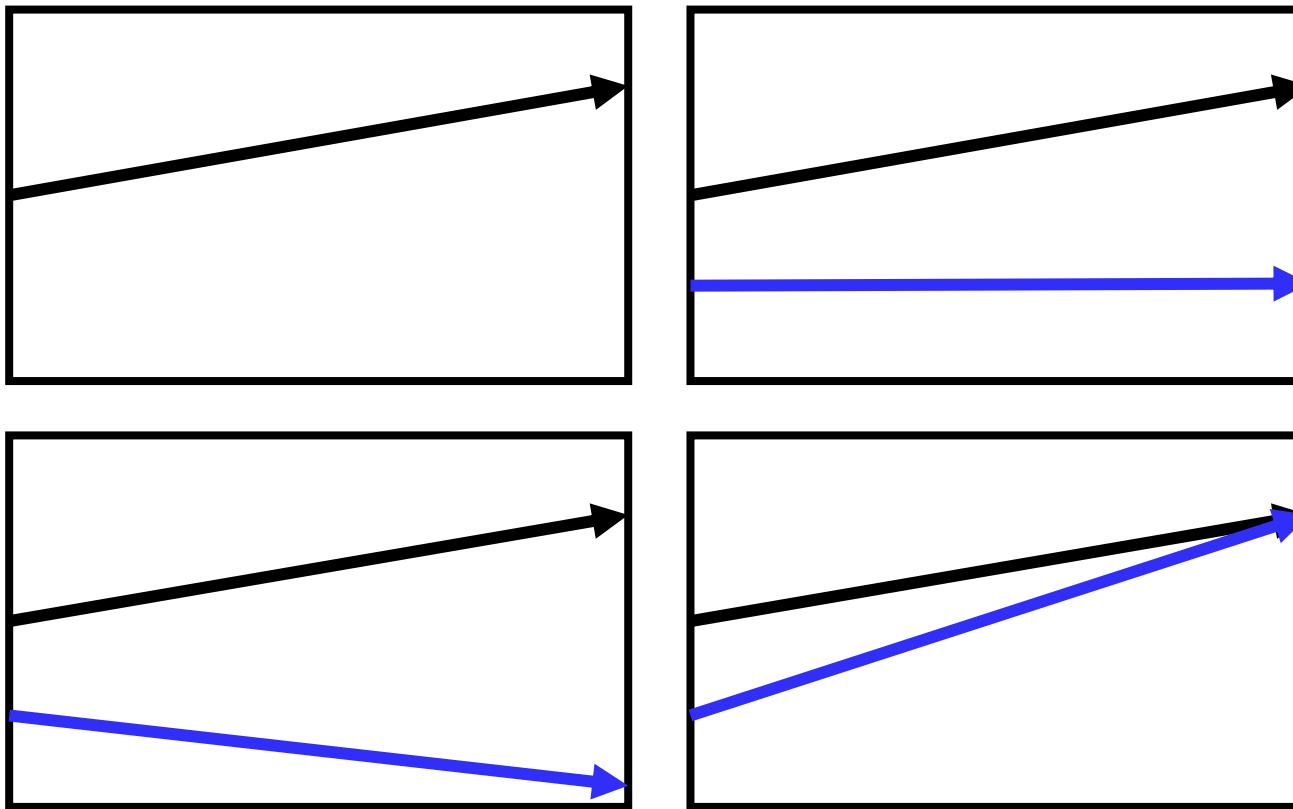
Selection Bias





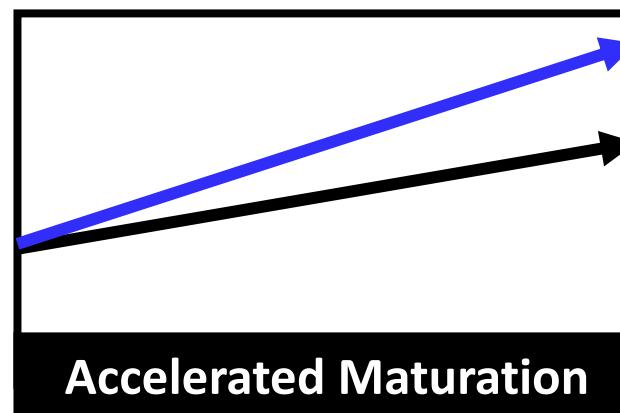
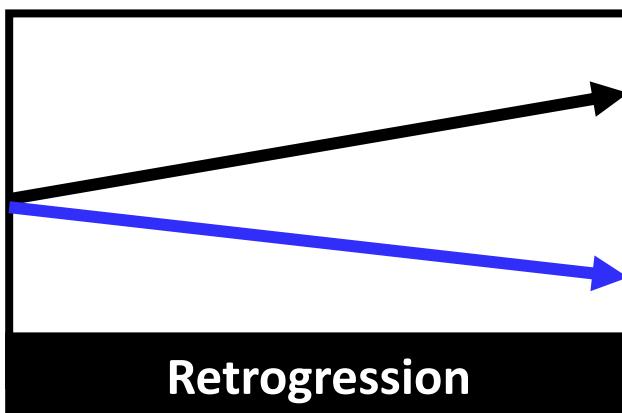
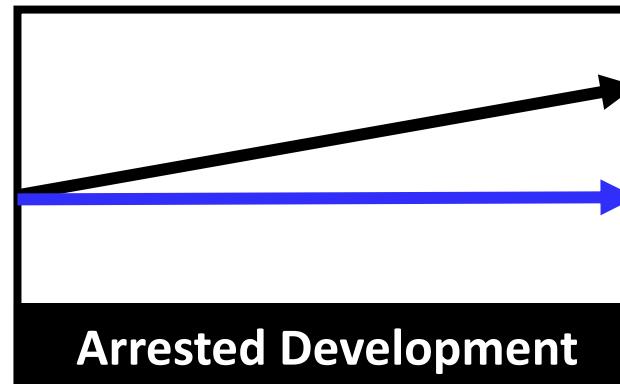
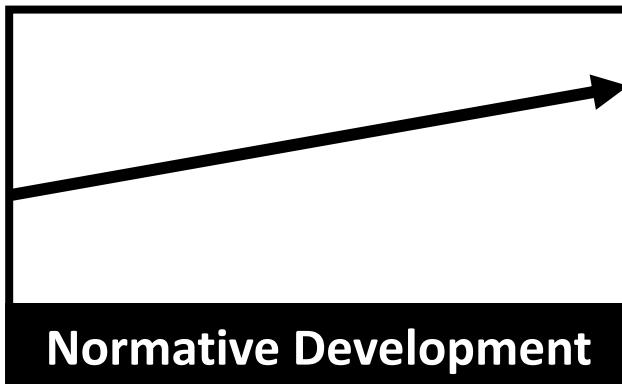
Socialization

Selection Bias



Socialization

Selection Bias

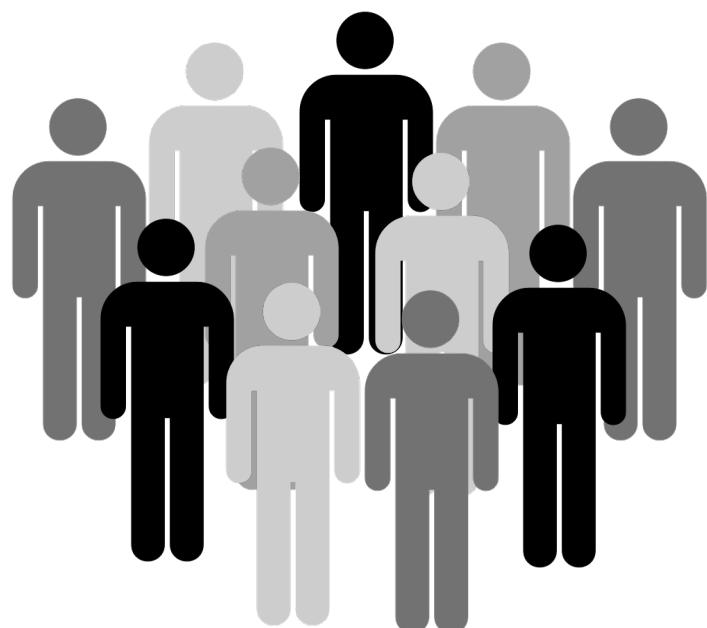


Research Question:
**Do life events predict individual
differences in personality trait change
when accounting for selection bias?**

No Event

Event

Propensity Score Matching



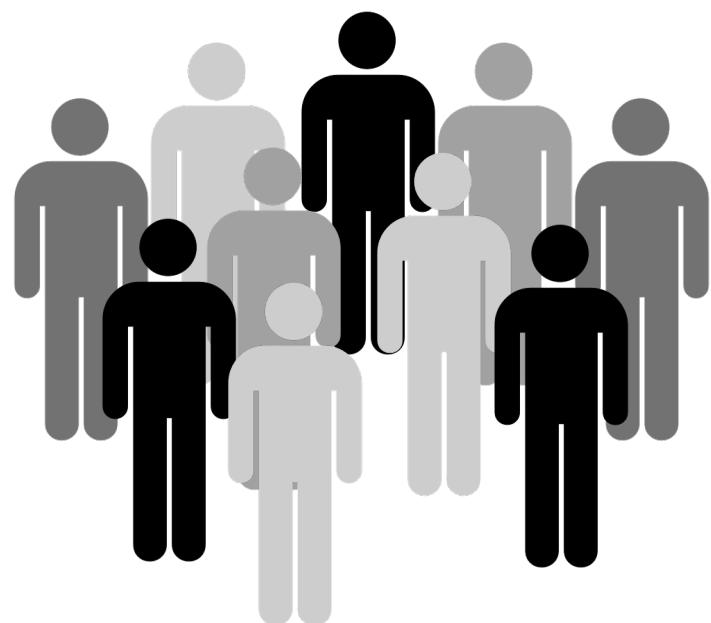
(Thoemmes & Kim, 2011)

No Event

Event



PS = .2



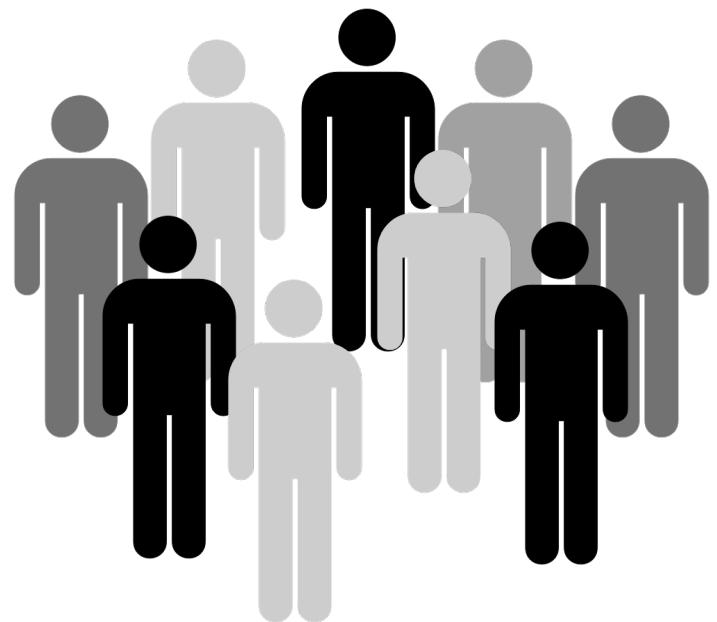
(Thoemmes & Kim, 2011)



PS = .2



No Event



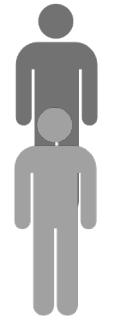
PS = .6



Event



(Thoemmes & Kim, 2011)



PS = .2



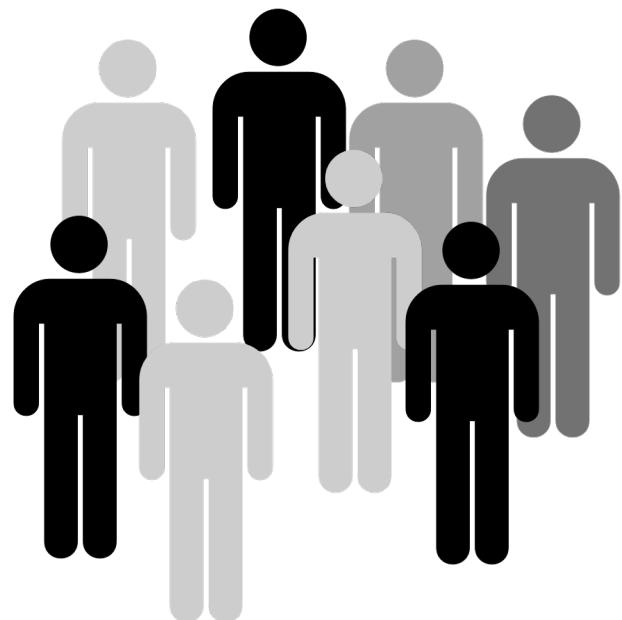
PS = .6

No Event

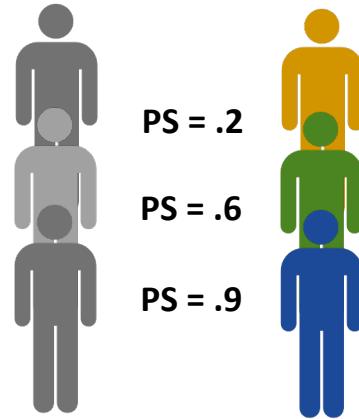
Event



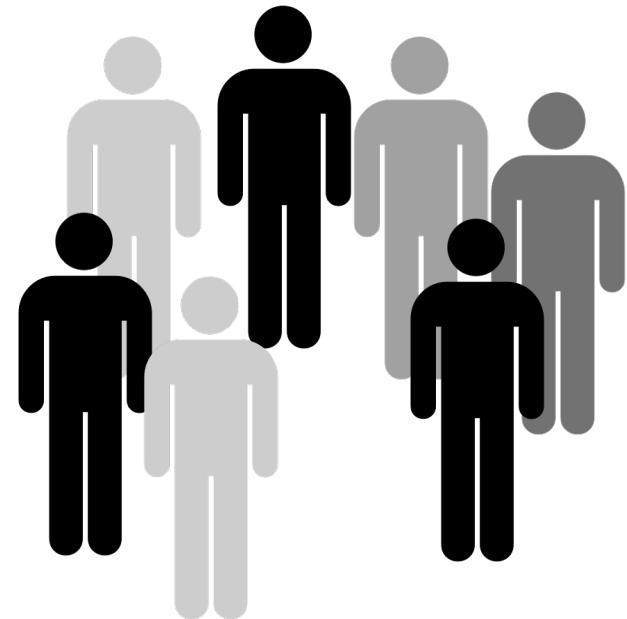
PS = .9



(Thoemmes & Kim, 2011)



No Event

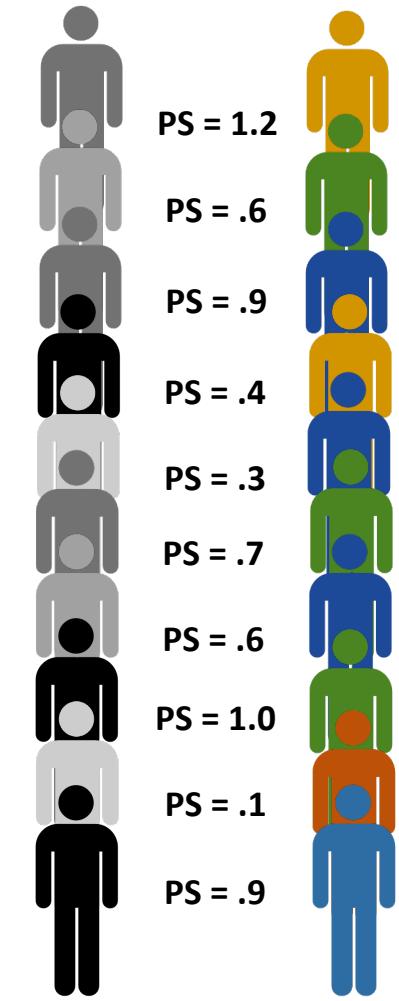


Event

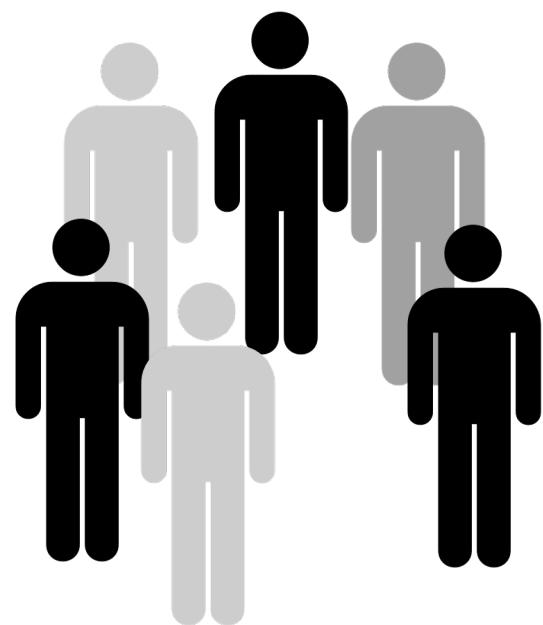
PS = .3



(Thoemmes & Kim, 2011)



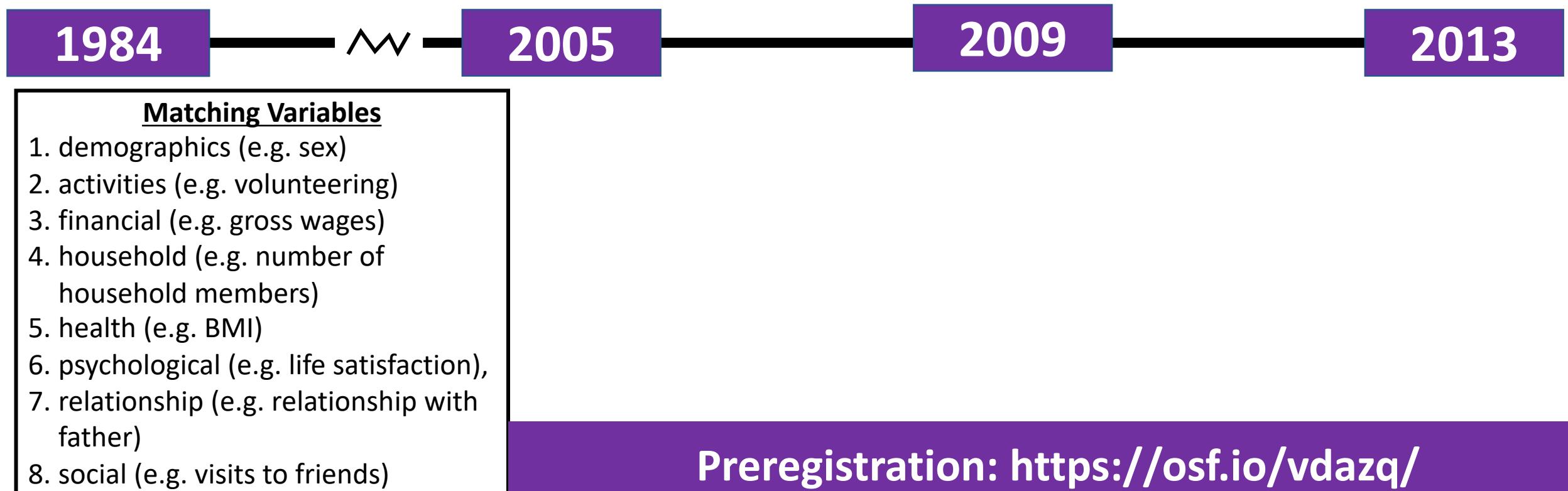
No Event



Event



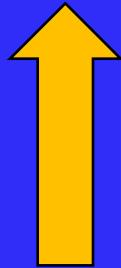
German Socioeconomic Panel Study (GSOEP)



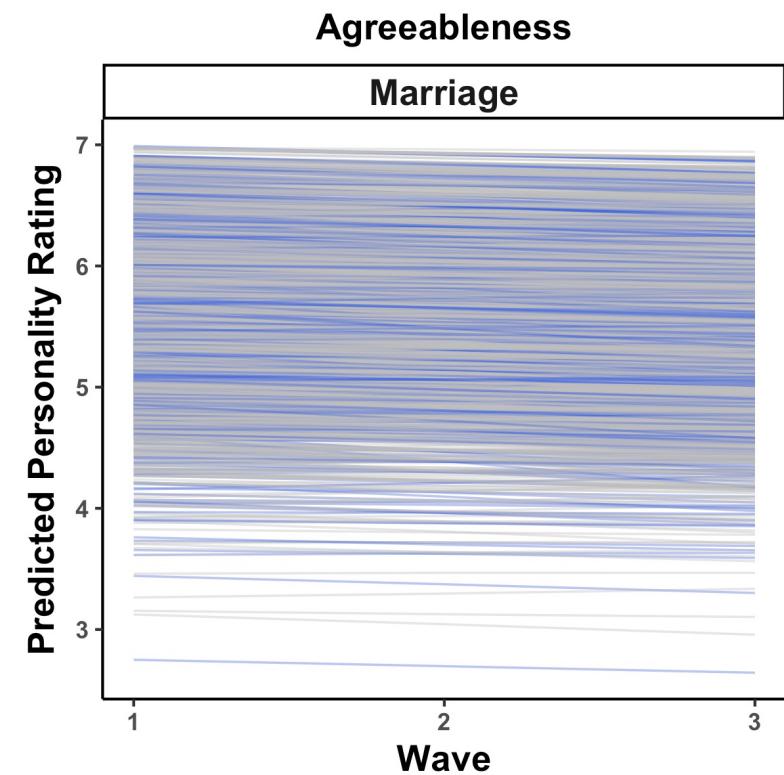
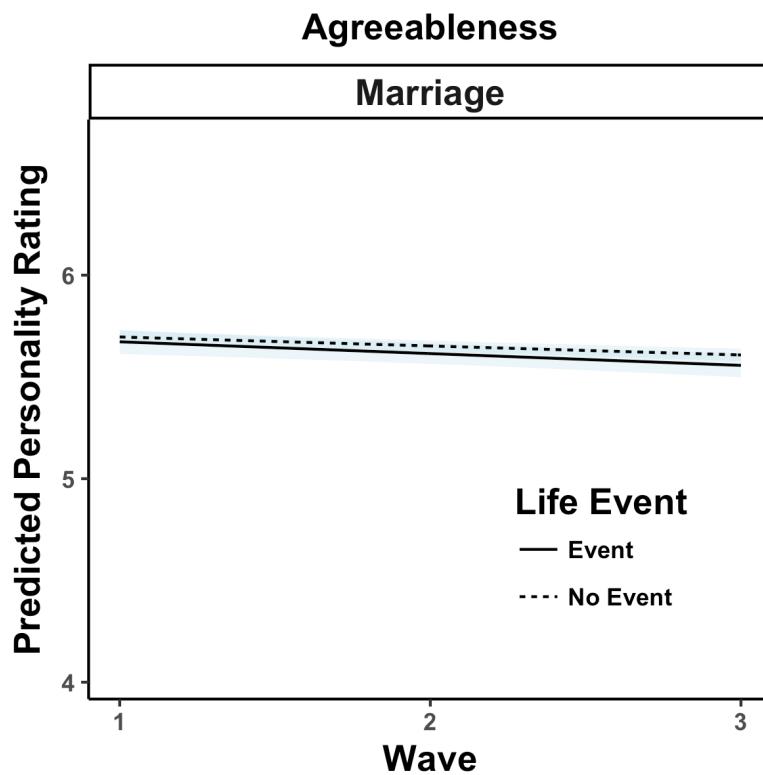
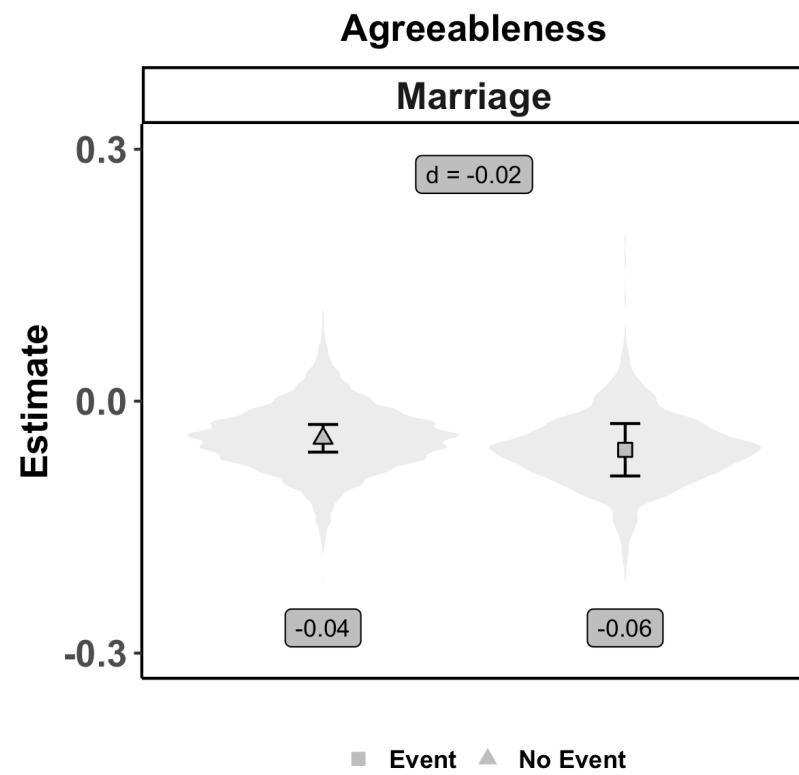
Results

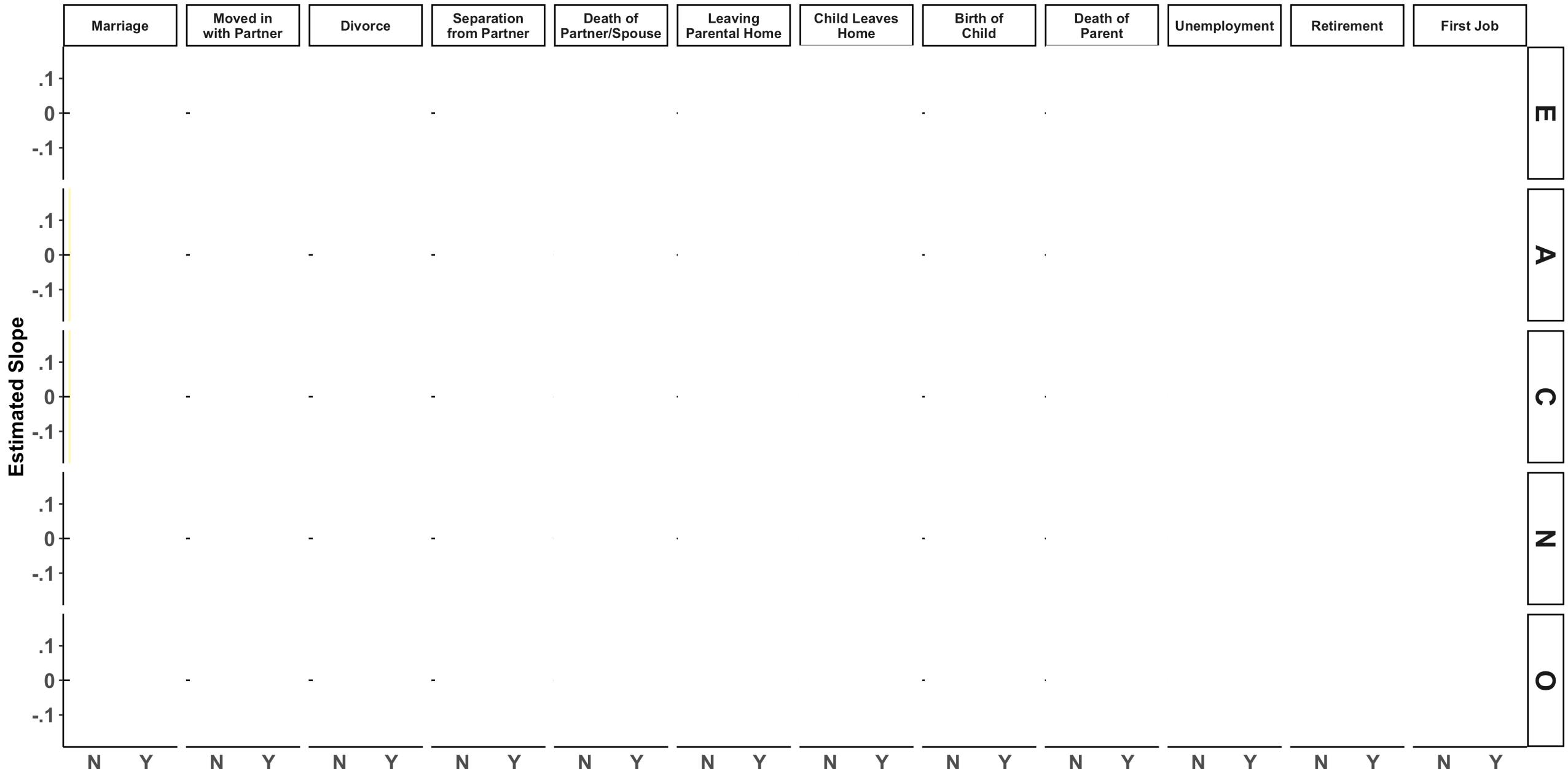
Socialization

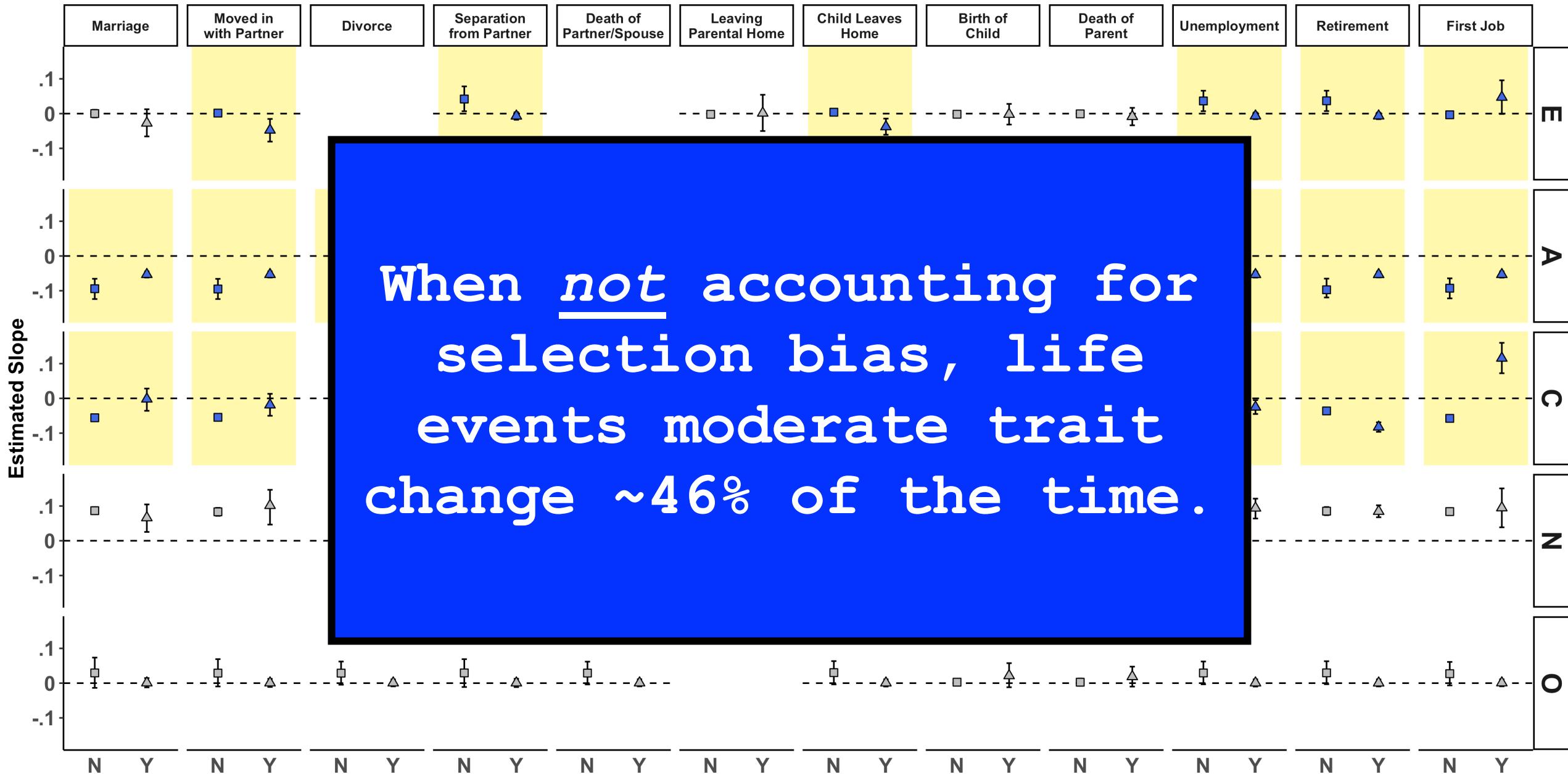
E A C N O

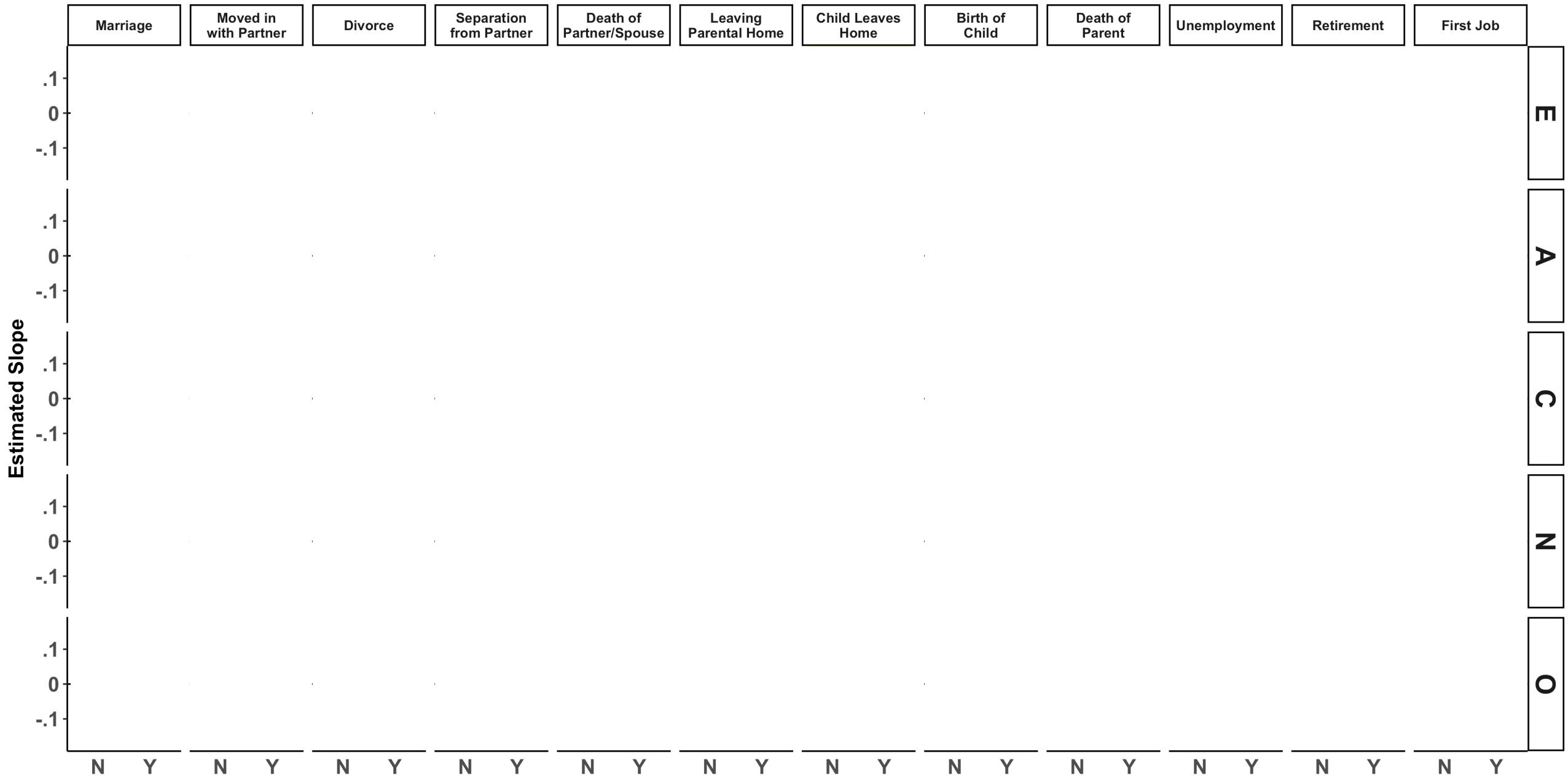


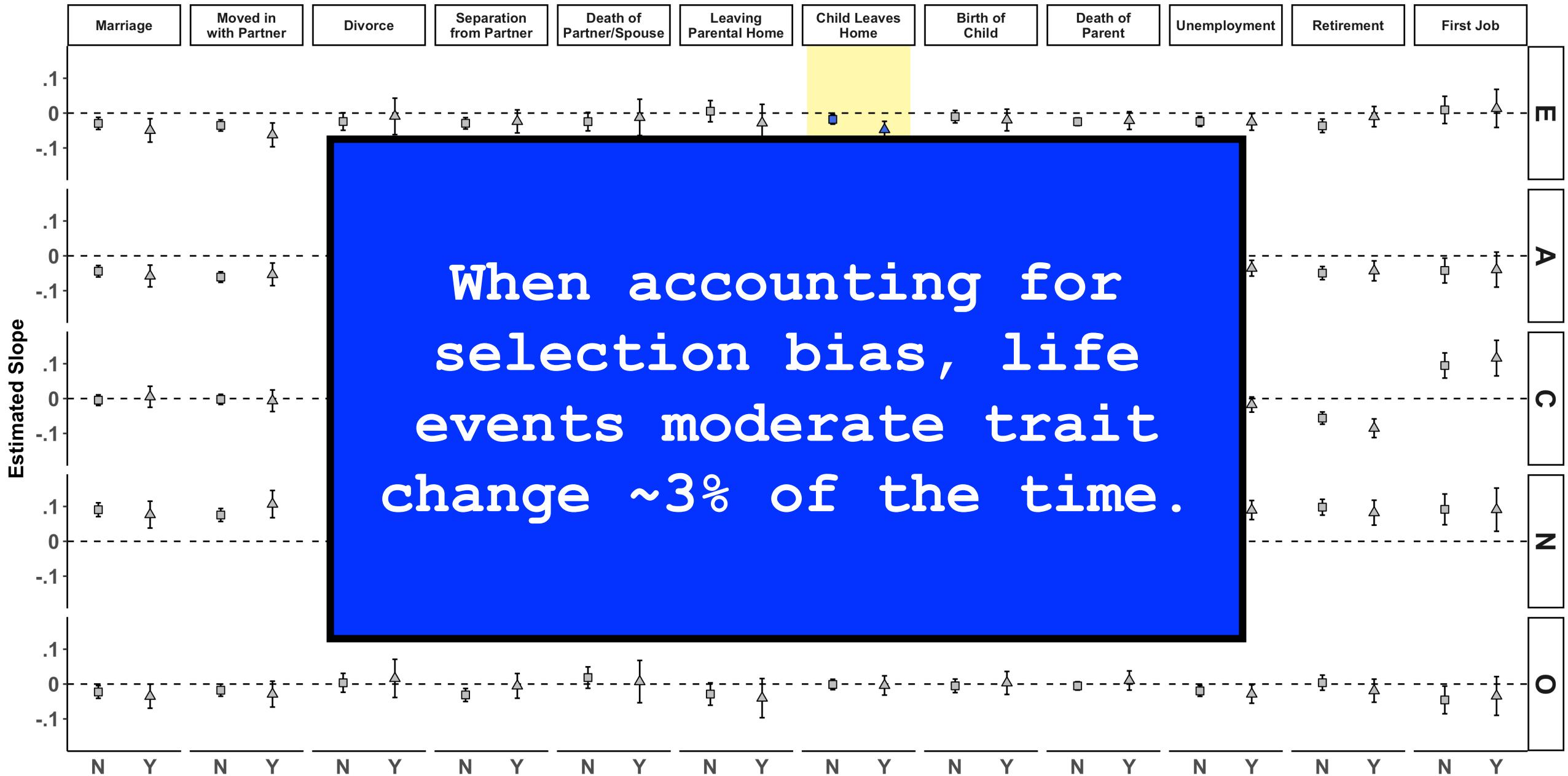
Life Events

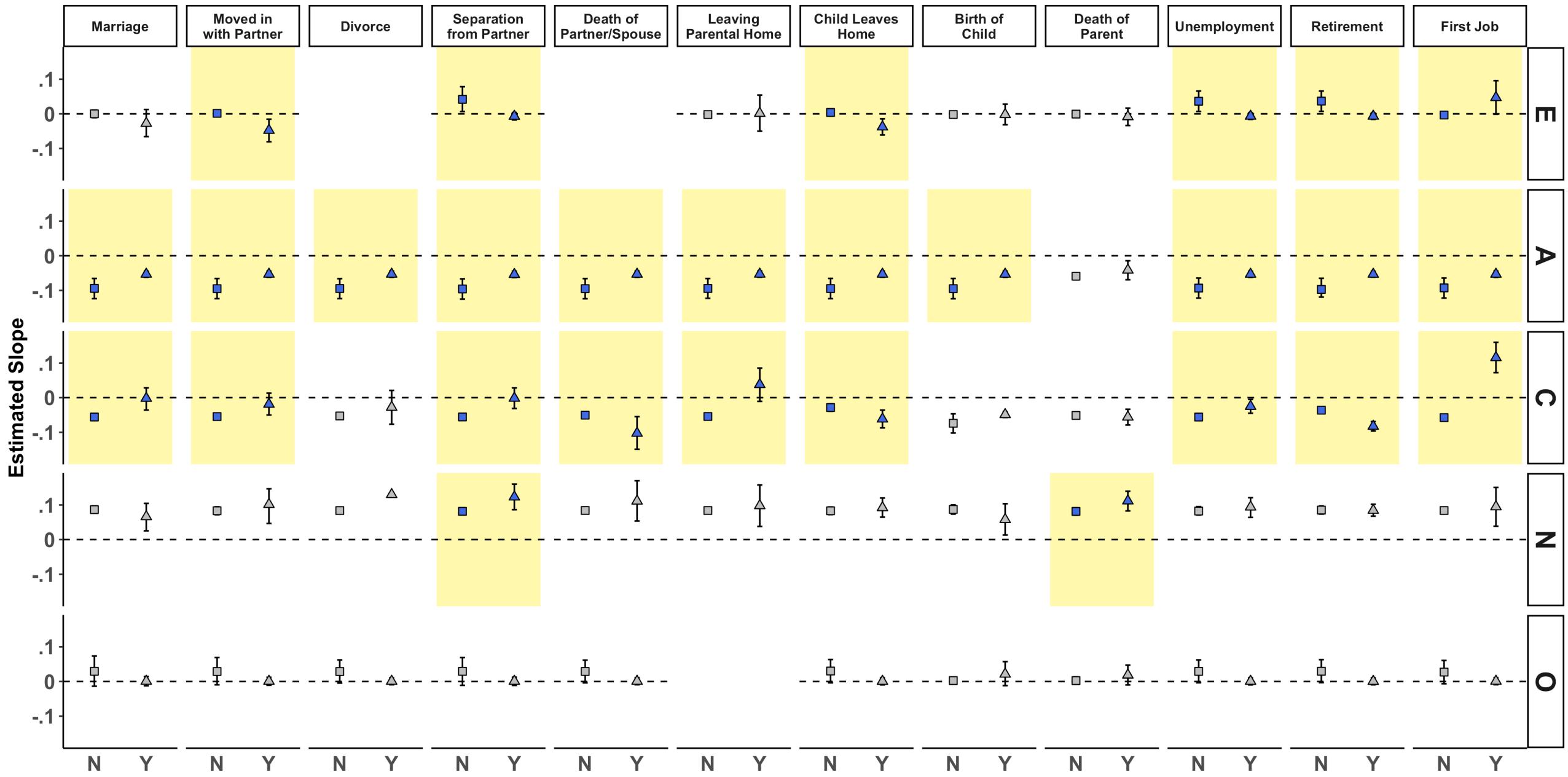


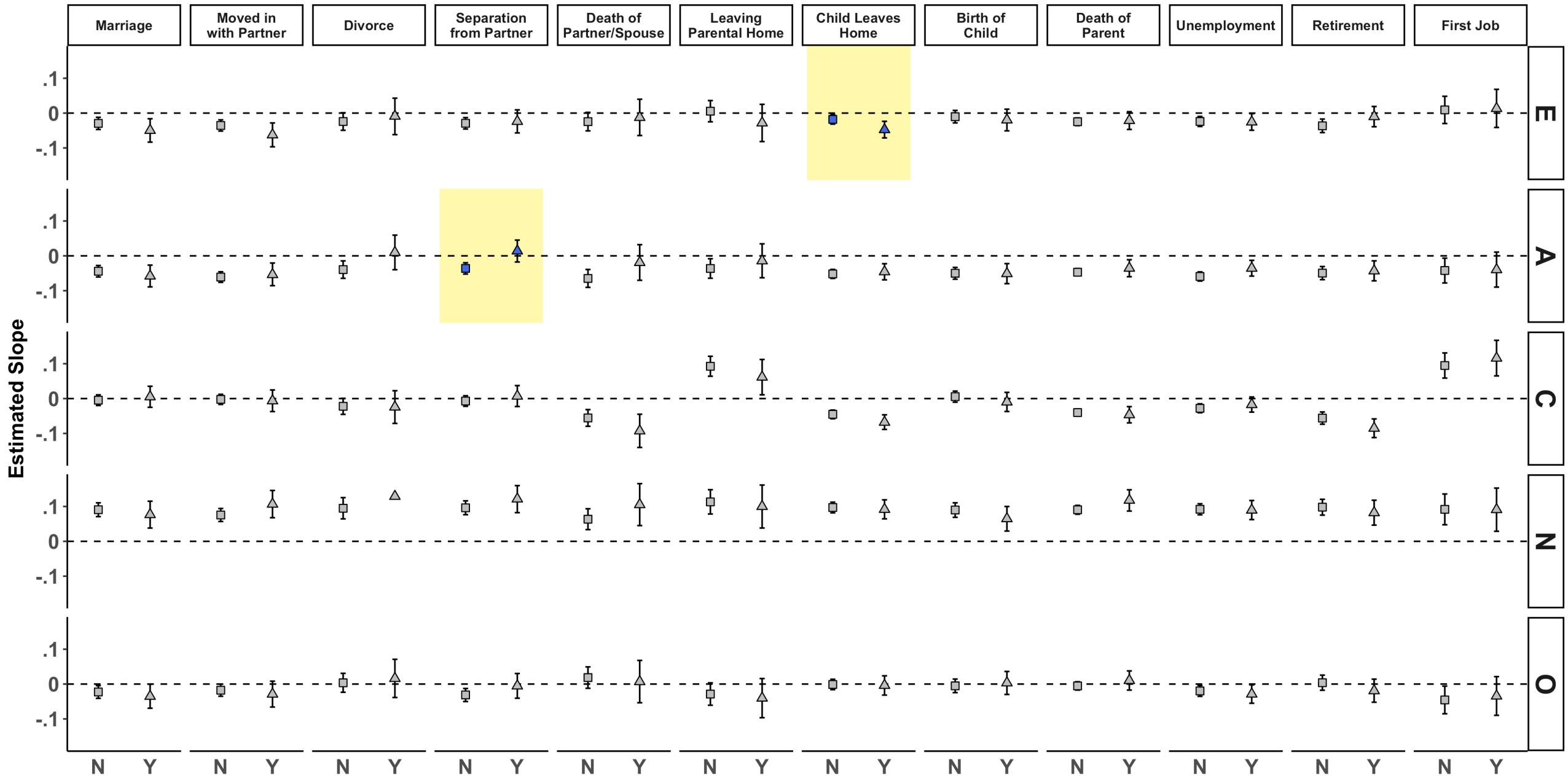




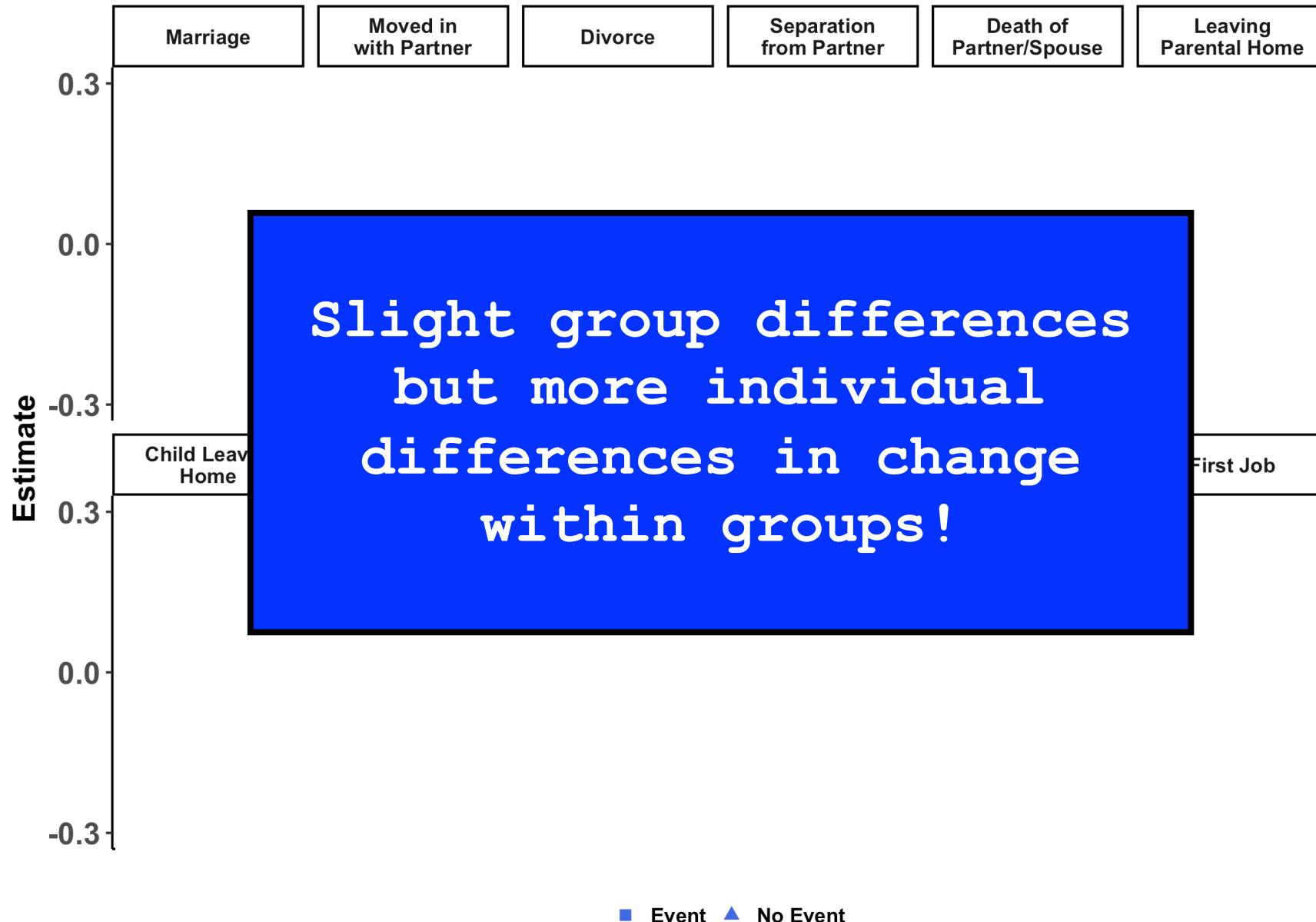




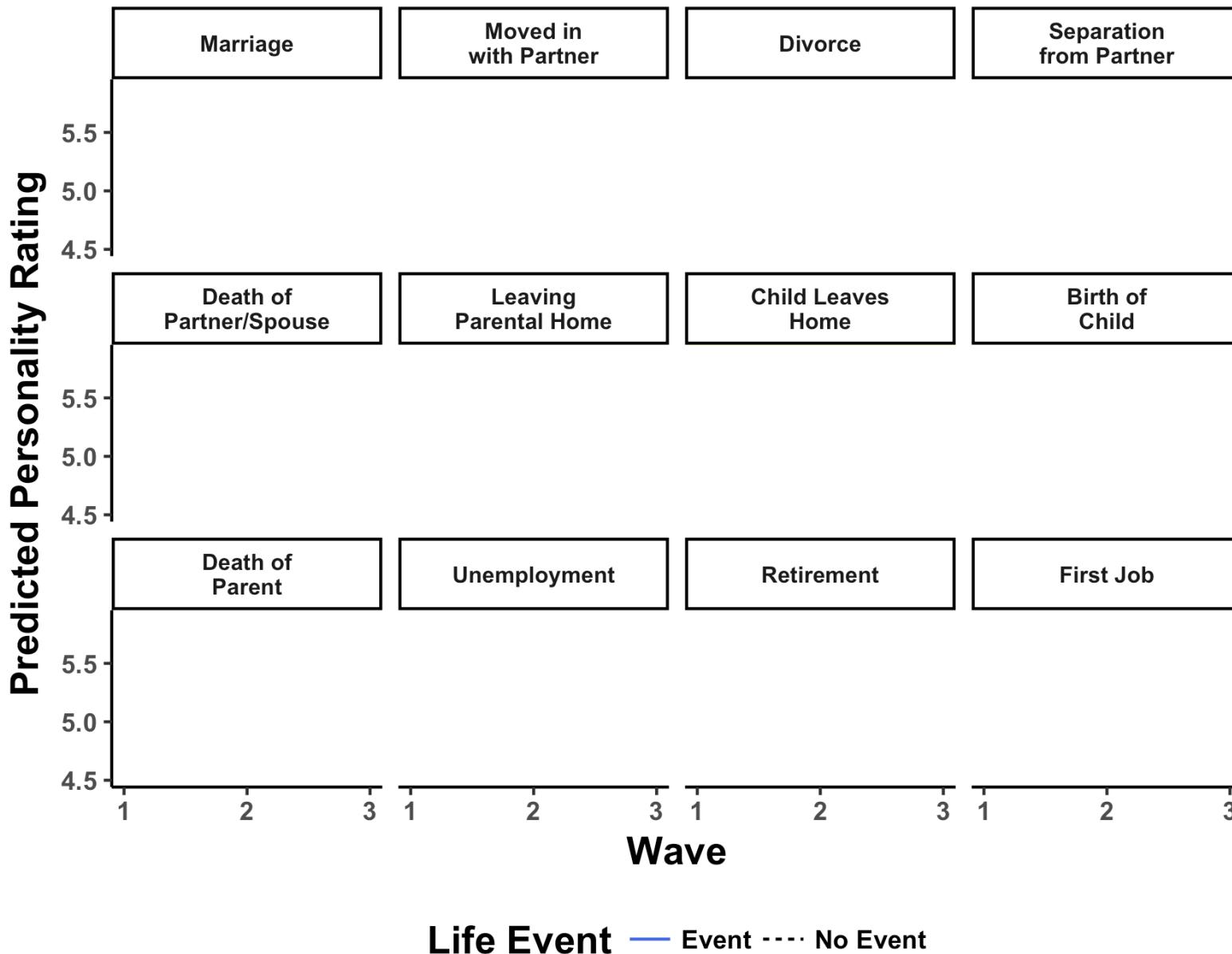




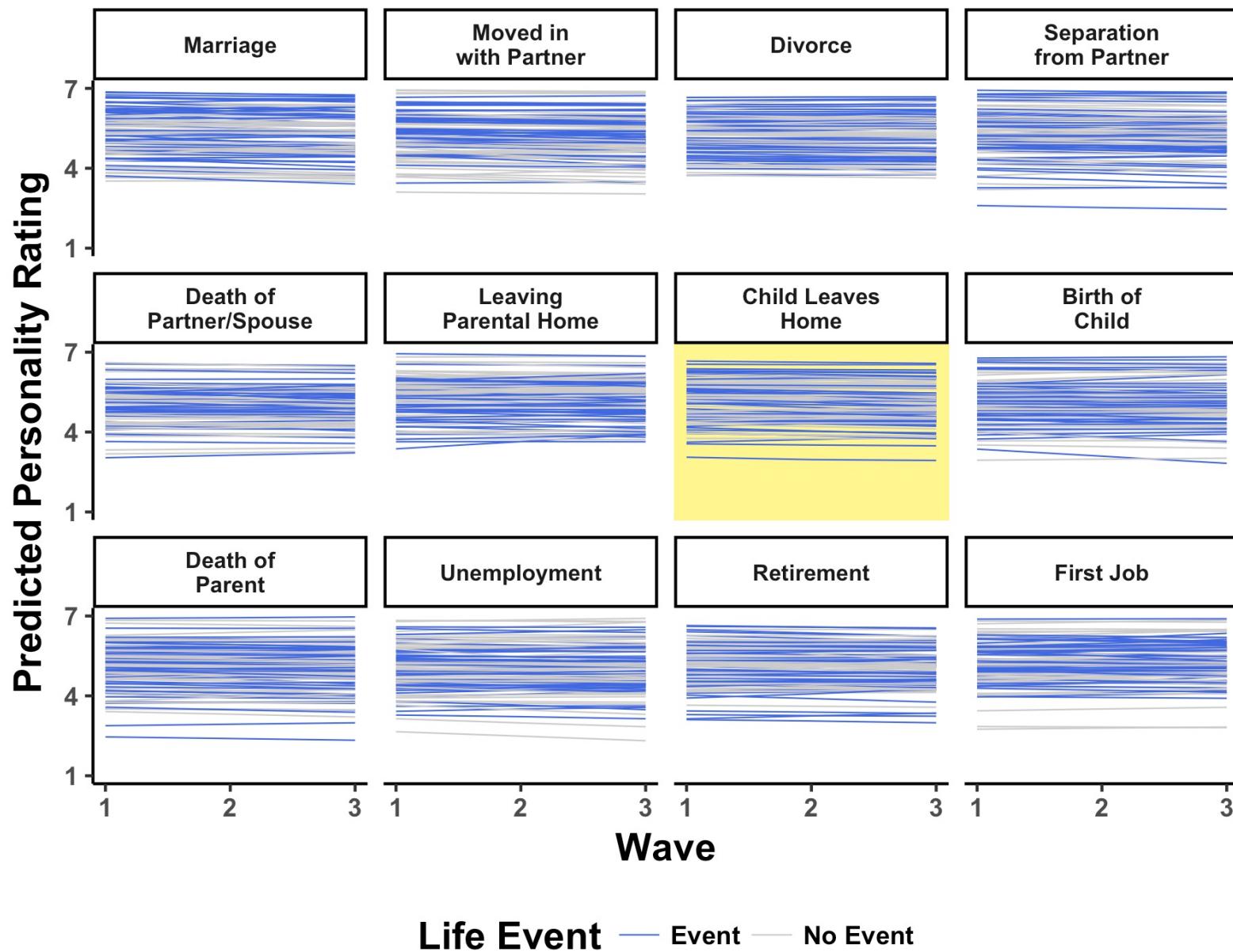
Extraversion



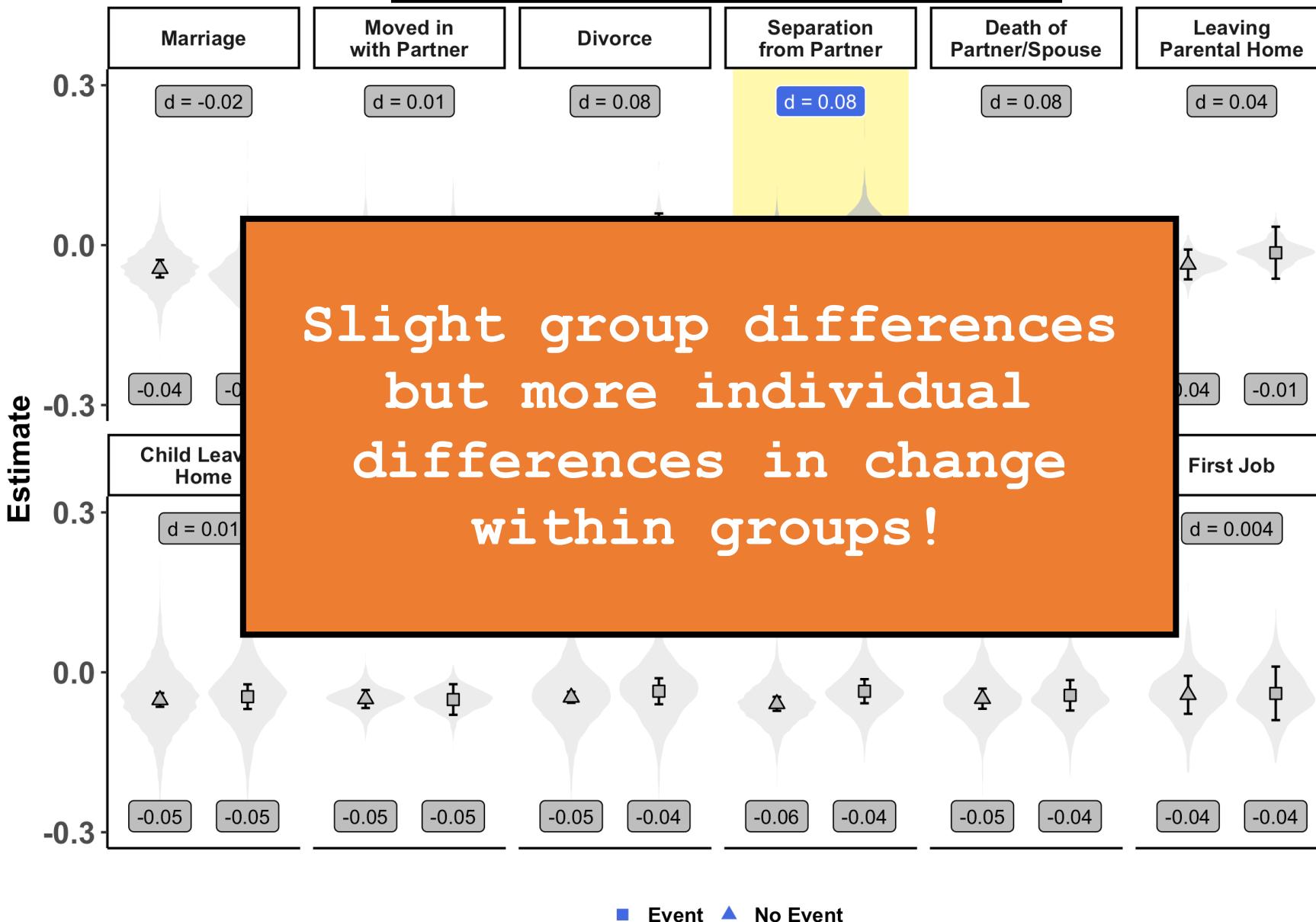
Extraversion



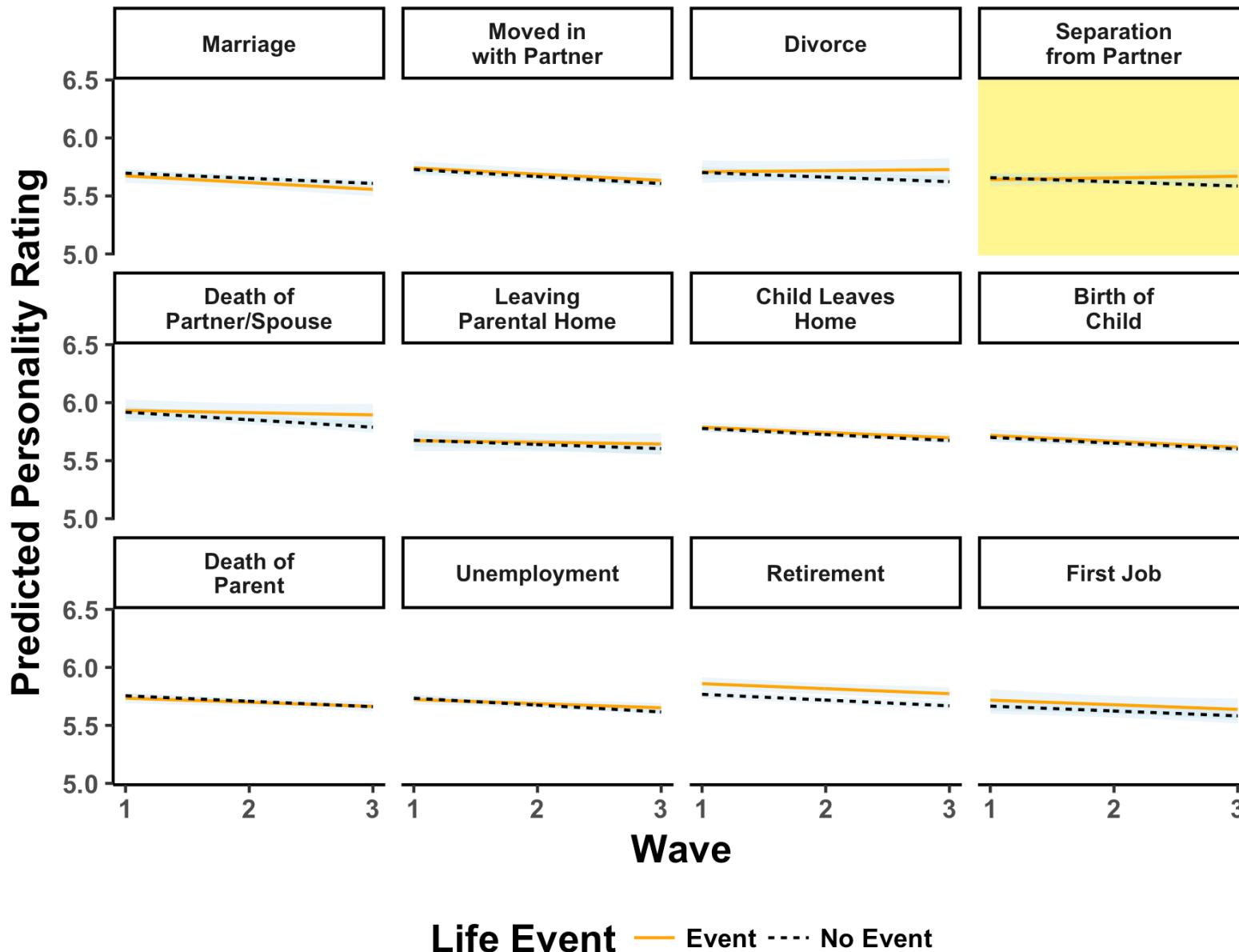
Extraversion



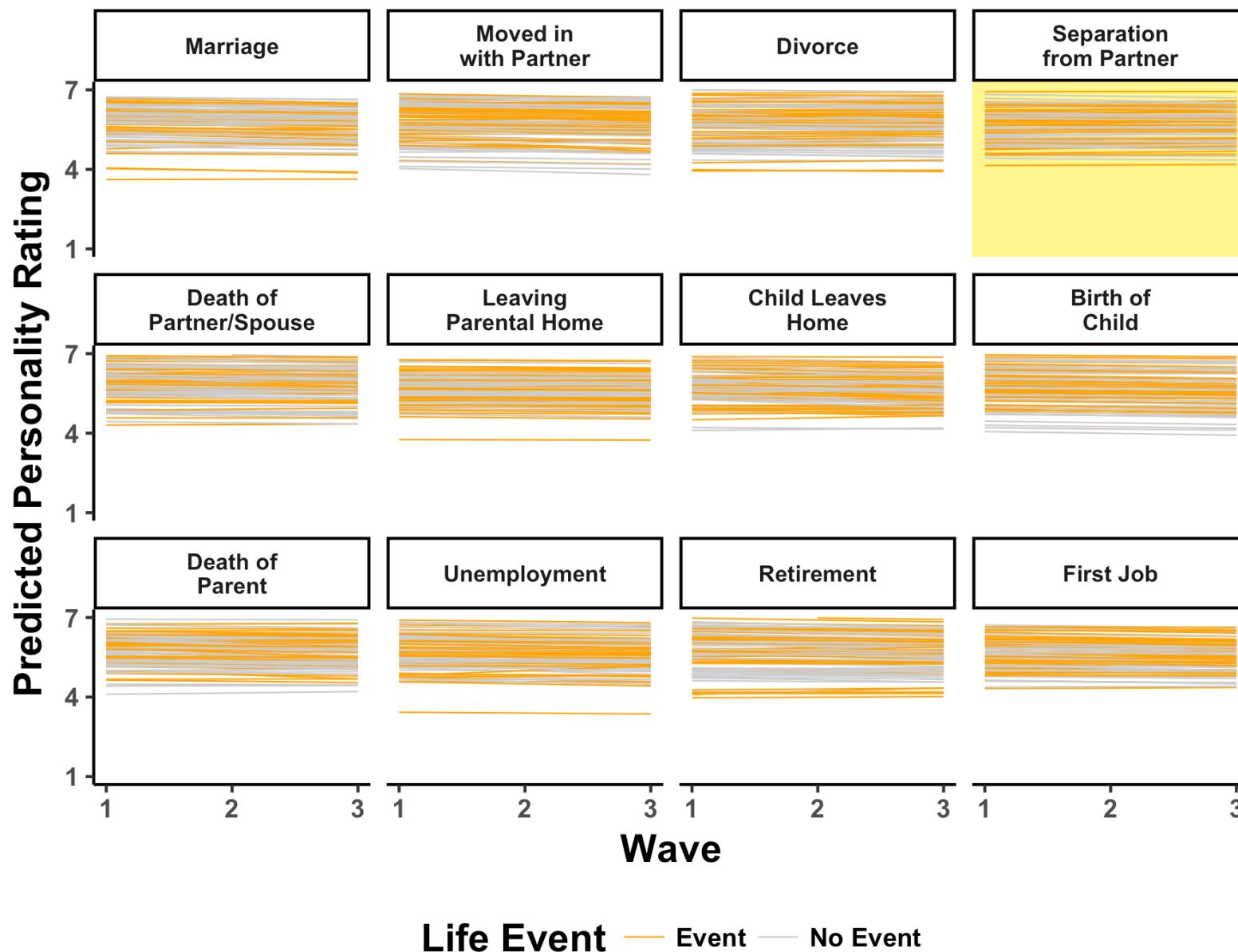
Agreeableness



Agreeableness



Agreeableness



Summary

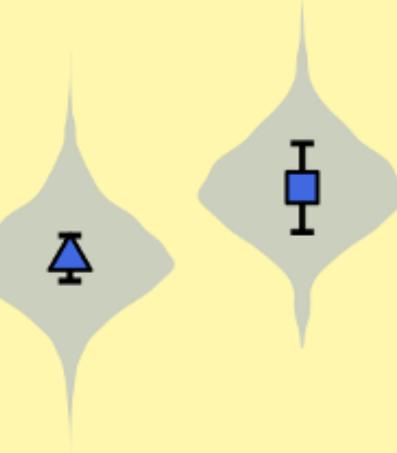
Few and small group differences in change as a function of experiencing life events.

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



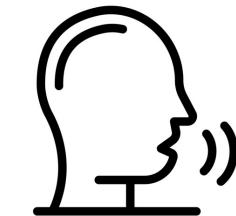
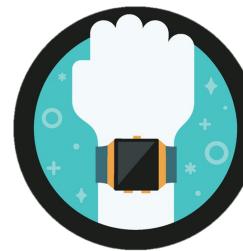
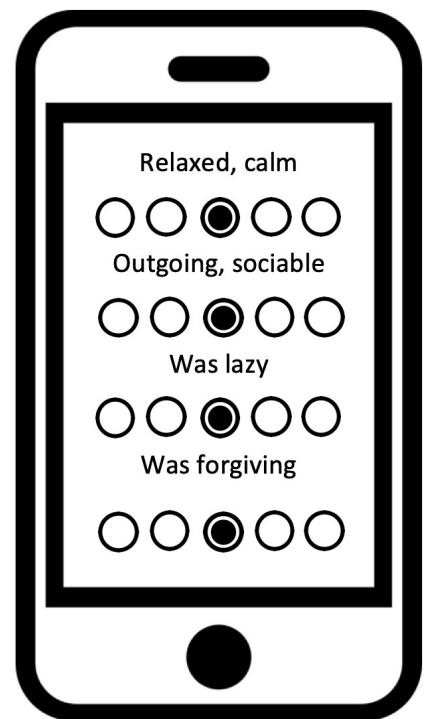
Change captured at the
individual-level in patterns of
states

Answers questions about what it
means for one person to change

Individualistic
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

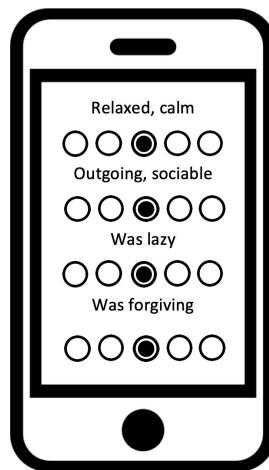
9 items from the Big Five Inventory (BFI)

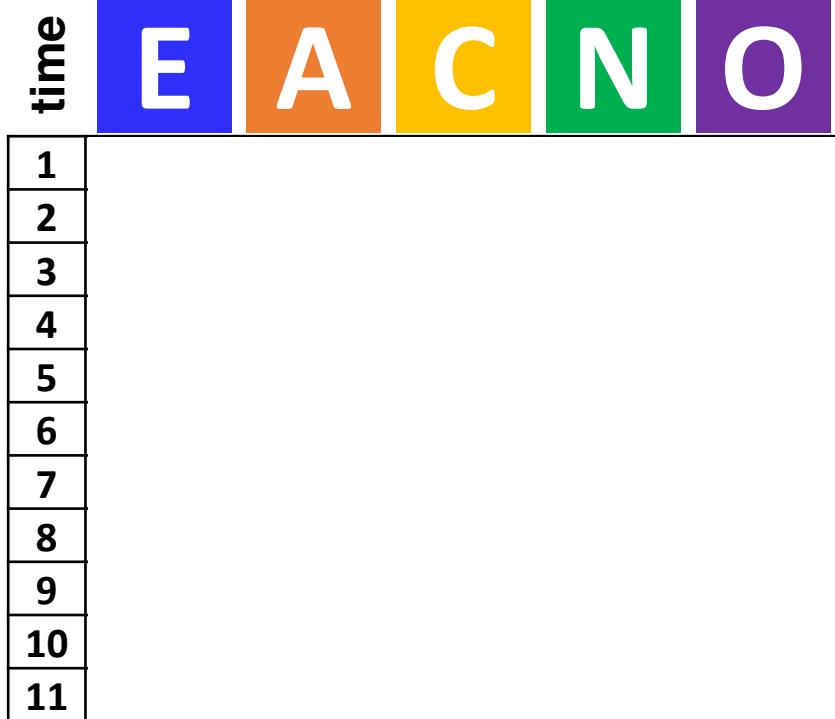
Procedure

4 assessments / day for 15 days

Modeling

Graphical vector autoregression





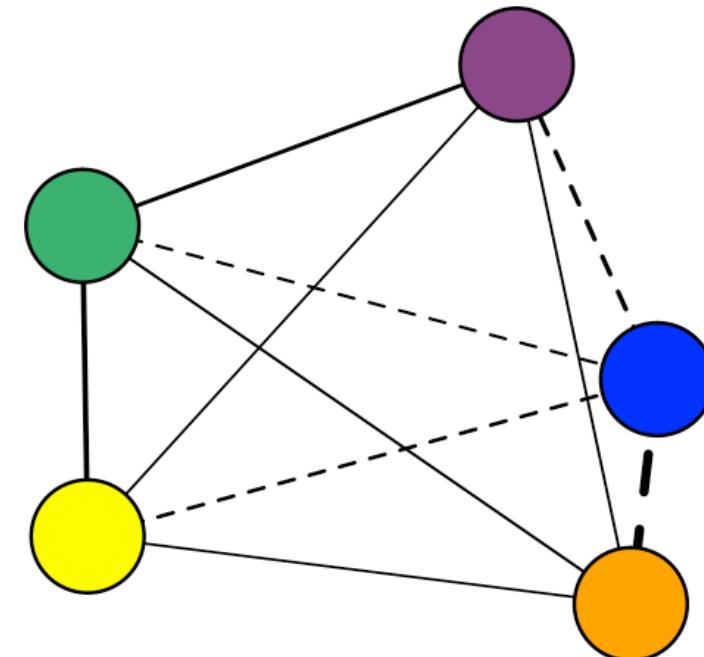
E					
A	0.02				
C	-0.05	0.08			
N	0.64	-0.12	-0.10		
O	0.26	-0.27	0.43	0.07	

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

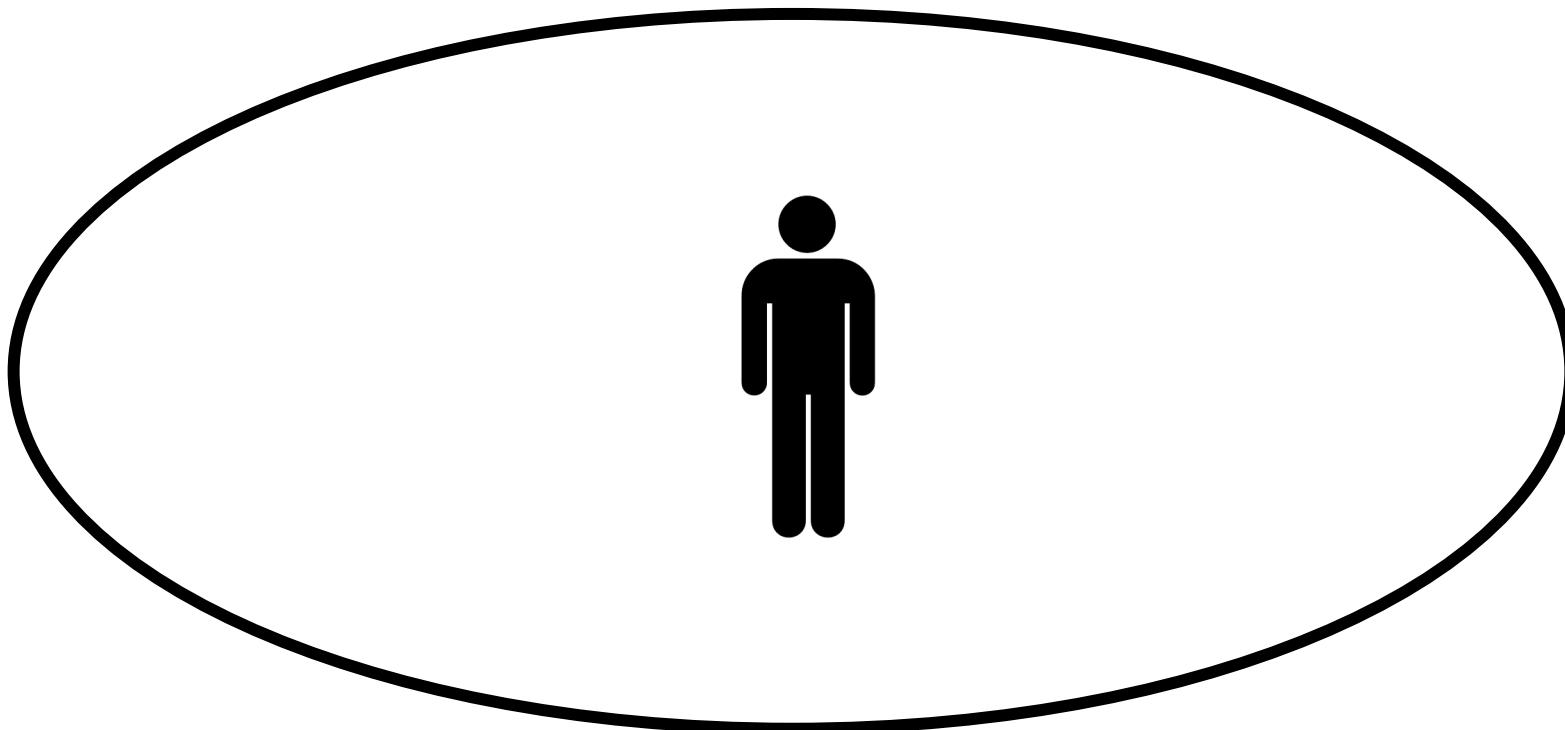


Contemporaneous: Within Time-Points

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

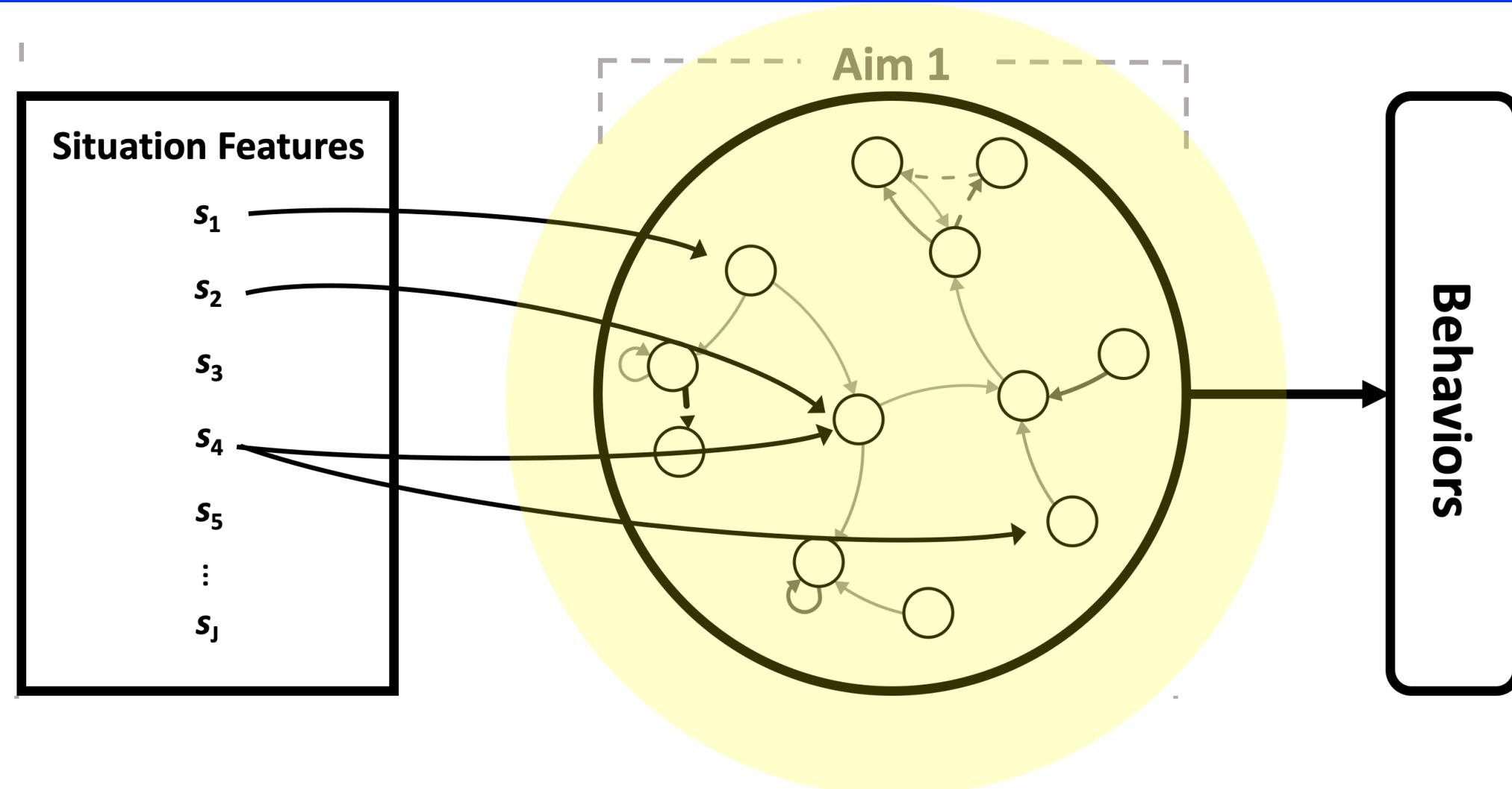
(Beck & Jackson, 2020a)

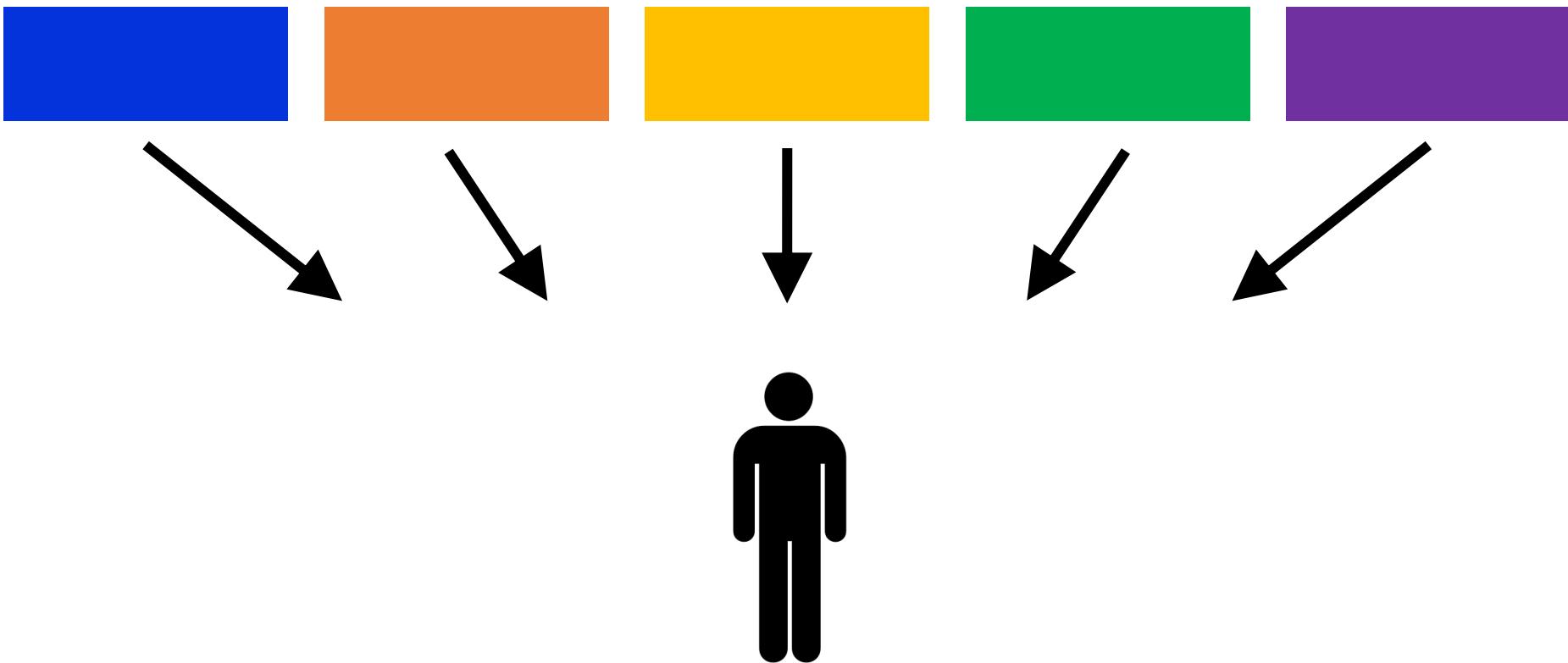
Persons in Context



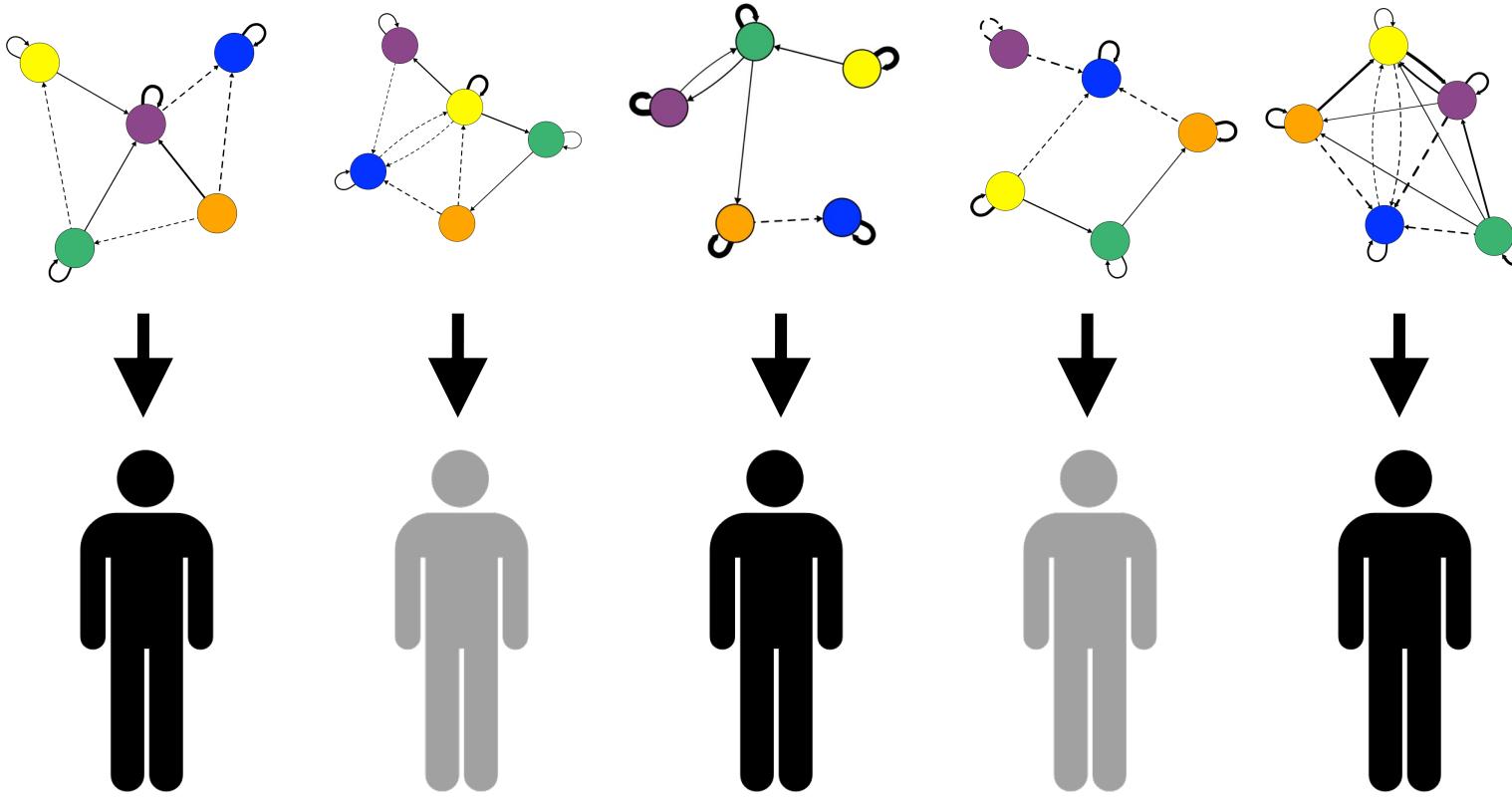
e.g., Lewin, 1936

Personality as a Cognitive Affective Personality System (CAPS)



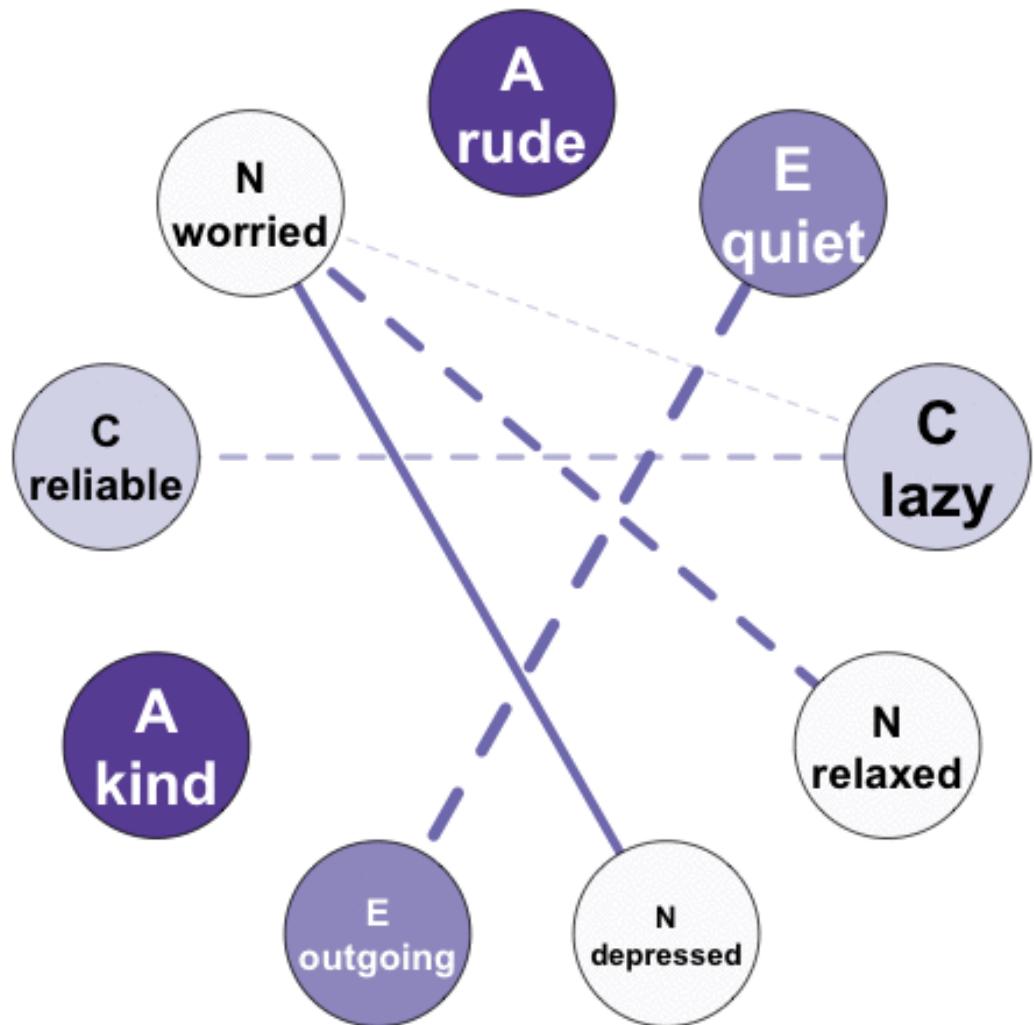


**Idiographic
Person-Centered**



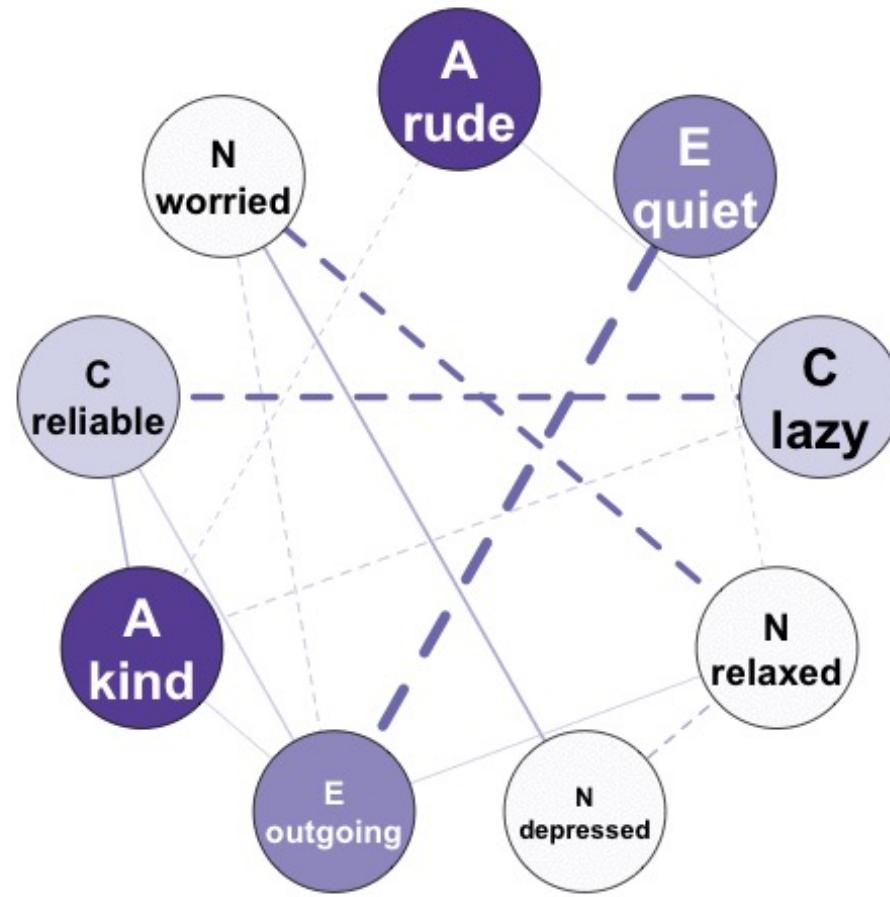
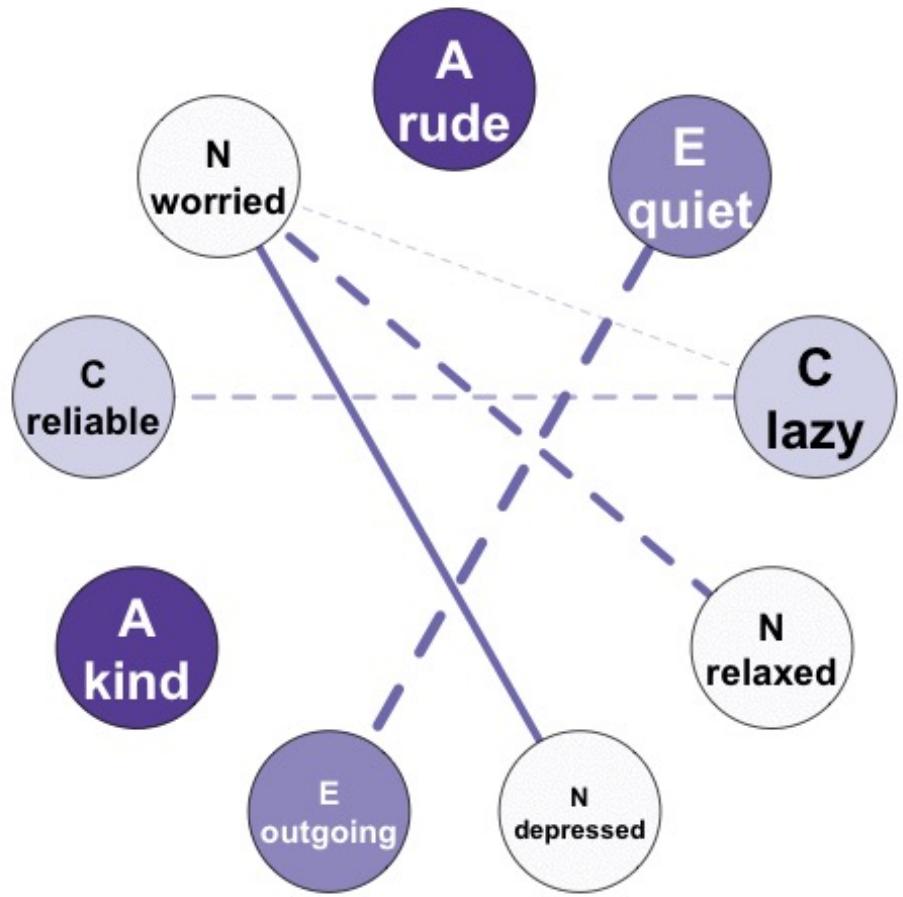
Idiographic

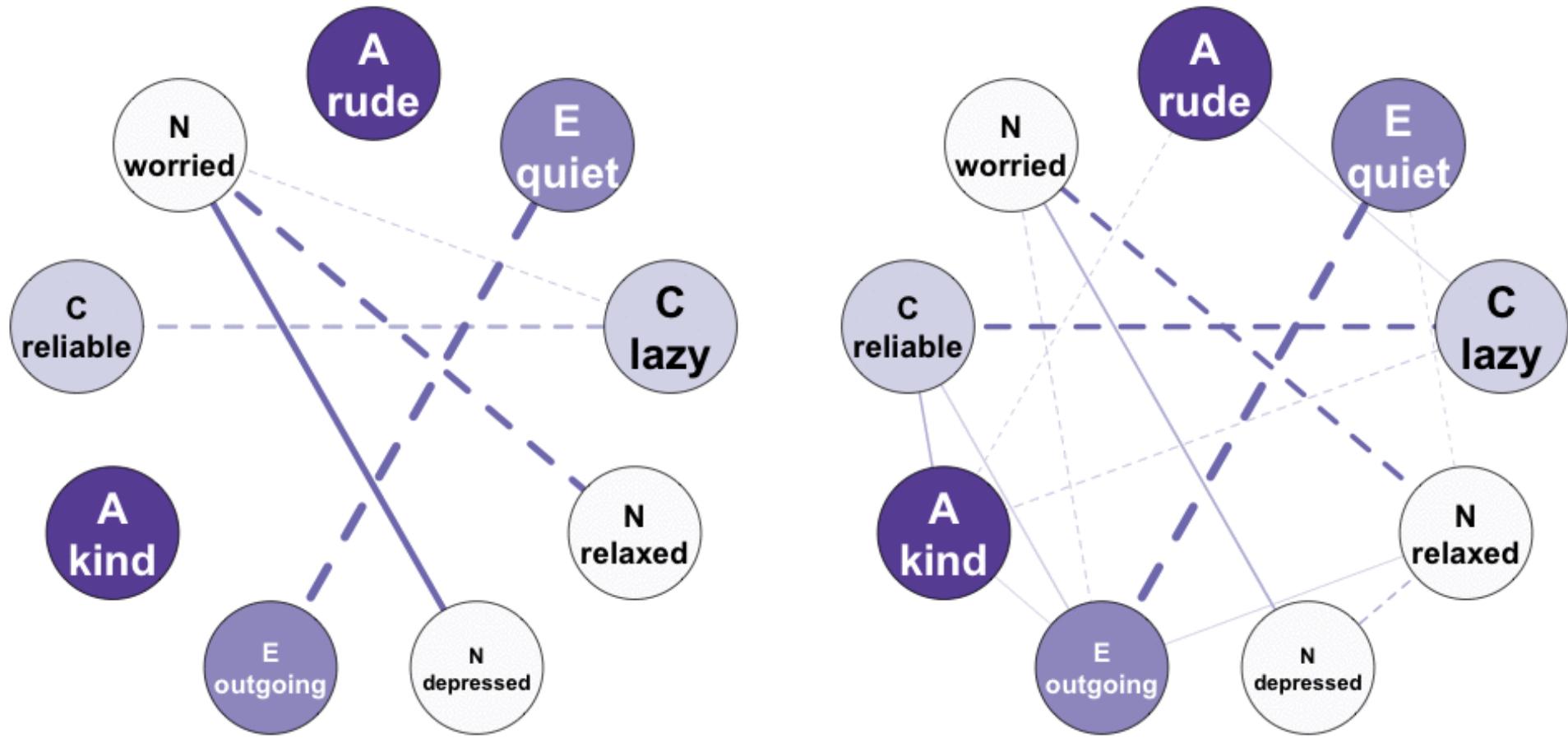
Research Question:
**Do idiographic personality structures (i.e.
measures of persons in contexts)
demonstrate consistency over two-years?**

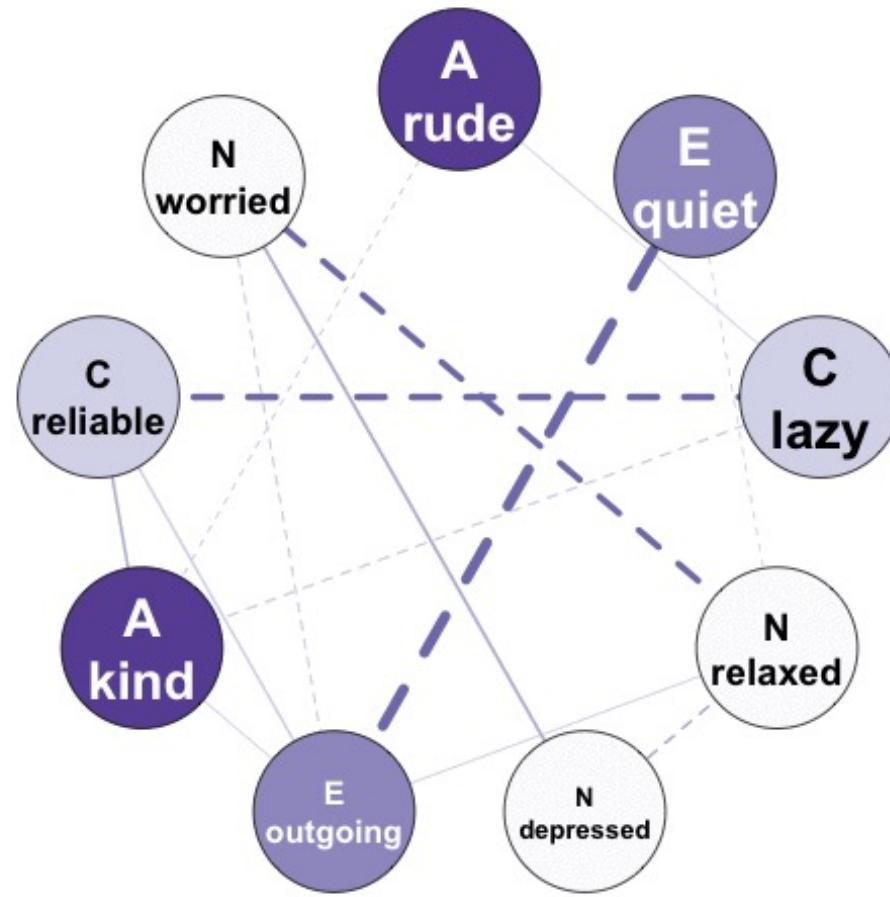
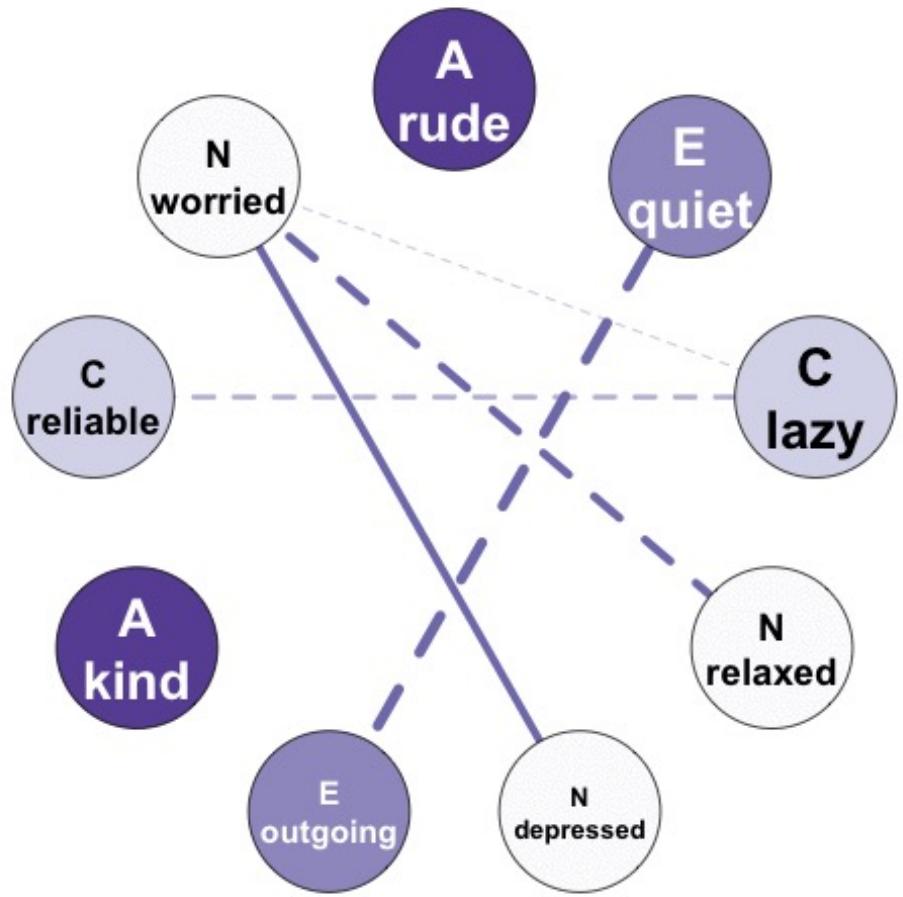


The structures differ across people.

But do they show expected longitudinal consistency?

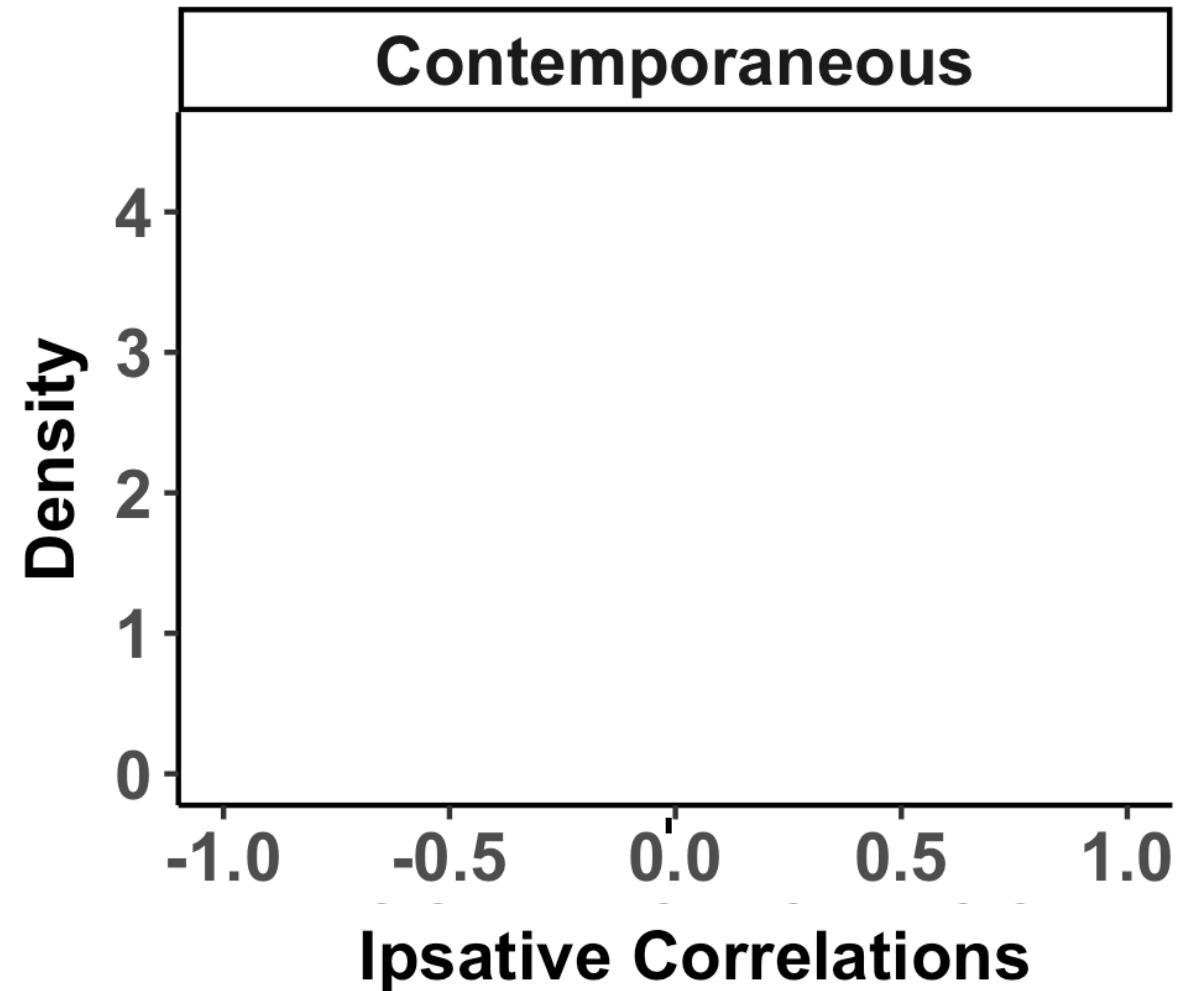






How consistent is
idiographic personality
across two
years?

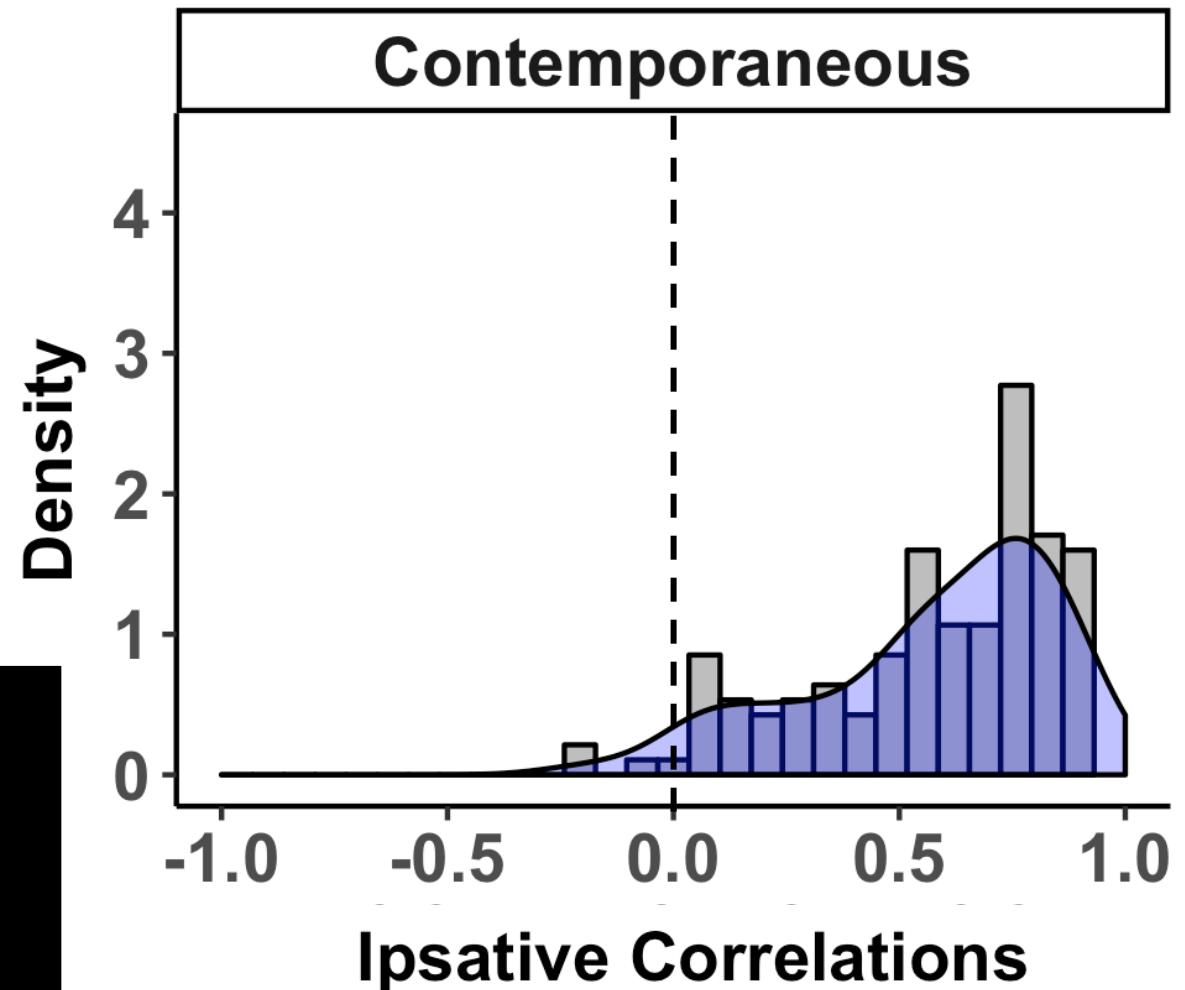
Ipsative Network Consistency



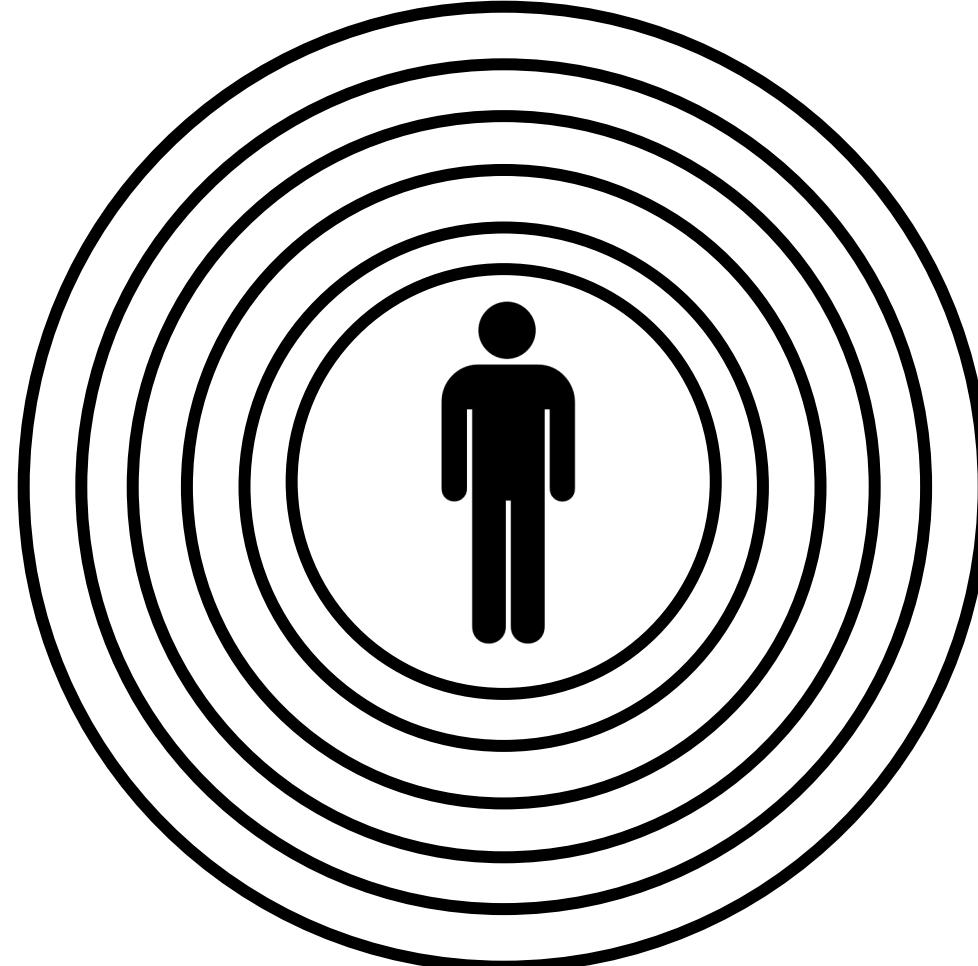
How consistent is
idiographic personality
across two
years?

Idiographic Personality
is consistent over two
years.

Ipsative Network Consistency



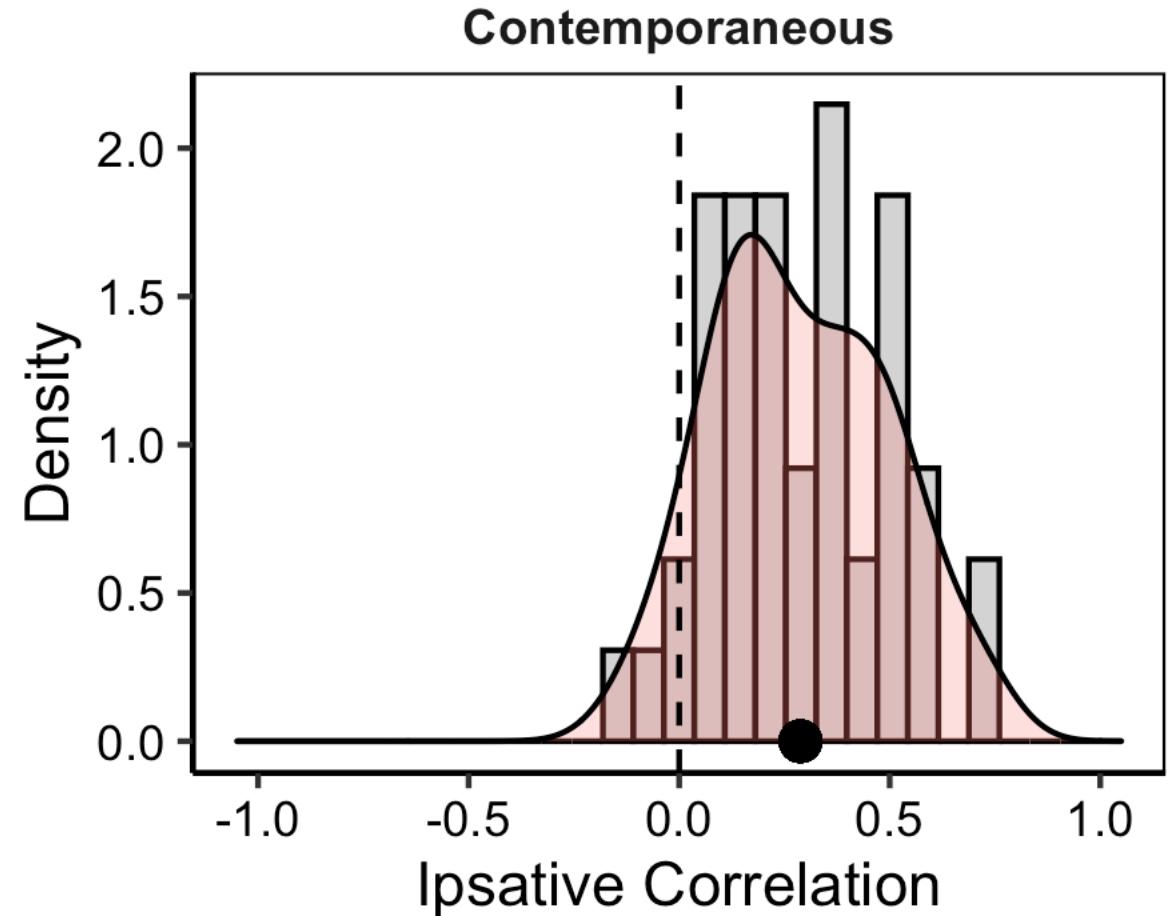
Persons in Context



e.g., Bronfenbrenner, 1979

How consistent is
idiographic personality
across two
years?

Idiographic Personality
is consistent over two
years AND global events.

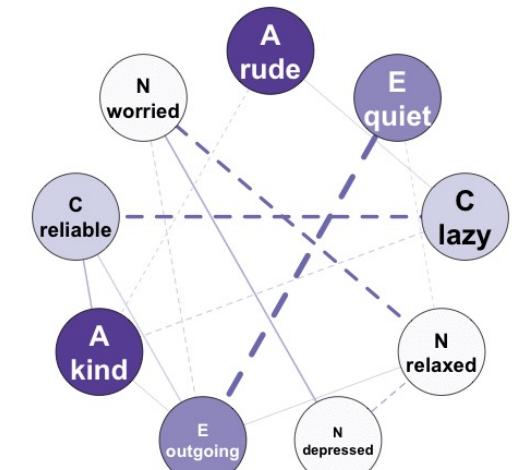
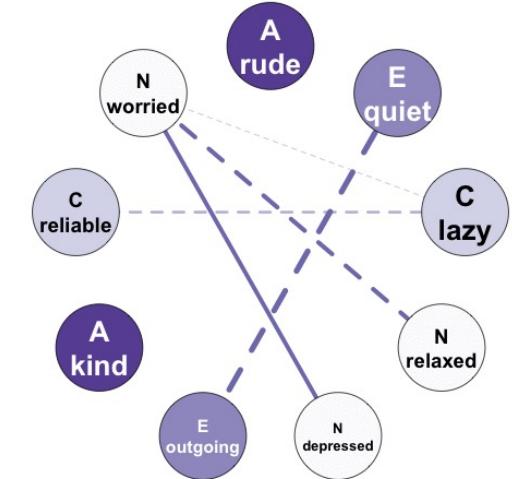


Summary: Idiographic personality structures are...

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

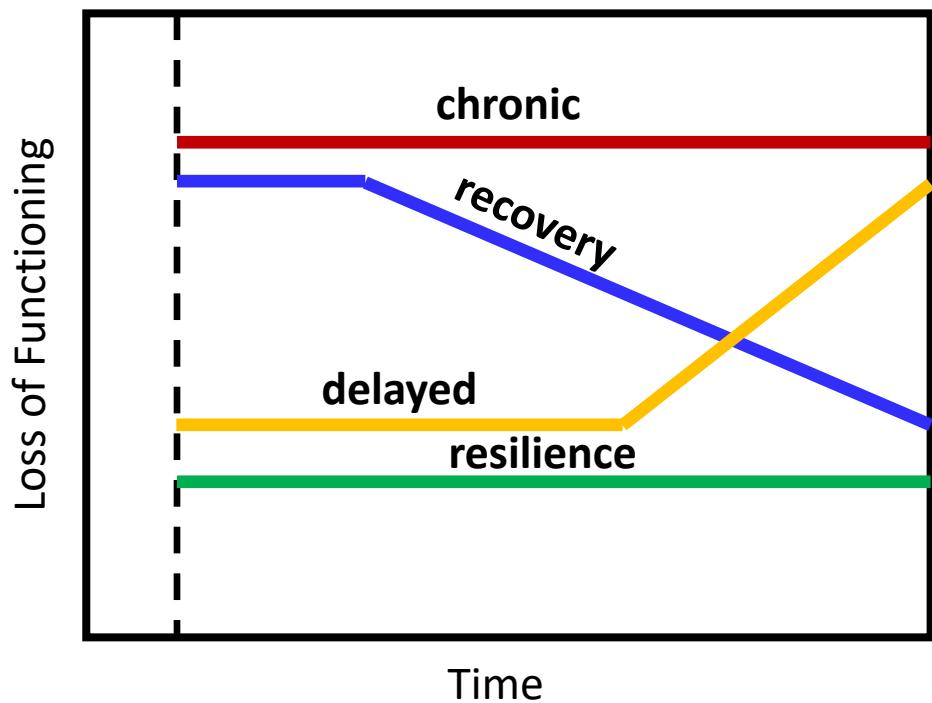


Idiographic personality structures differ across people and show consistency over years

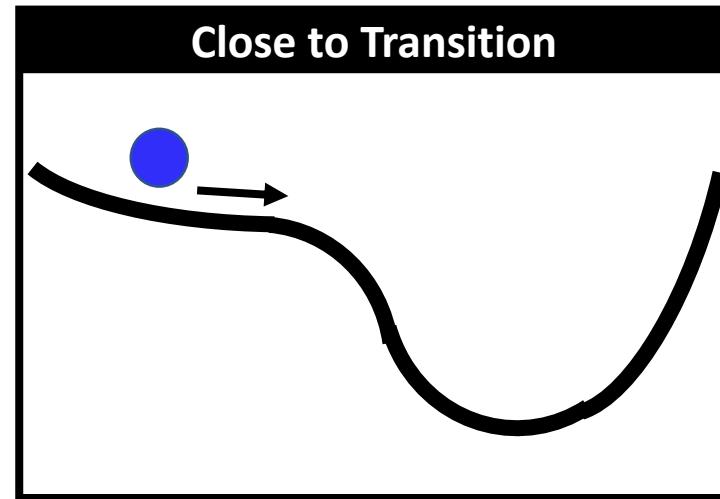


Nonlinear changes in idiographic personality and life events

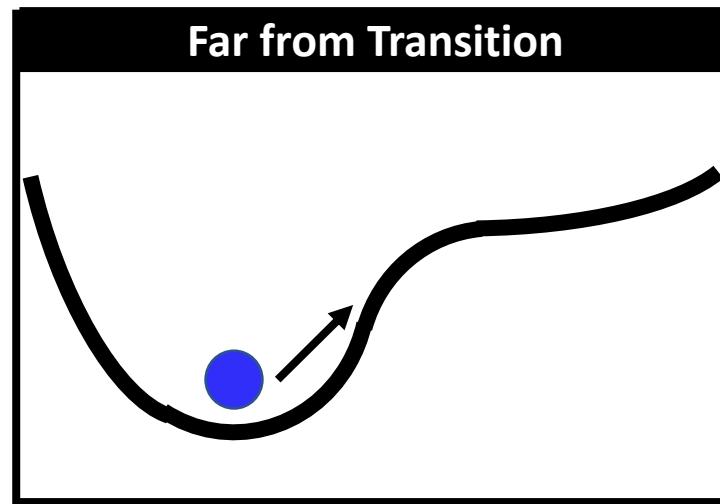
“Tipping Points”



Close to Transition



Far from Transition

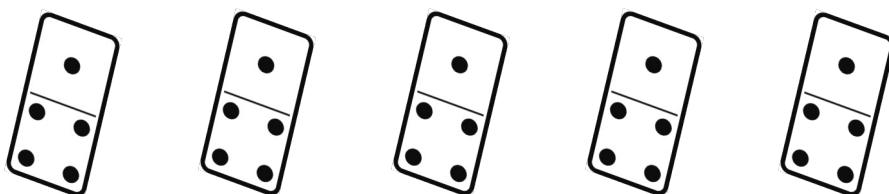
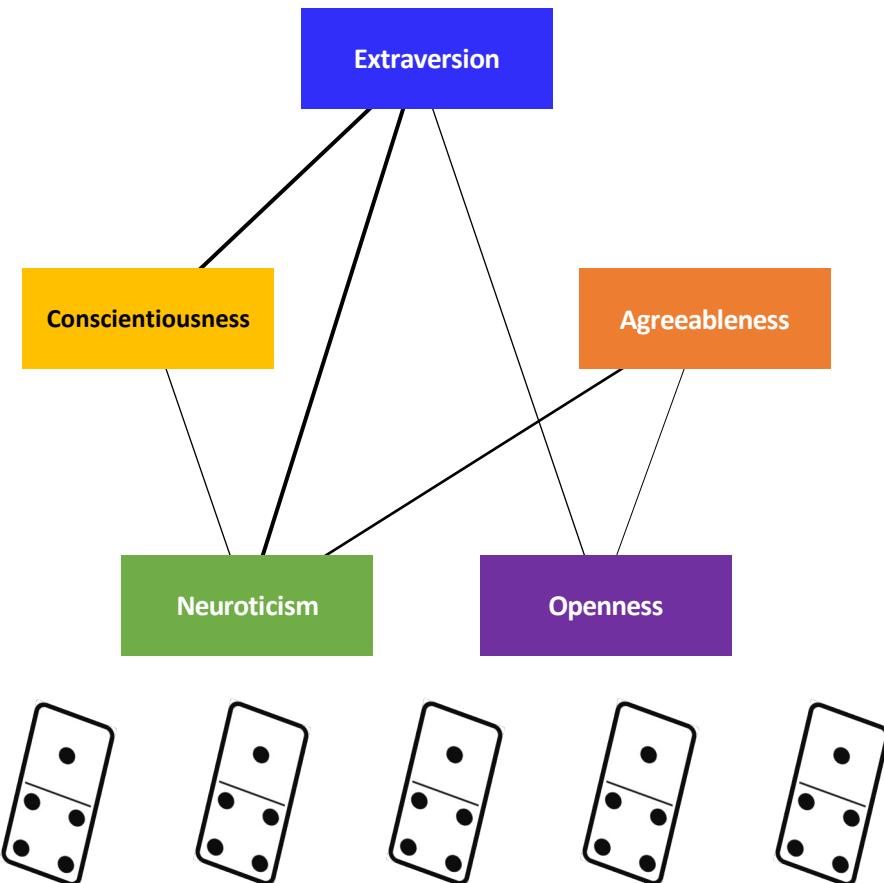


“No trait operates alone”

Allport, 1937, p. 330

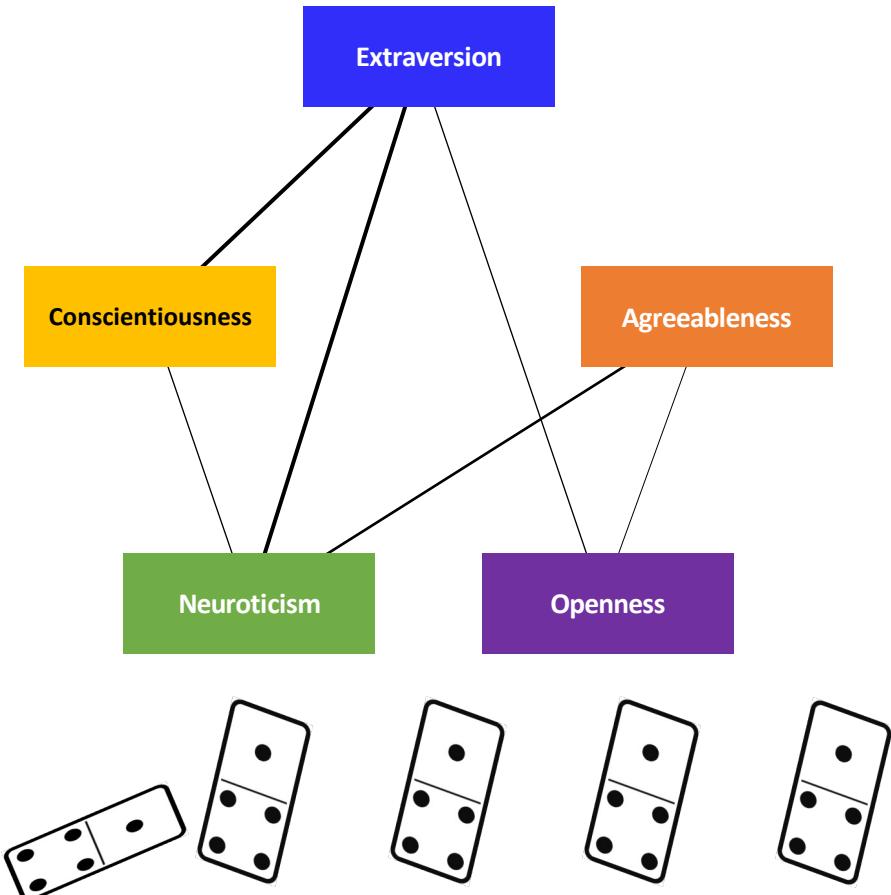
“No trait operates alone”

Allport, 1937, p. 330



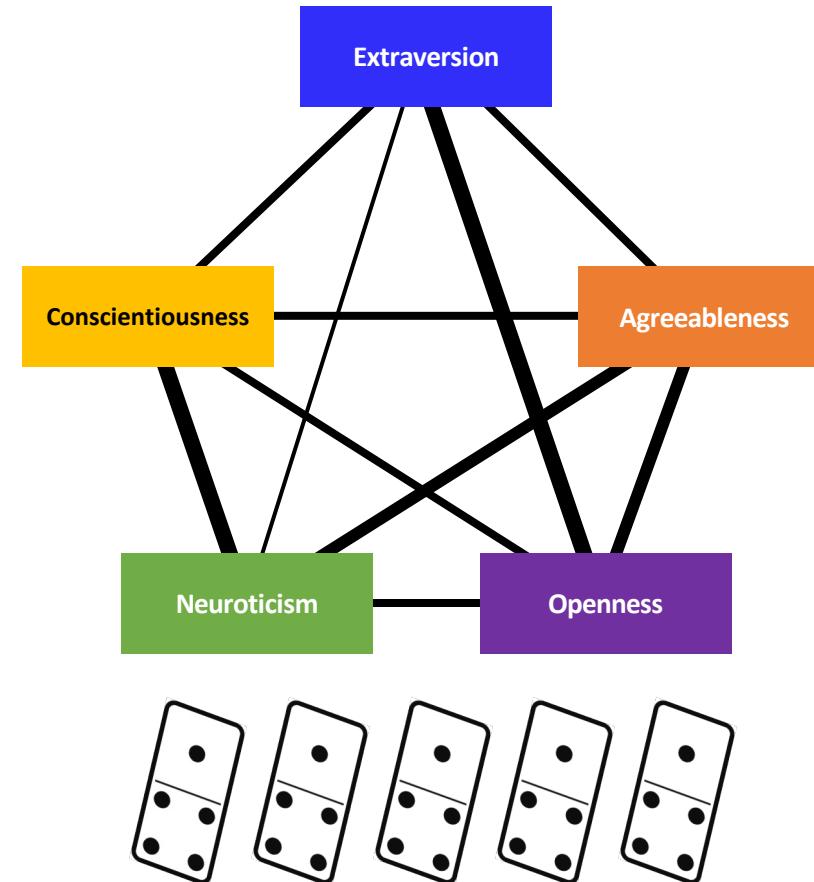
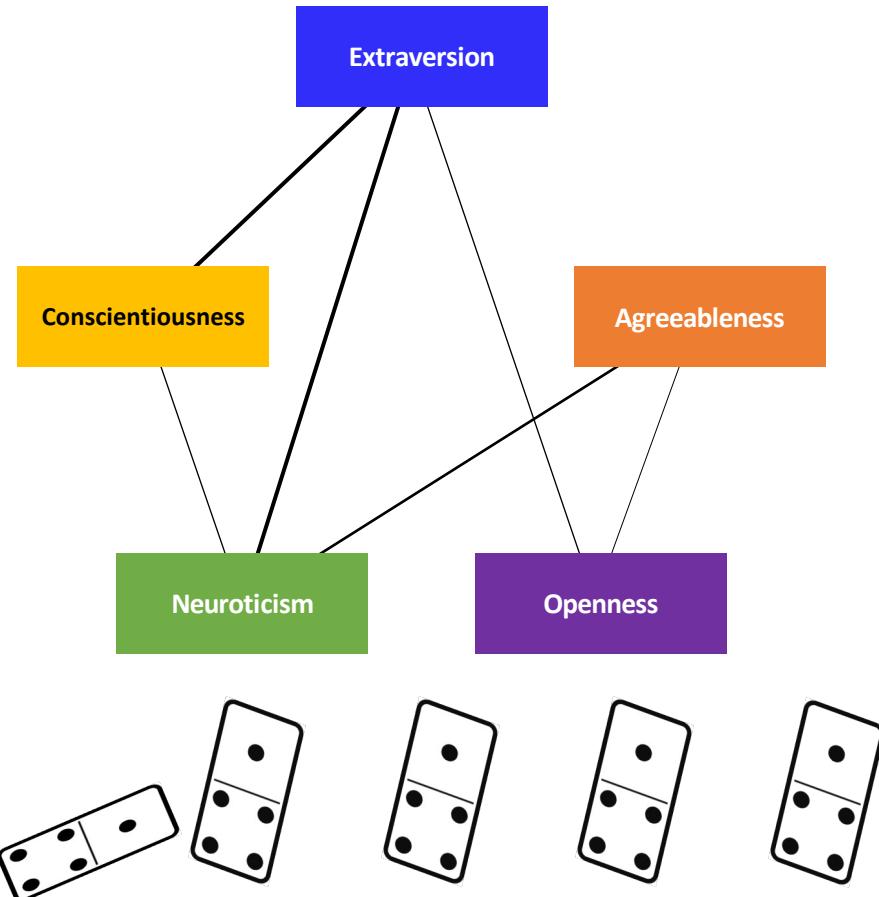
“No trait operates alone”

Allport, 1937, p. 330



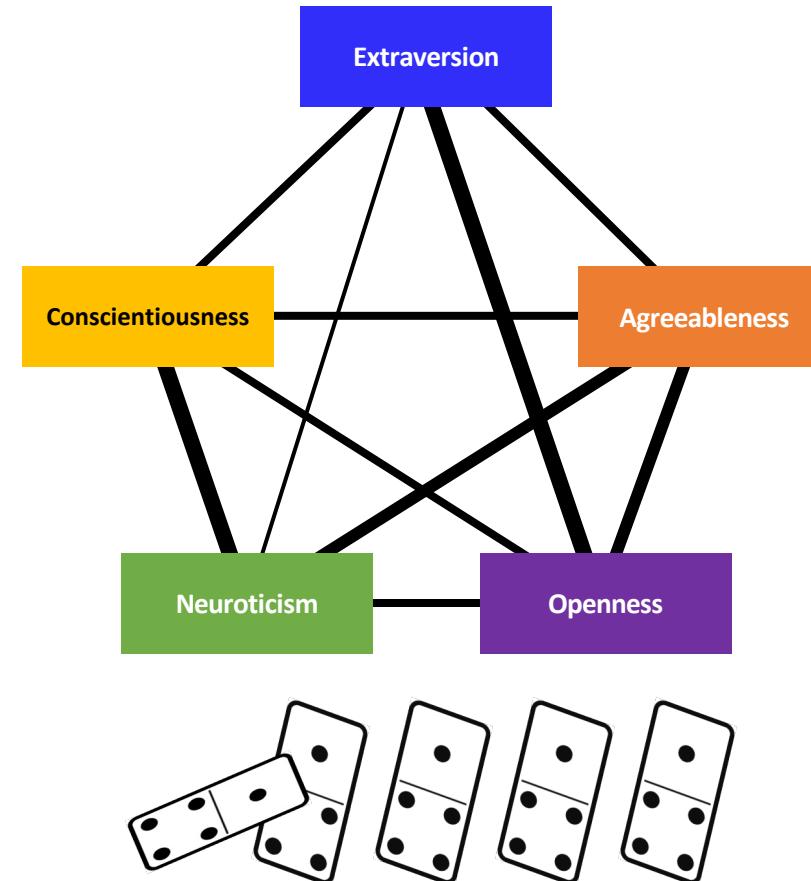
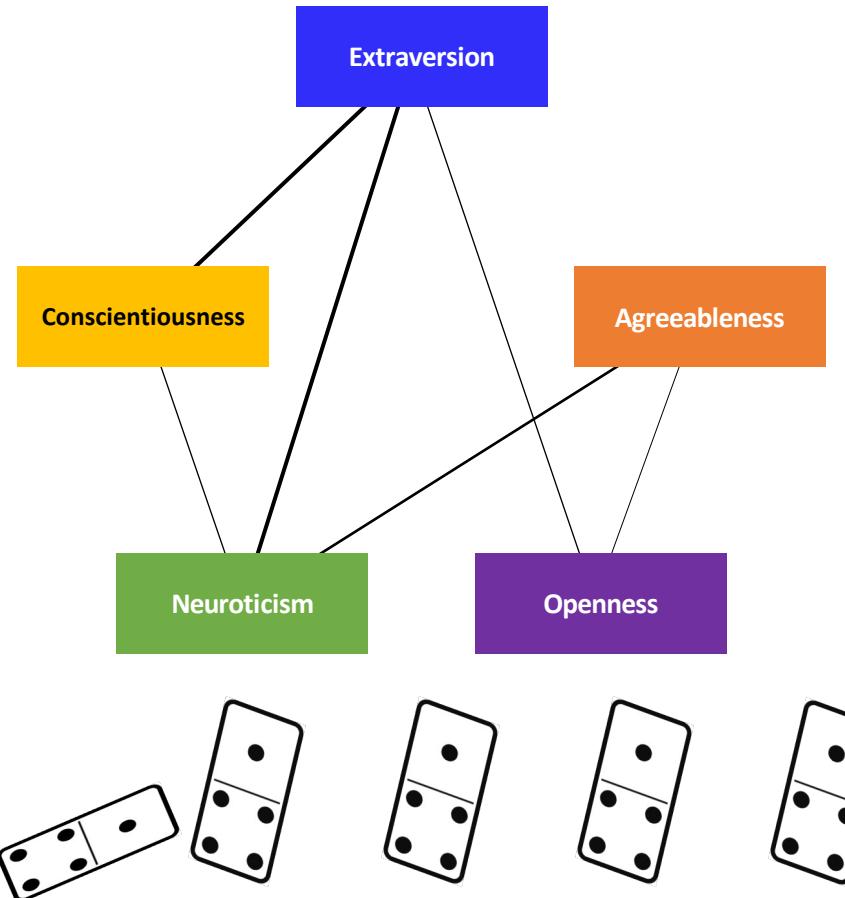
“No trait operates alone”

Allport, 1937, p. 330



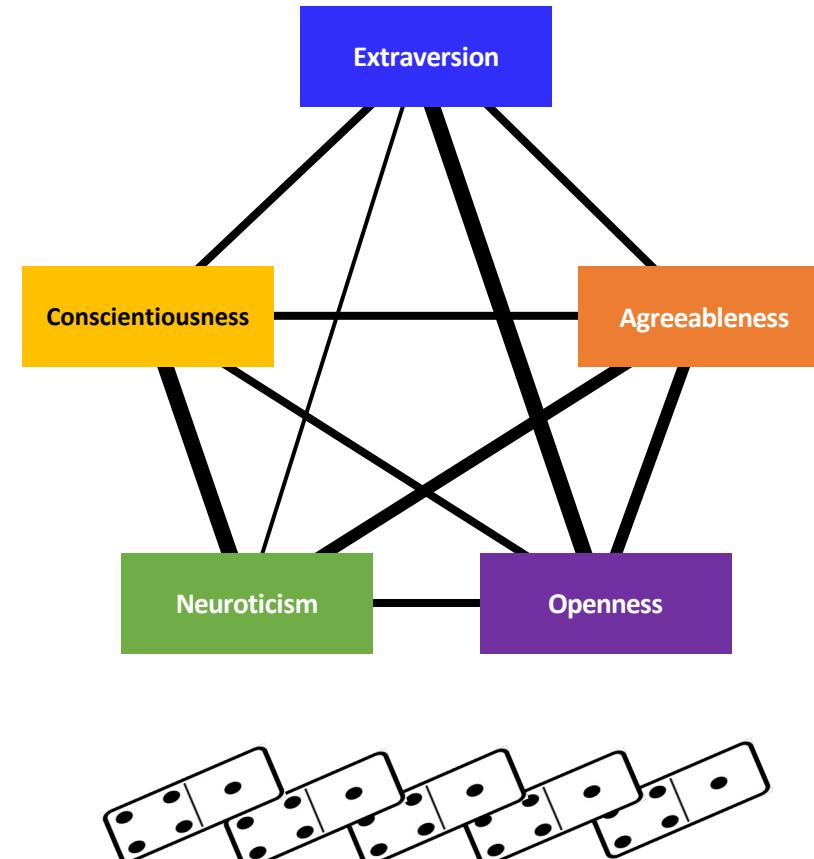
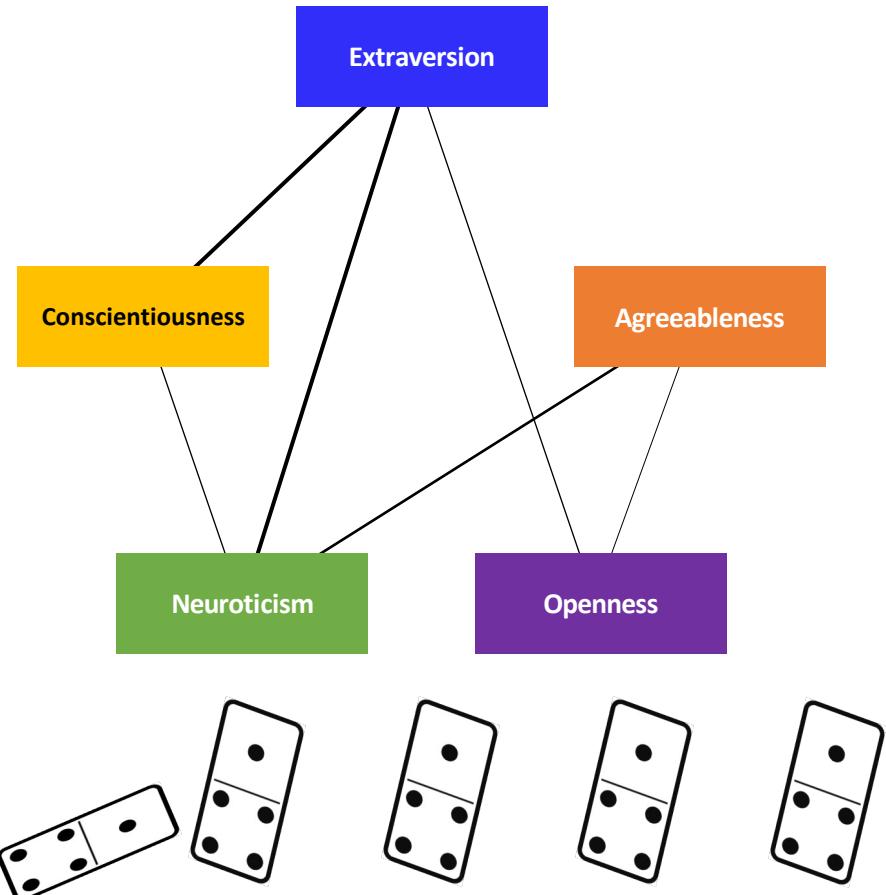
“No trait operates alone”

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

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

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

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

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

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

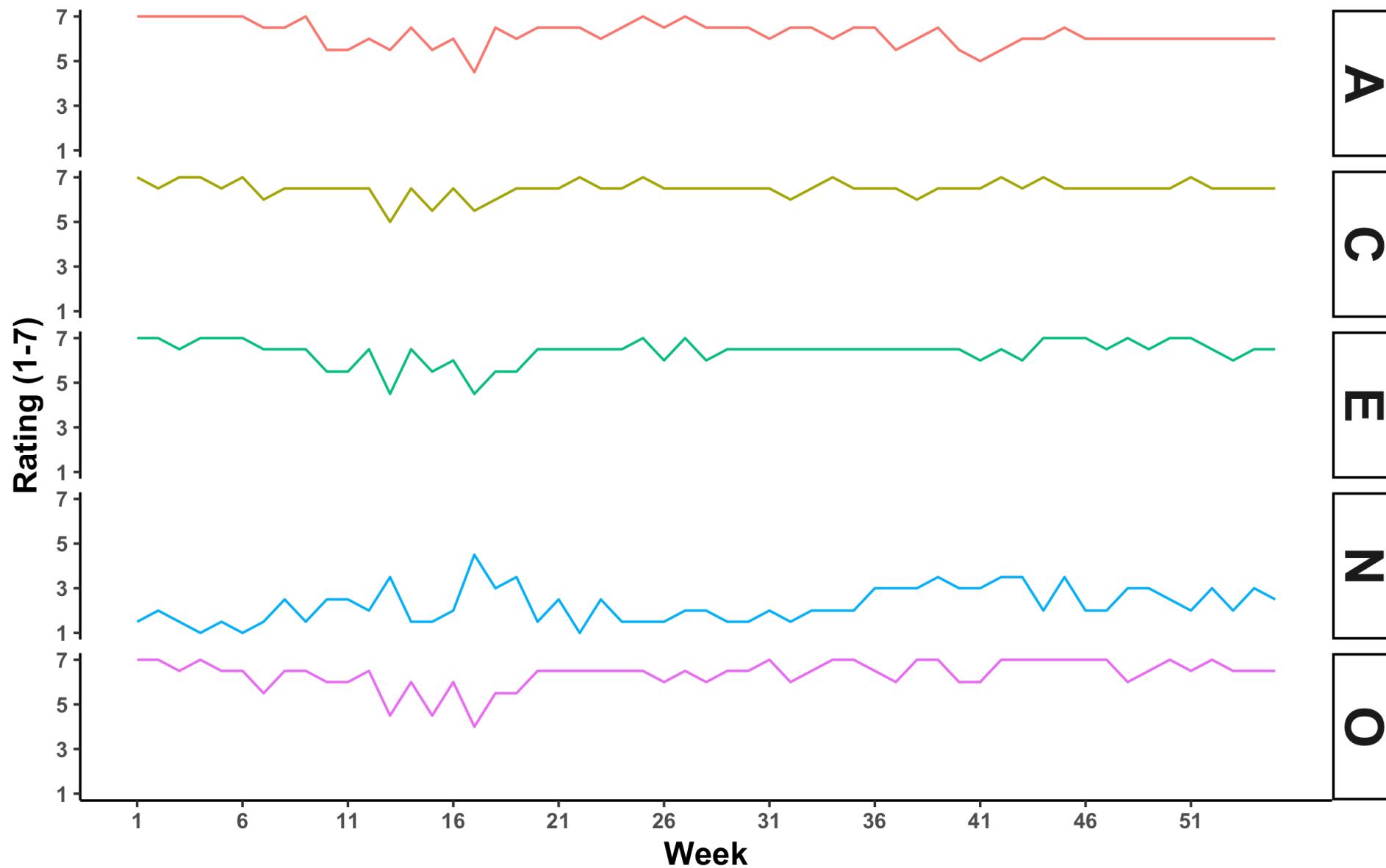
$$p_{variancedrop} = \frac{\#(\max variance drop_{perm} > \max variance drop)}{B}$$

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

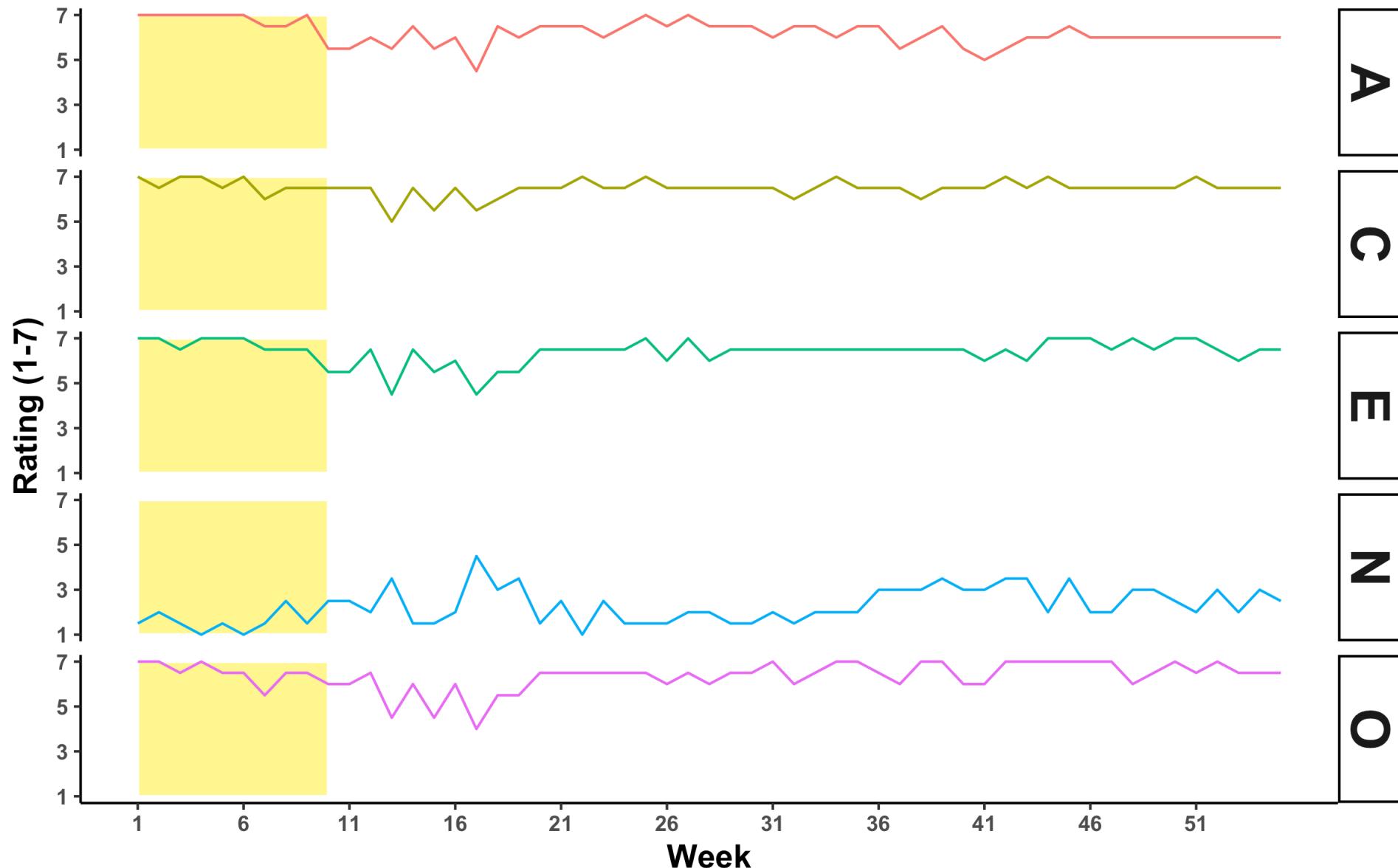
$$\hat{K} = \arg \min \hat{R}_{min,K} + pen_K,$$

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

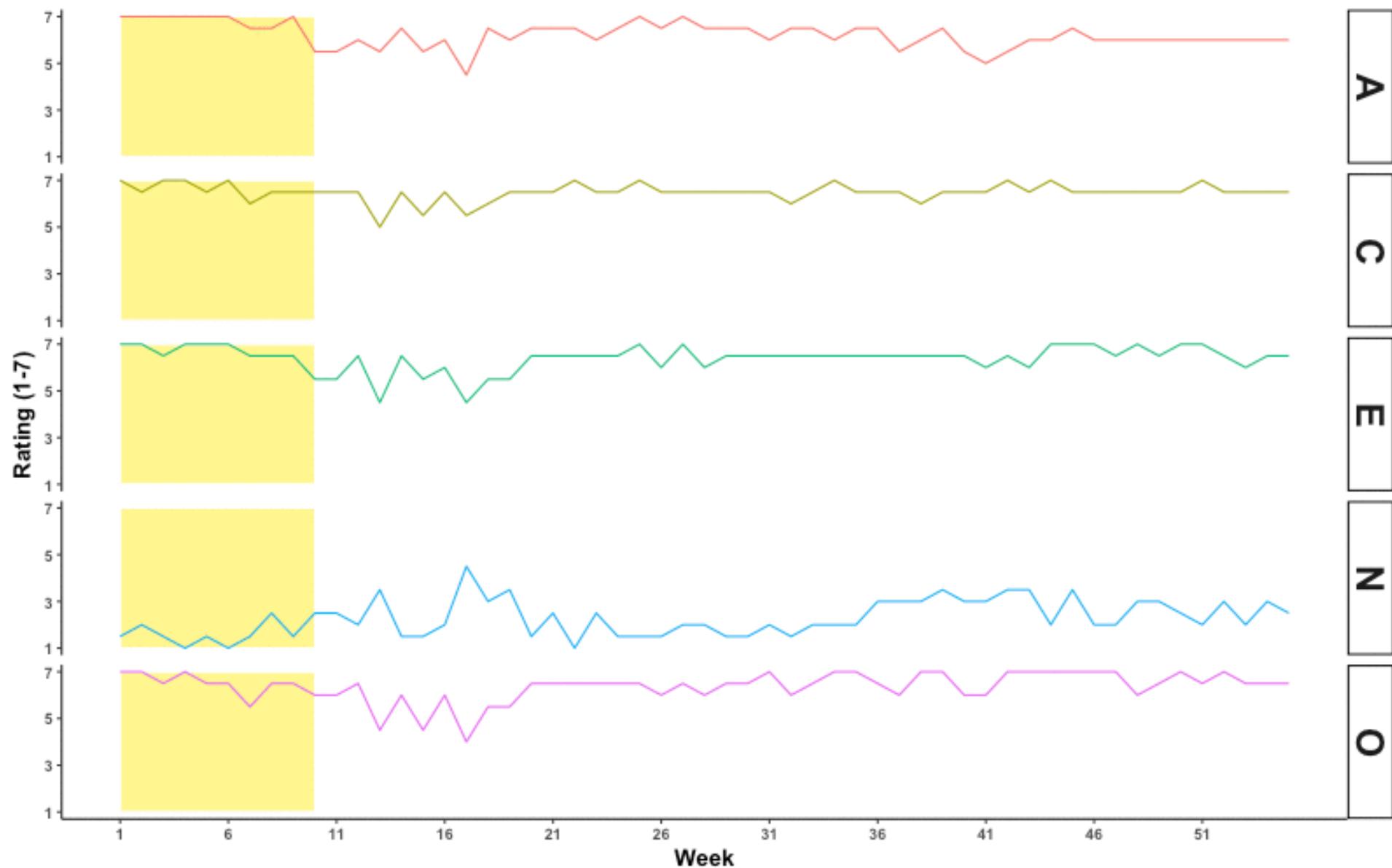
Idiographic Time Series



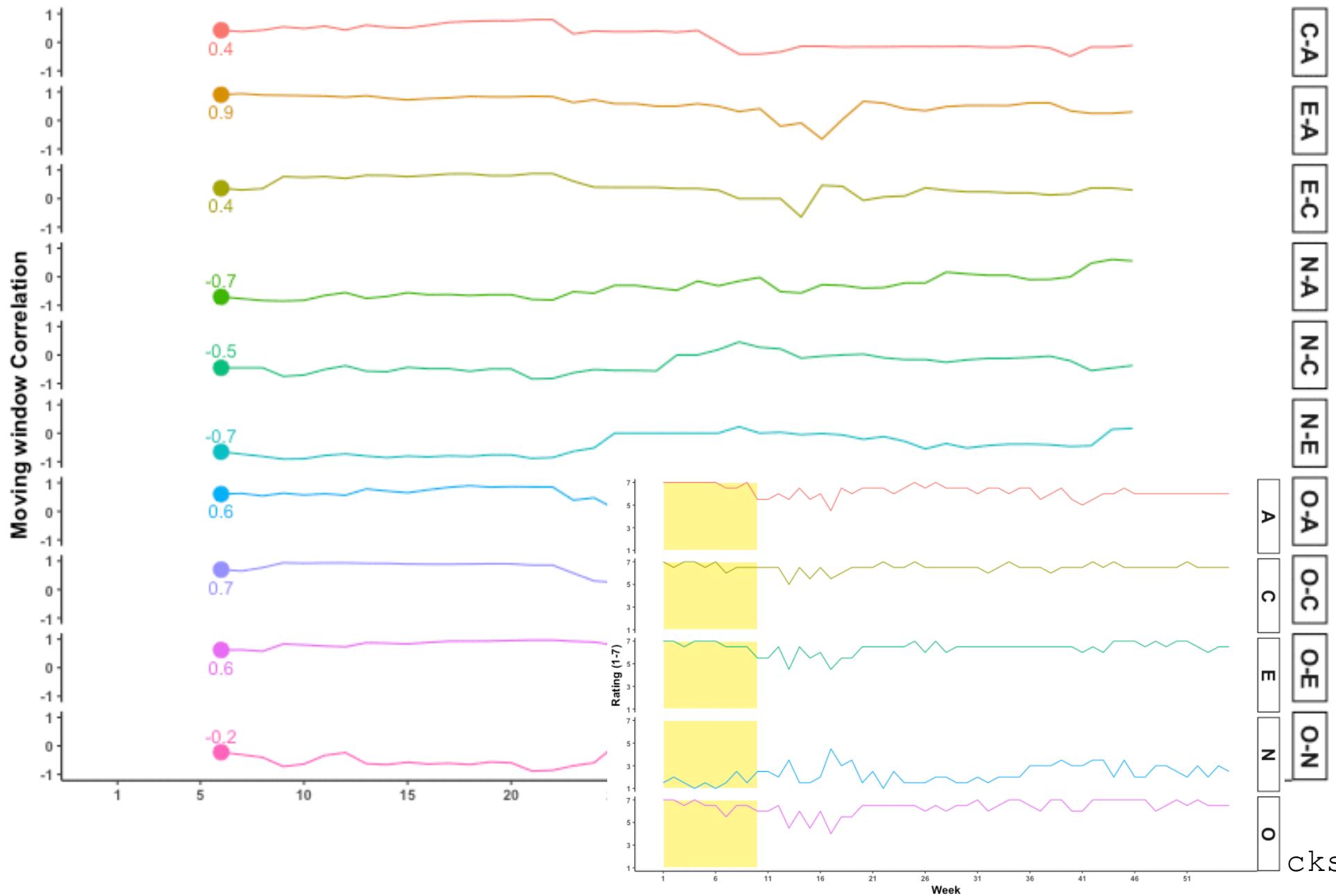
Idiographic Time Series



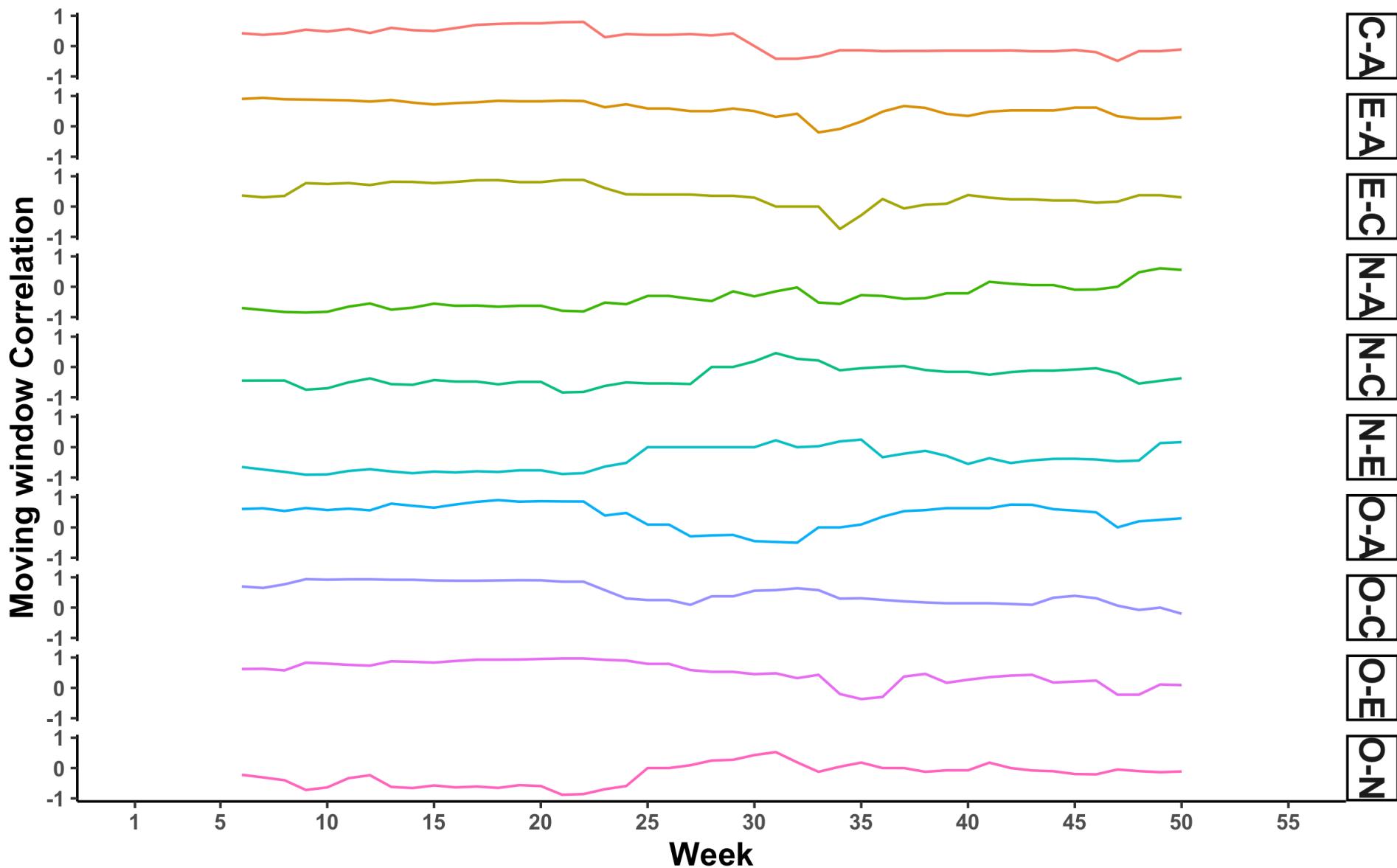
Idiographic Time Series



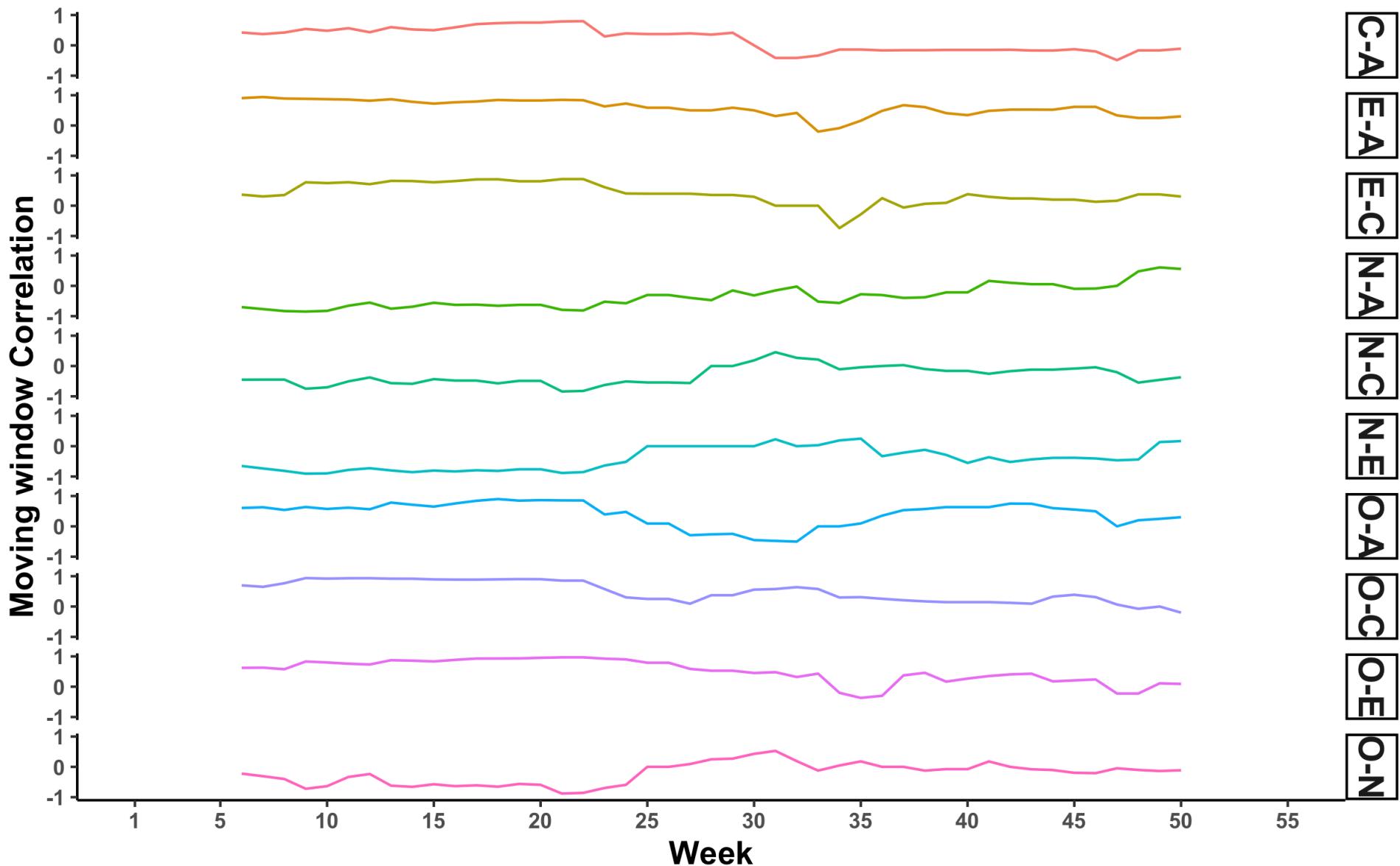
Moving Window Correlation Time Series



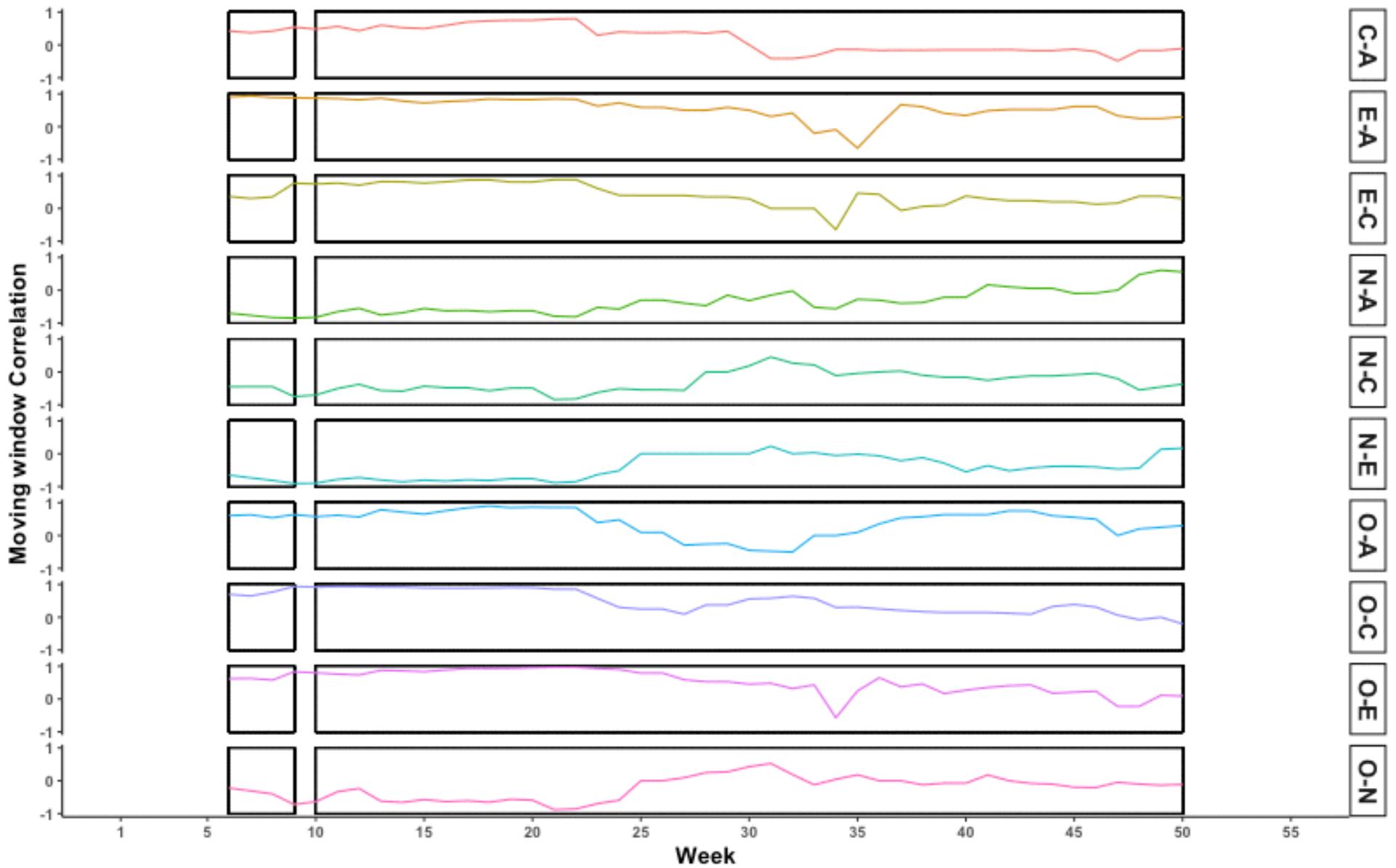
Moving Window Correlation Time Series



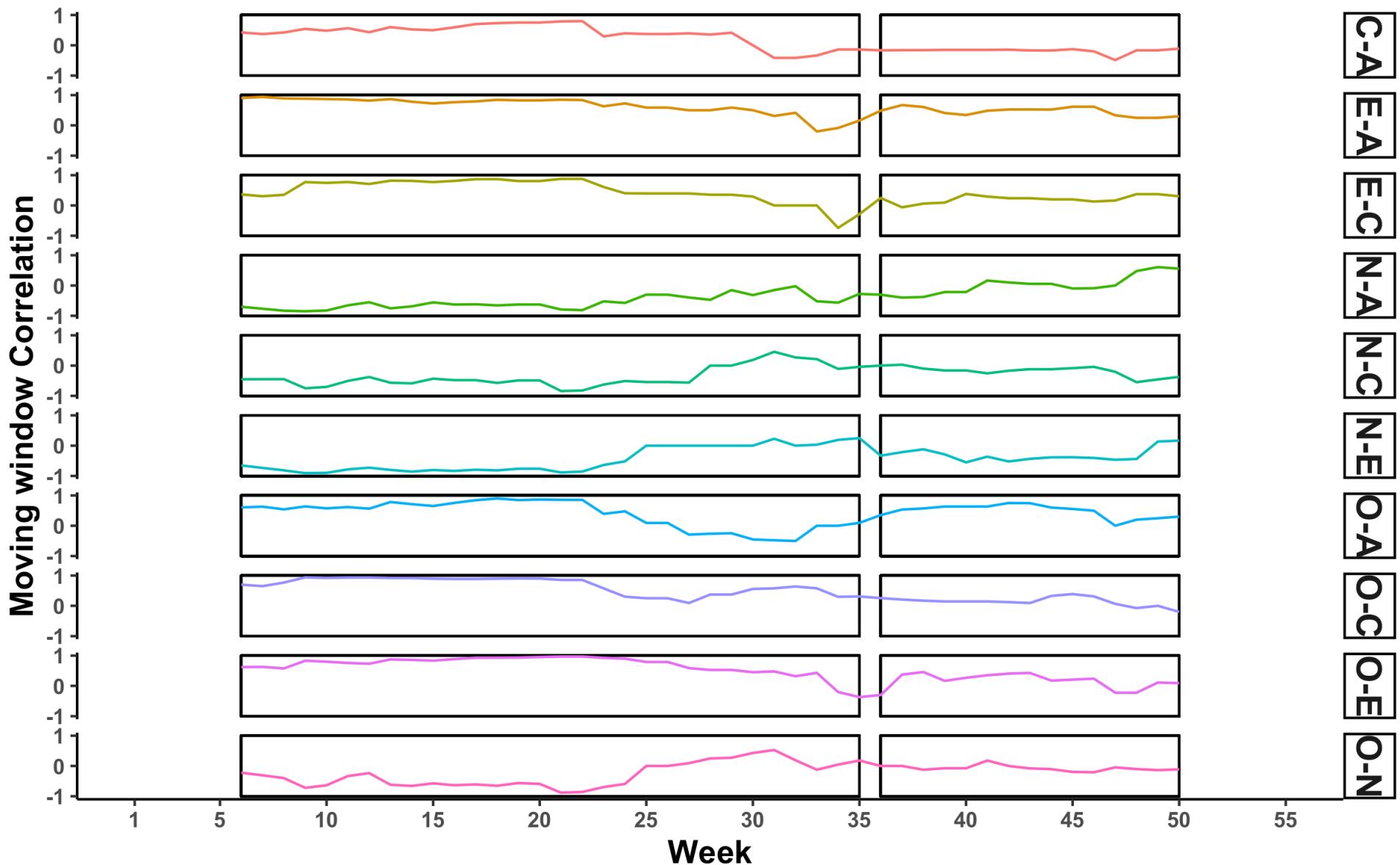
Phases: $k = 0$



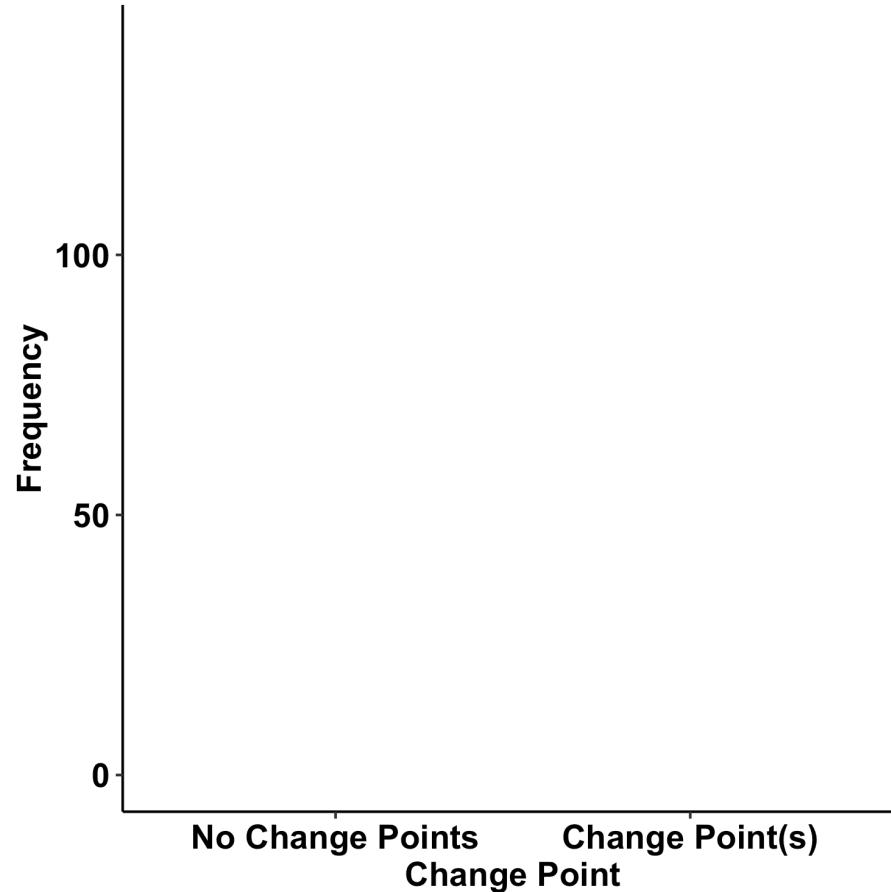
Phases: $k = 1$



Phases: $k = 1$

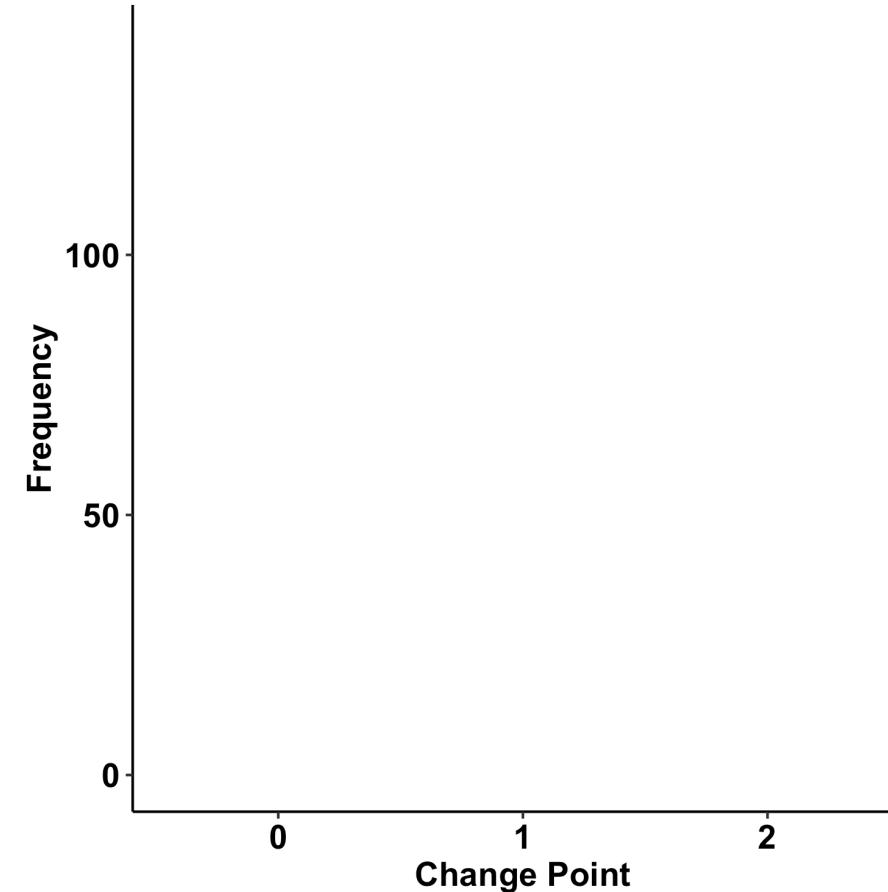
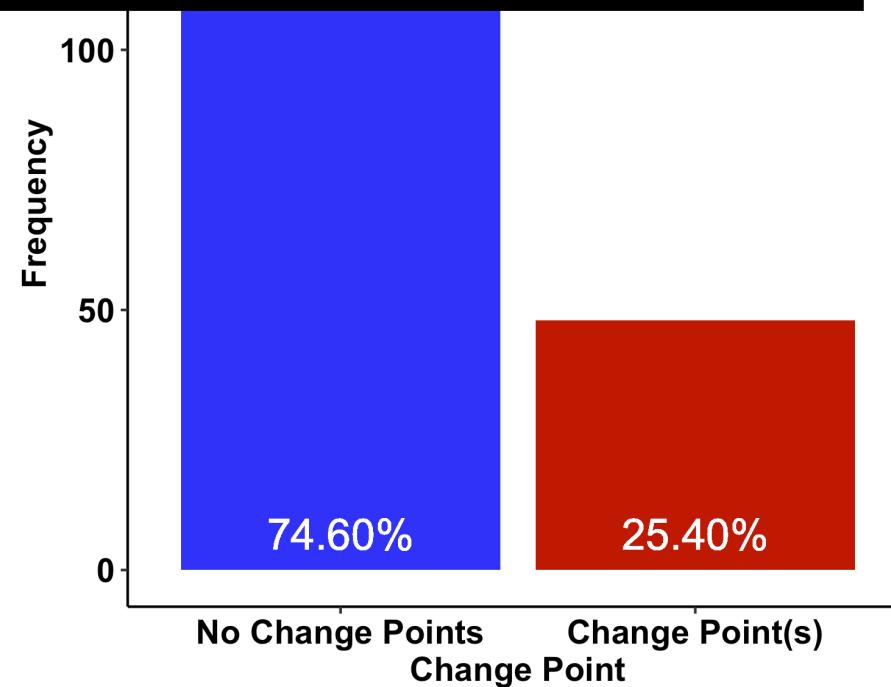


Did people show correlational changes?



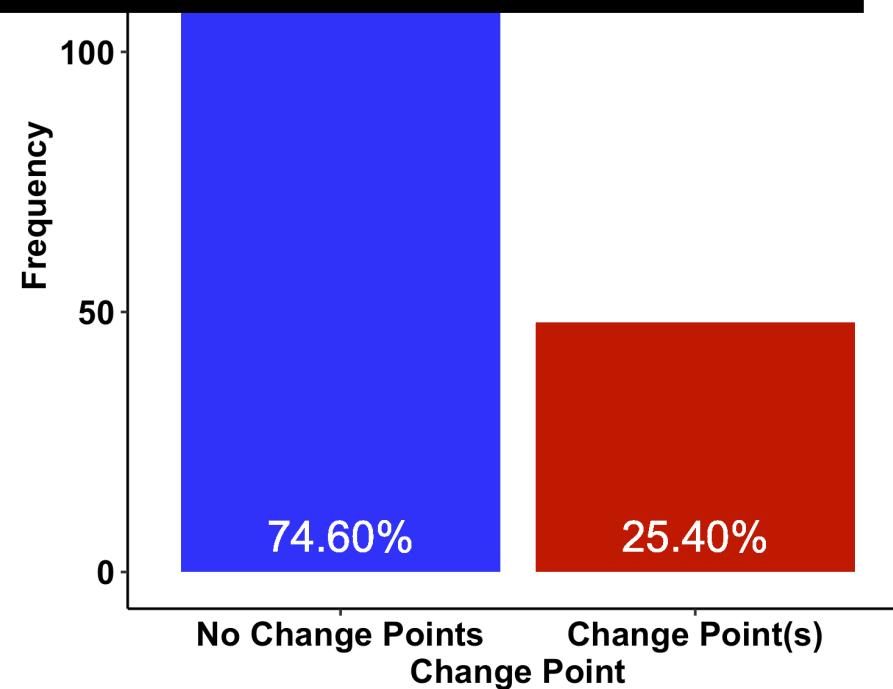
Did people show correlational changes?

A minority of participants showed correlational changes

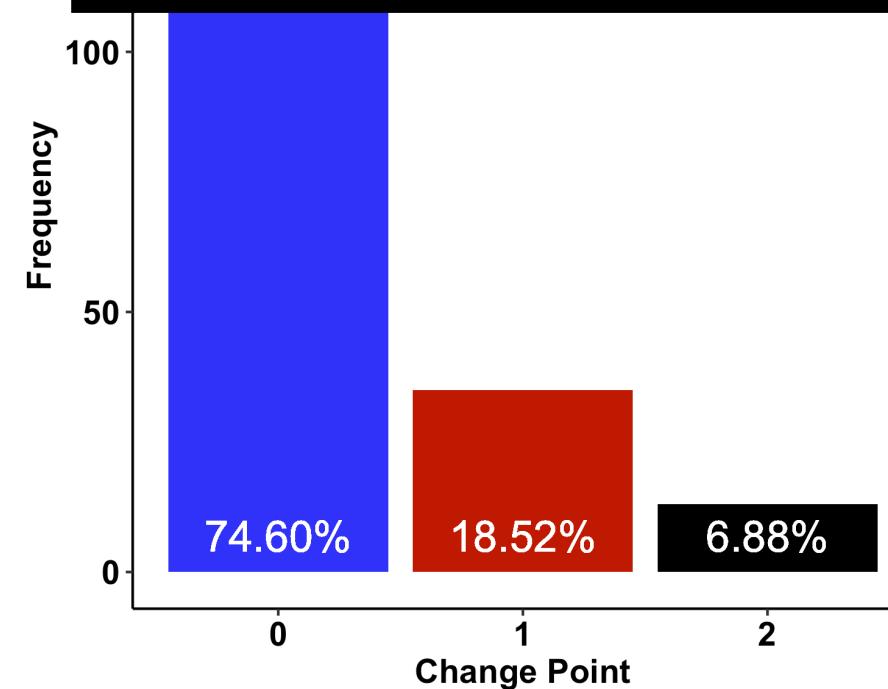


Did people show correlational changes?

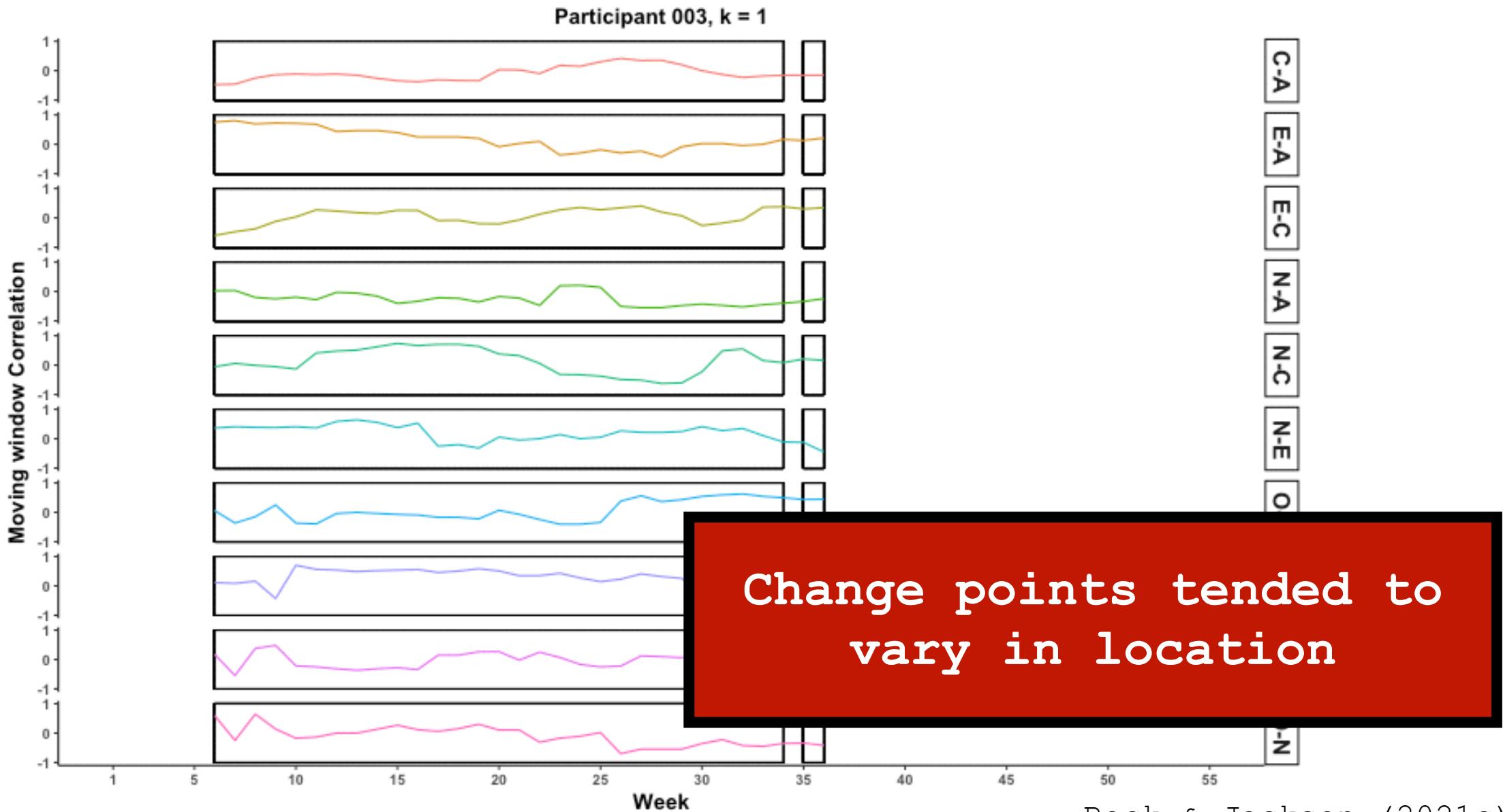
A minority of participants showed correlational changes



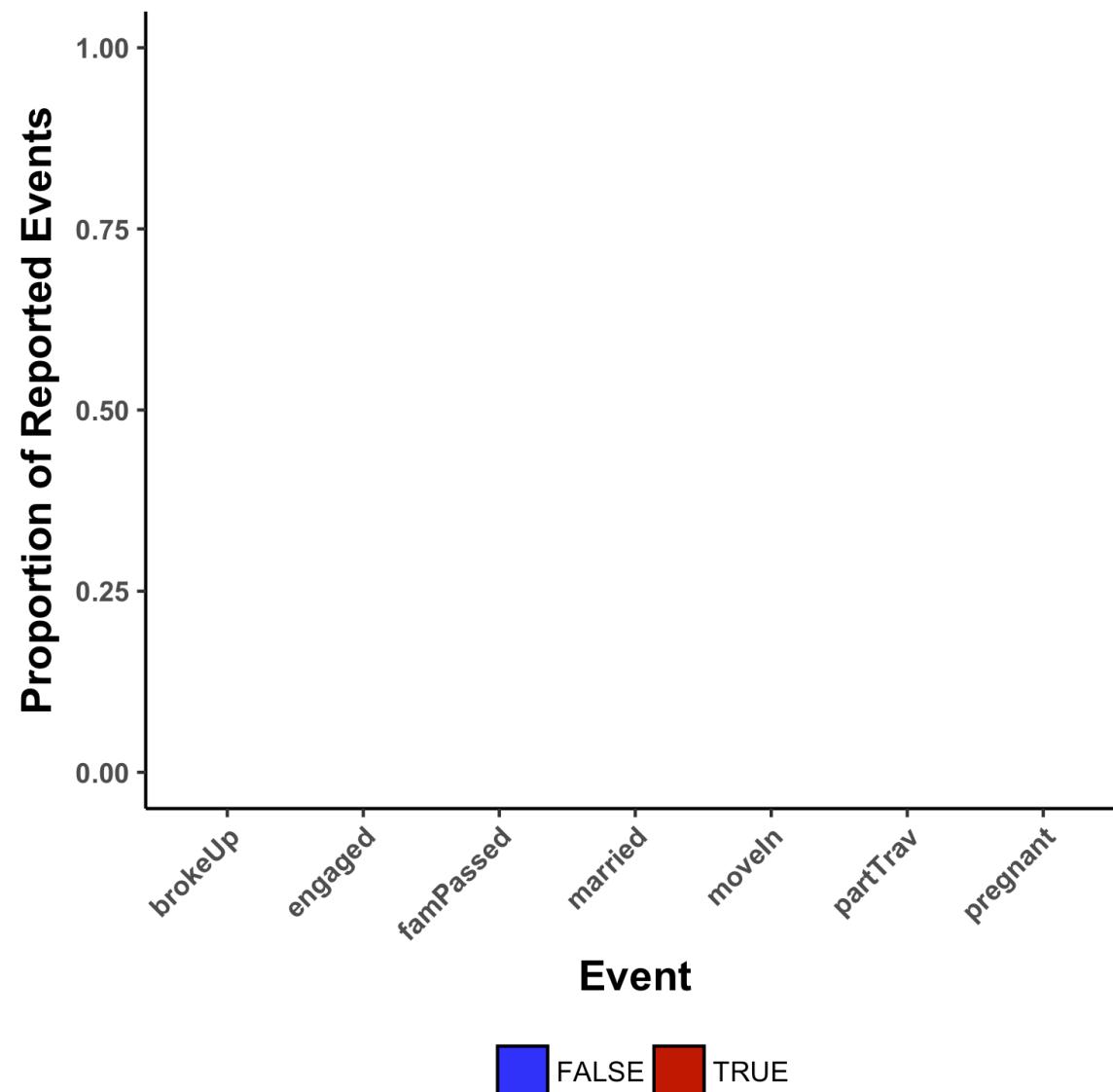
Those who showed change tended to show it only once



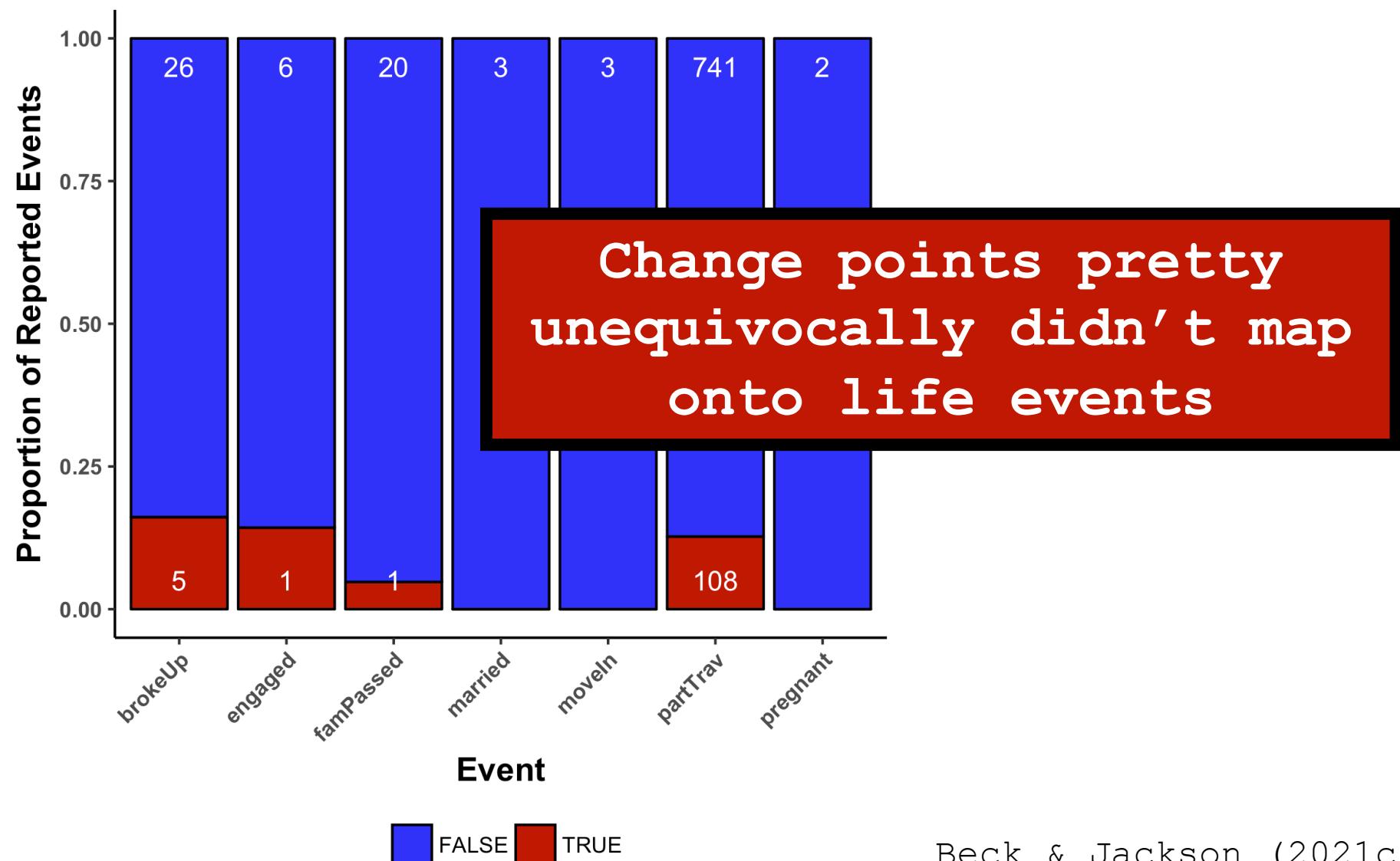
Did people show correlational changes?



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

Next Steps in Studying Change

Measurement

Ensuring measures are optimized to detect change

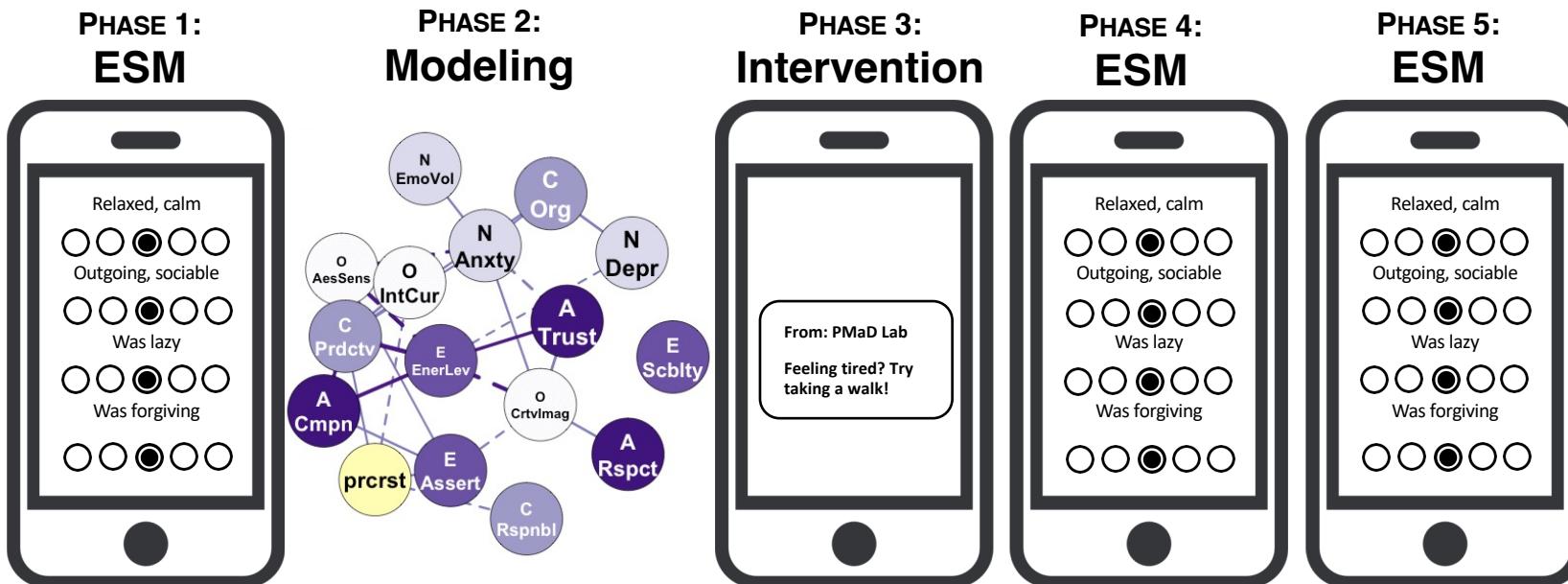
Longitudinal Designs

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

Experimental Designs

Tailored interventions

Personalized Interventions



Our Approach: Idiographic Network Profiles
(Specific Personality-Behavior links good/bad)

Next Steps in Studying Change

Measurement

Ensuring measures are optimized to detect change

Longitudinal 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 (How do understand change?)

Statistical Models

Examining changing dynamics, not just changing levels

Thank You & Questions

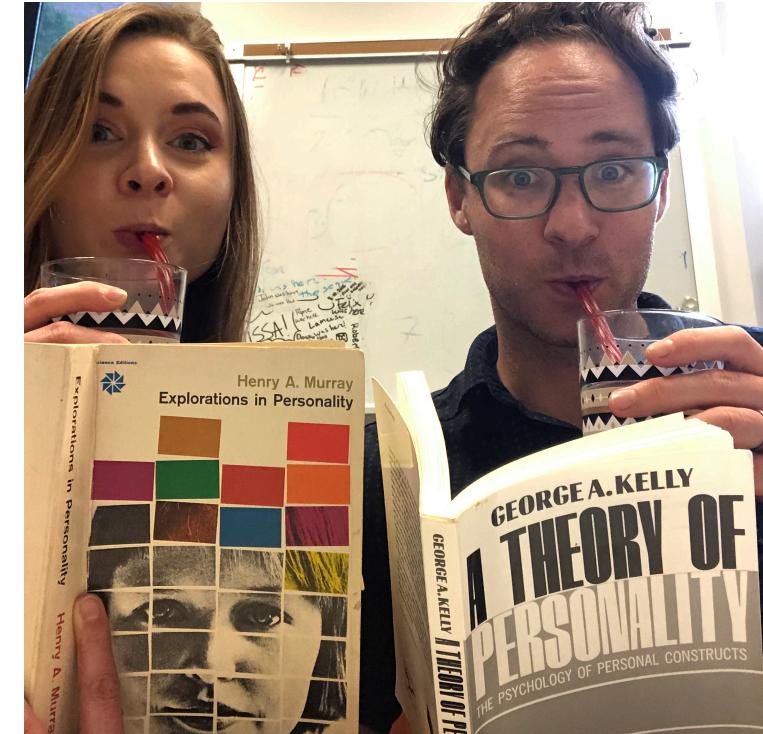
Co-author

Josh Jackson (WUSTL)

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

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

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



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