

# Building a Personality Science of the Whole Person

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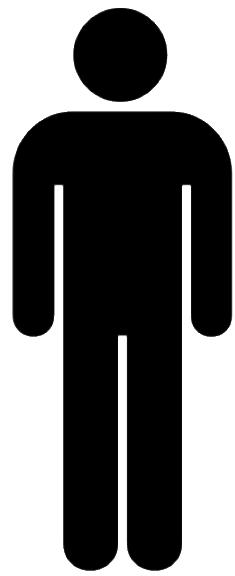
@EmorieBeck



**Description**

**Prediction**

**Explanation**



**Thoughts**

**Feelings**

**Behaviors**

Description

Prediction

Explanation



Thoughts

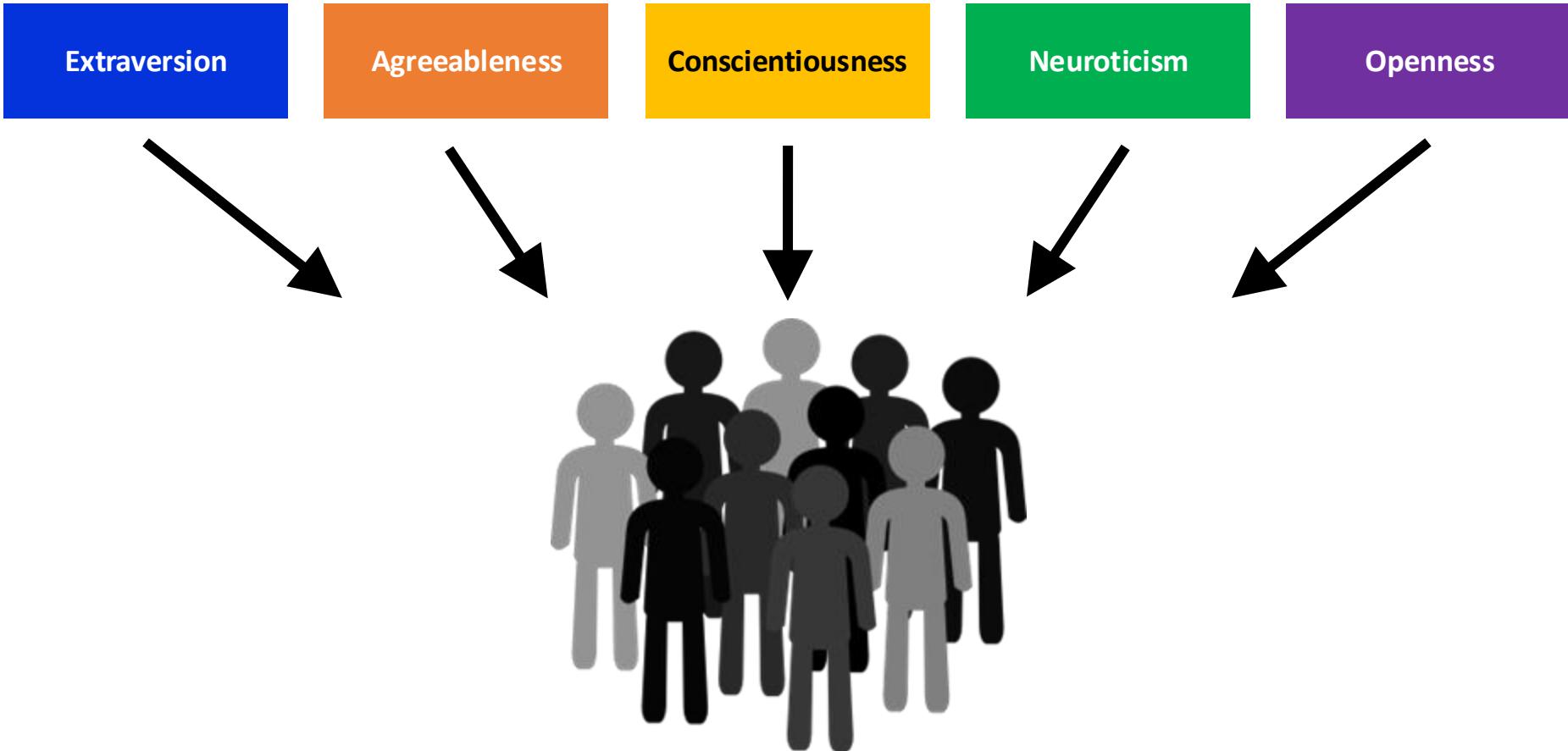
Feelings

Behaviors

# What is personality?

“Personality refers to those **characteristics** of the person that account for **consistent patterns of feelings, thinking, and behaving.**”

(Pervin, Cervone & John, 2005, p. 6)



**Nomothetic  
Between-Person  
Variable Centered**

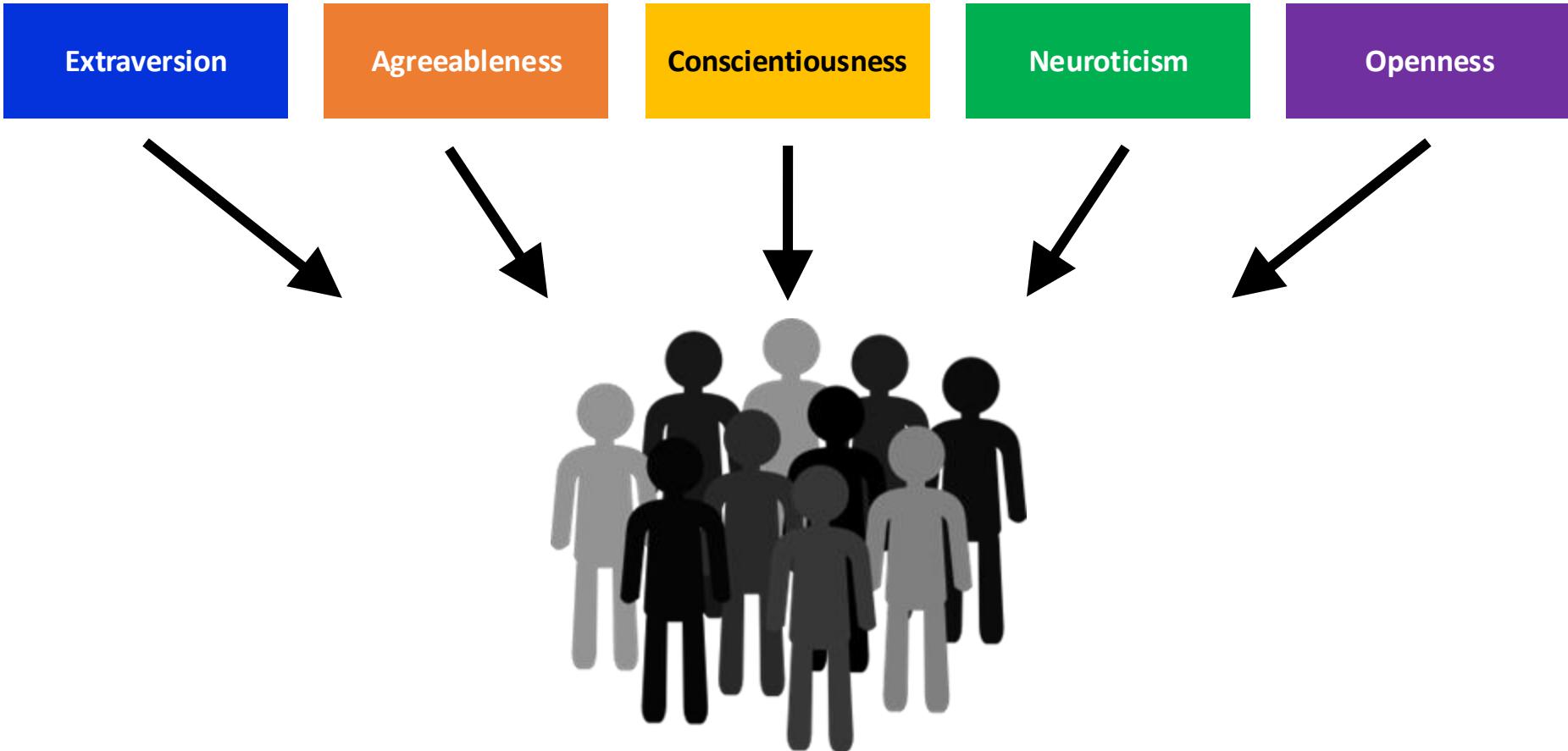


EJP  
@EJPBlog

"We assessed personality with the Big Five - As seductive as it is to make such statements, they are only a bit true... personality is not just the Big Five." Read [@rauthmann](#) blog post and memes here. [ejp-blog.com/blog/2024/9/17...](http://ejp-blog.com/blog/2024/9/17...)



12:07 PM · Sep 17, 2024 · 275 Views

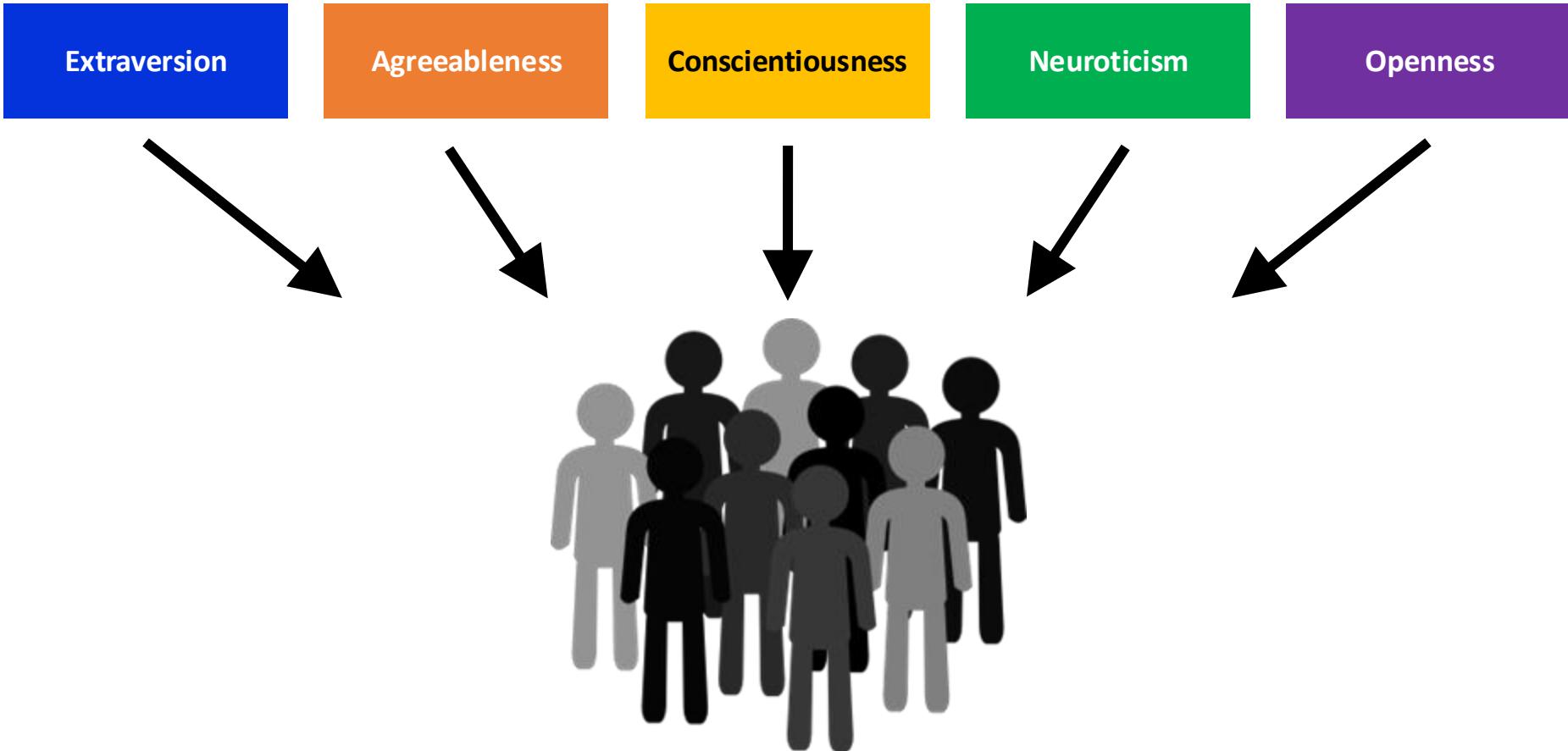


**Nomothetic  
Between-Person  
Variable Centered**

# What is personality?

**Personality is what personality tests test.**

(Jack Wright, personal communication, 2013)



**Nomothetic  
Between-Person  
Variable Centered**

# What is personality?

“Personality is the **dynamic organization** within the individual of those **psychophysical systems** that determine his **unique adjustments to the environment**.”



(Allport, 1937, p. 32)

e.g., Allport, 1937, 1961, 1968

# What is personality?

**Personality is what personality tests test.**

(Jack Wright, personal communication, 2013)

The Whole Person

Contexts

Dynamics &  
Systems

# What is personality?

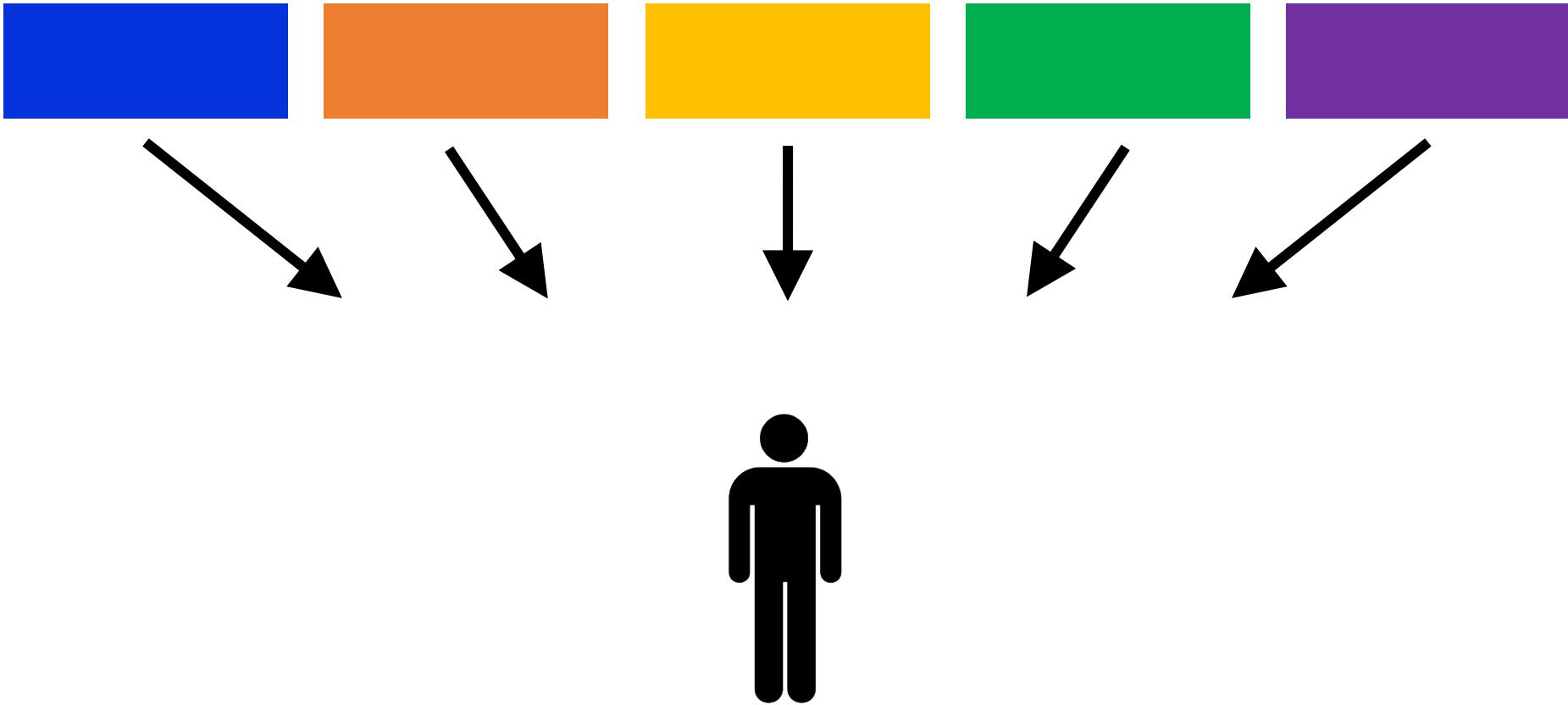
**Personality is what personality tests test.**

(Jack Wright, personal communication, 2013)

The Whole Person

Contexts

Dynamics &  
Systems



**Idiographic  
Person-Specific  
 $N = 1$**

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



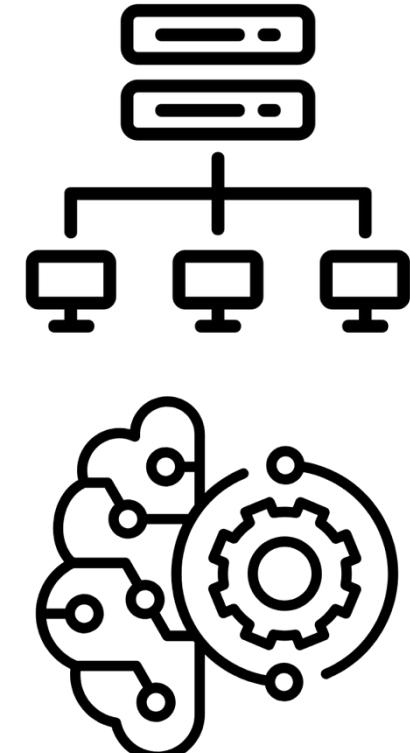
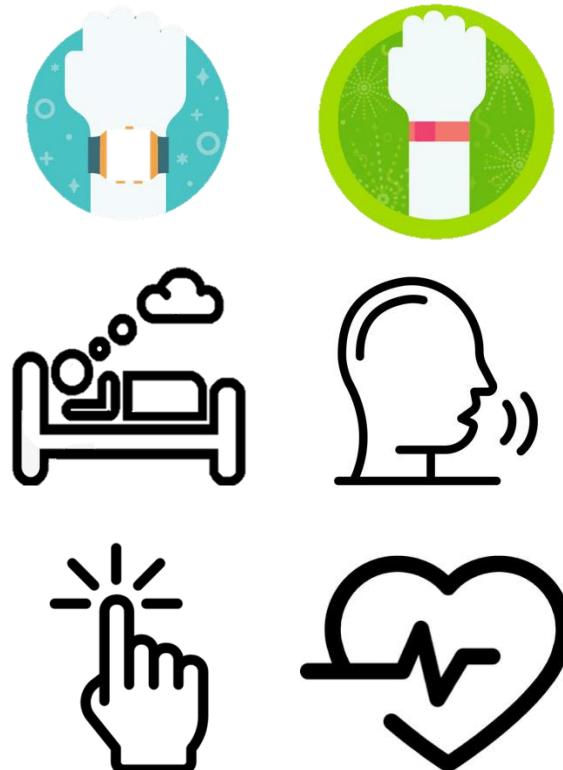
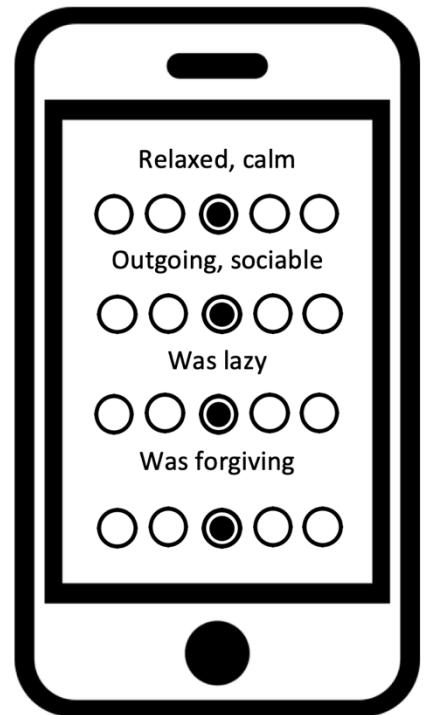
# Modern Opportunities for $N = 1$ Research

ESM / EMA

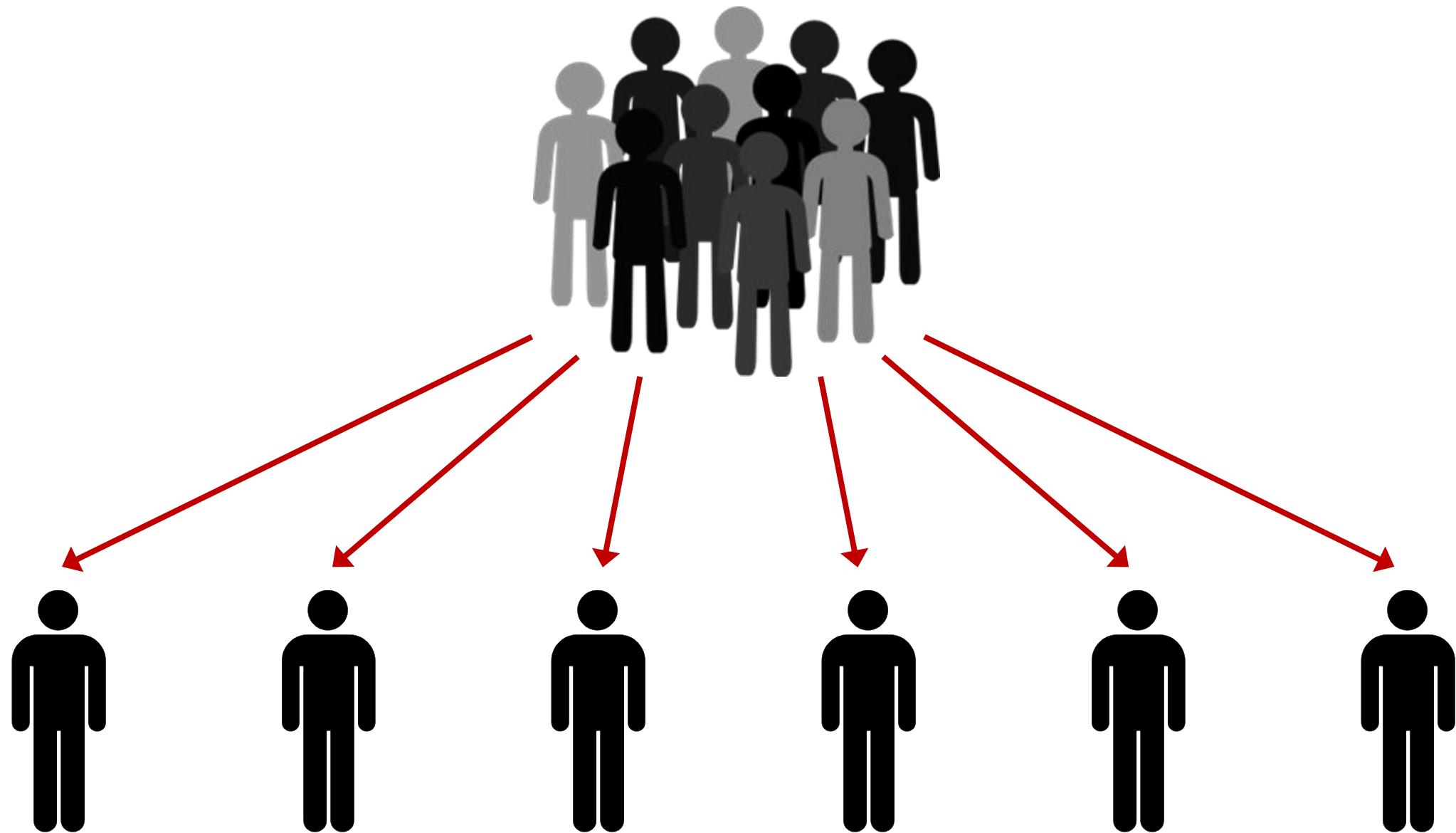
Mobile Sensing

Open-Ended  
Responses

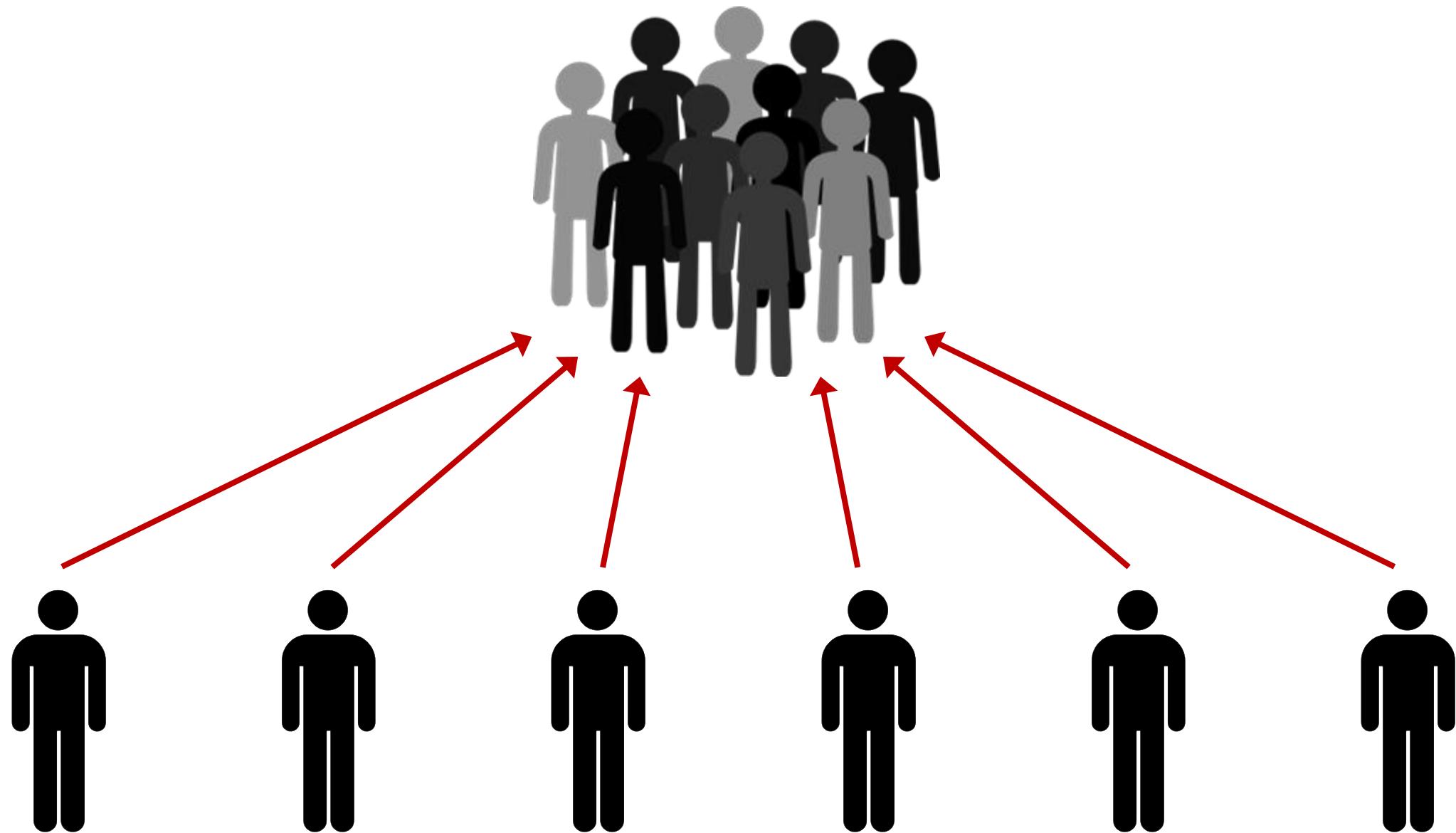
Computational  
Tools



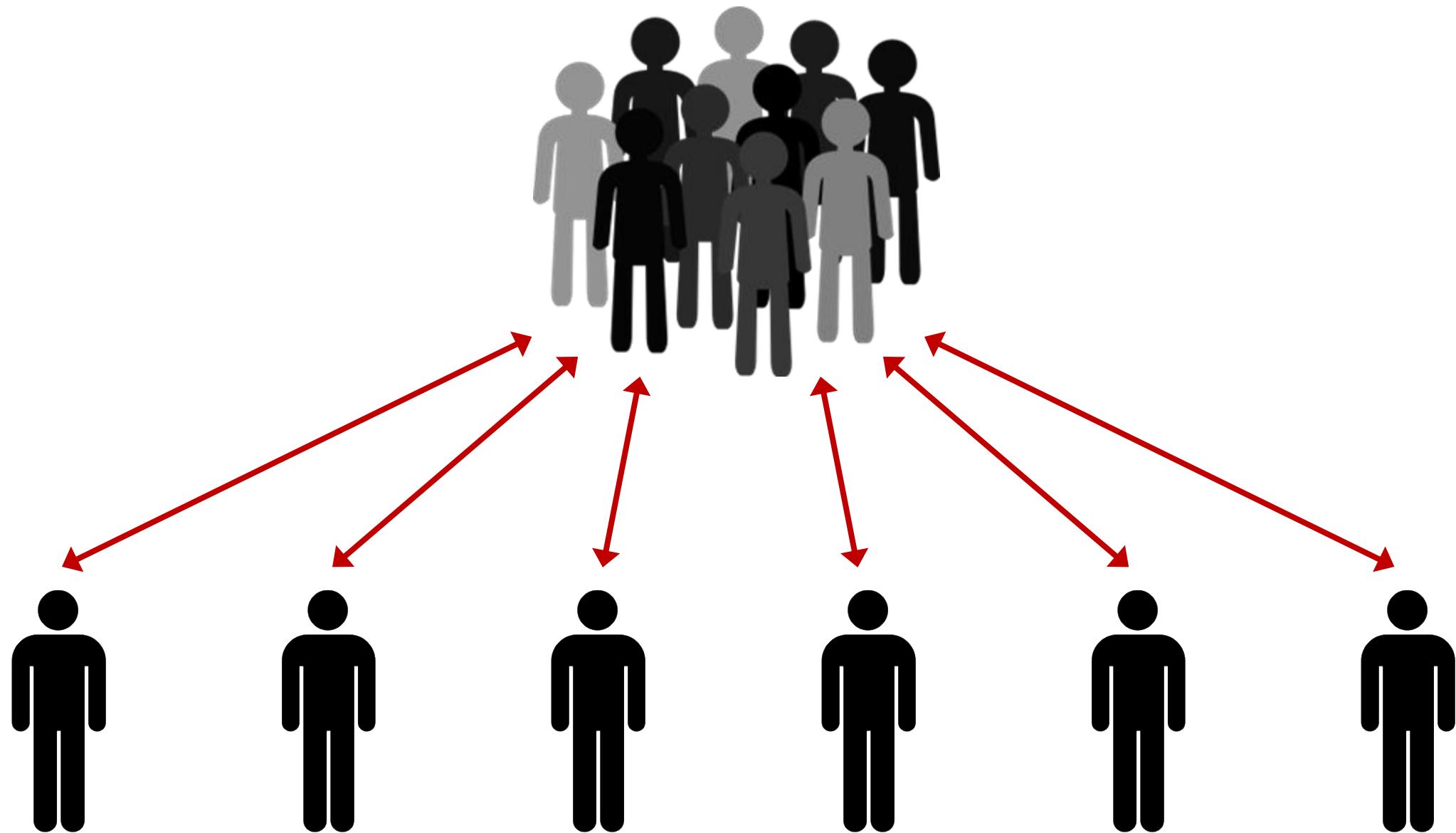
# Top-Down Psychological Science



# Bottom-Up Psychological Science



# Bottom-Up Psychological Science



# What is personality?

**Personality is what personality tests test.**

(Jack Wright, personal communication, 2013)

The Whole Person

Contexts

Dynamics &  
Systems



# What is personality?

***if***

***...***

***then***

***Context***

***Situation perception***

***Experience***

***Etc.***

***Behavior***

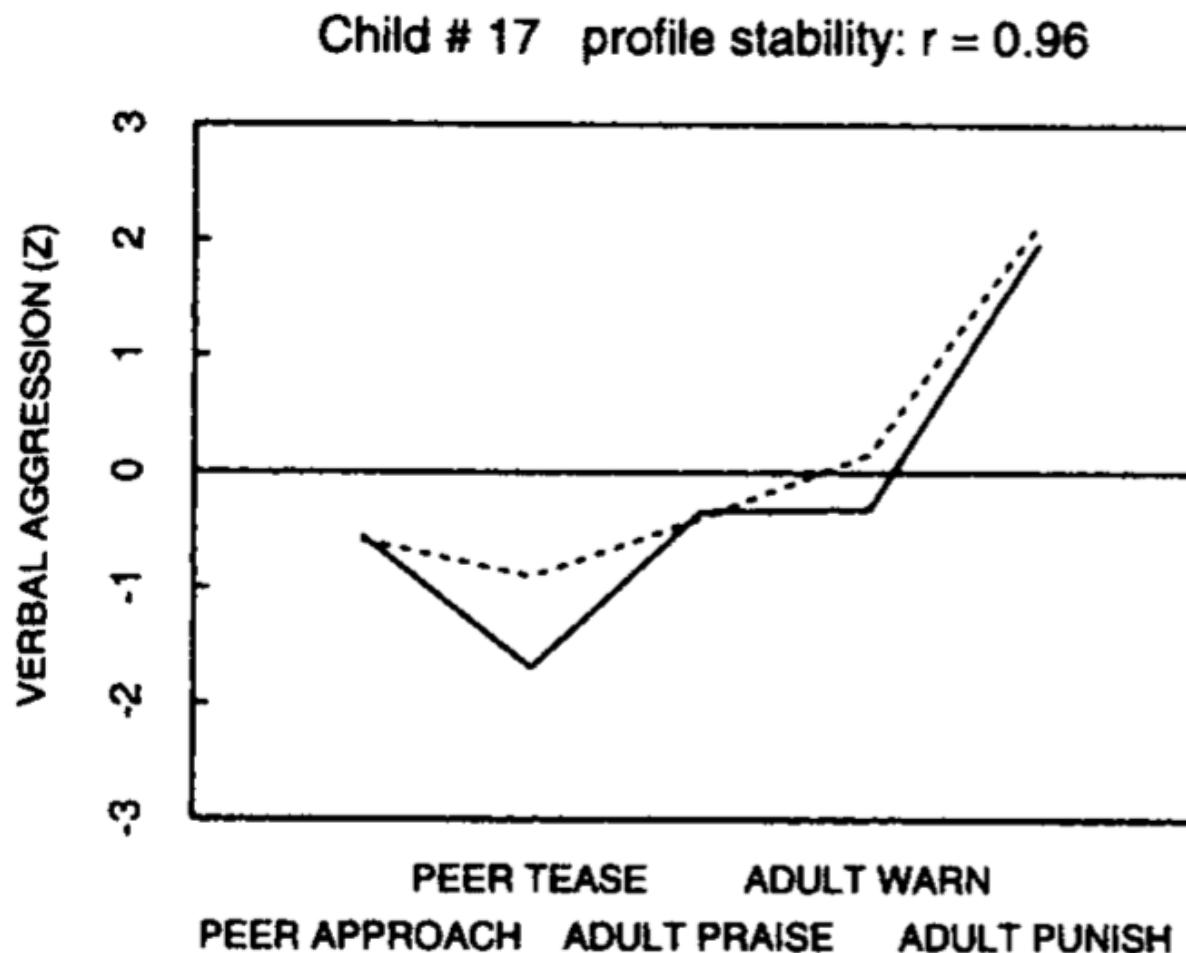
***Experience***

***Etc.***

e.g., Mischel & Shoda, 2005; Wright & Mischel, 1987;  
Shoda, Mischel, & Wright, 1993; Mischel, 1973



# What is personality?



e.g., Mischel & Shoda, 2005; Wright & Mischel, 1987;  
Shoda, Mischel, & Wright, 1993; Mischel, 1973

# What is personality?

**Personality is what personality tests test.**

(Jack Wright, personal communication, 2013)

The Whole Person

Contexts

Dynamics &  
Systems

# Dynamic Systems Theories

Self-  
Organizing

Emergent  
Properties

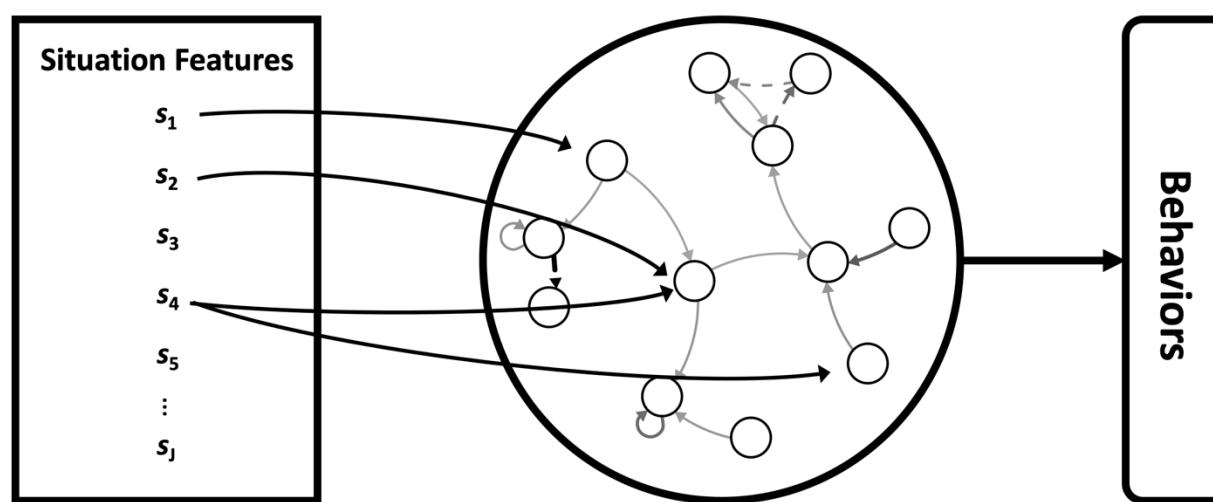
Equilibria

# Persons in Context: Systems Theories

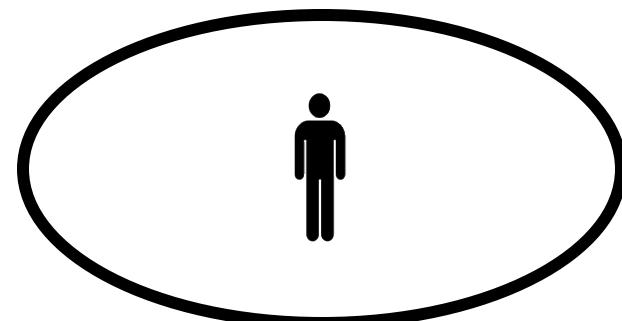
**Ecological Systems Theory**  
(e.g., Bronfenbrenner, 1979)



**Cognitive Affective Personality System**  
(e.g., Mischel & Shoda, 1995)



**Field Theory**  
(e.g., Lewin, 1936)

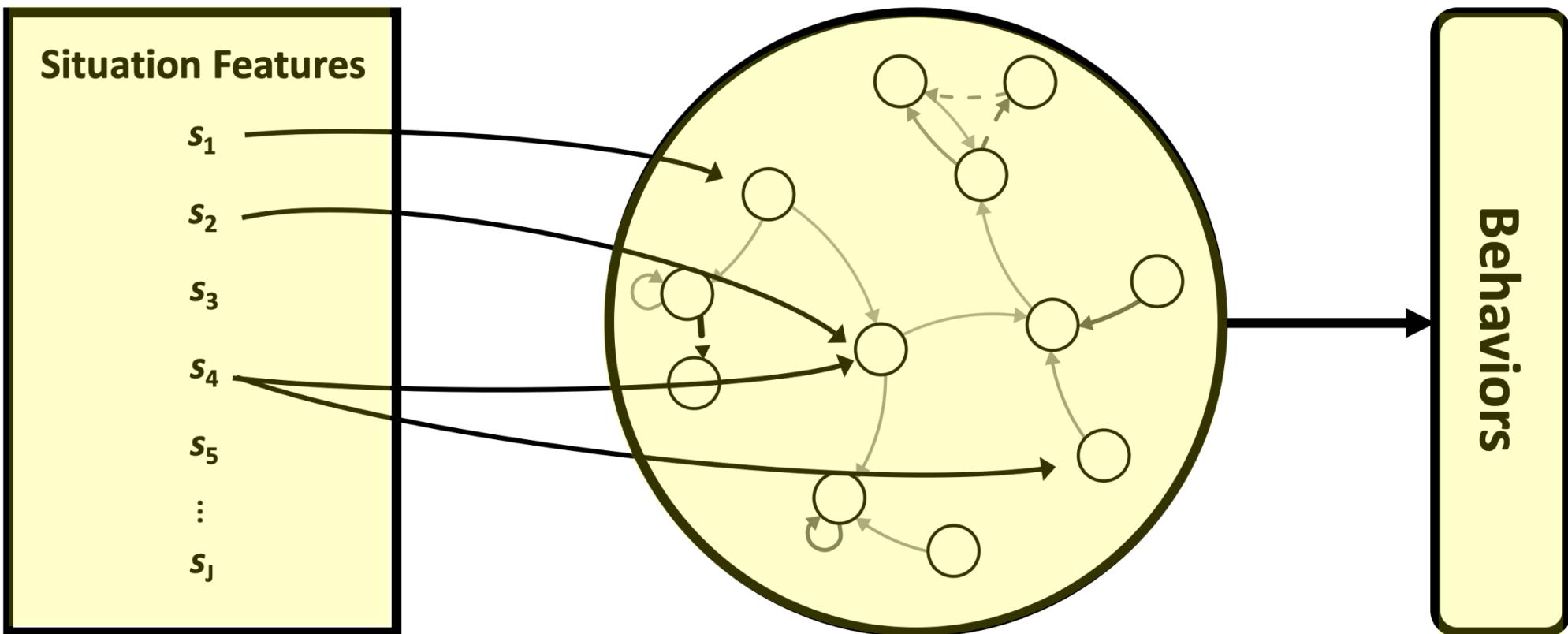


e.g., Lewin, 1936

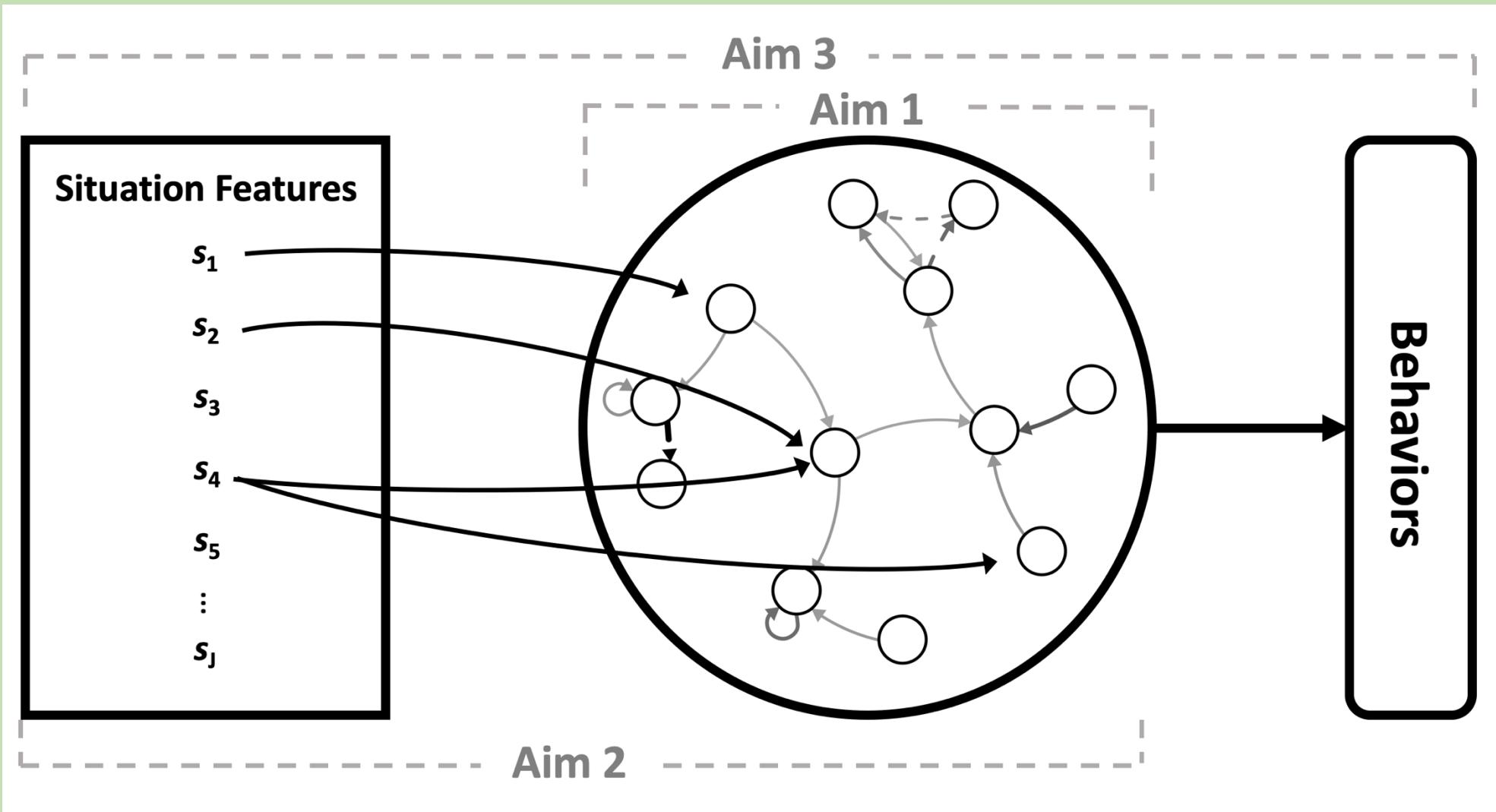


# What is personality?

A Cognitive Affective Processing System (CAPS)



e.g., Mischel & Shoda, 2005; Wright & Mischel, 1987;  
Shoda, Mischel, & Wright, 1993; Mischel, 1973



**Aim 1:** Bringing the individual back in the study of personality structure and change.

Beck & Jackson  
(2020, *JPSP*; 2021b; *EJP*)

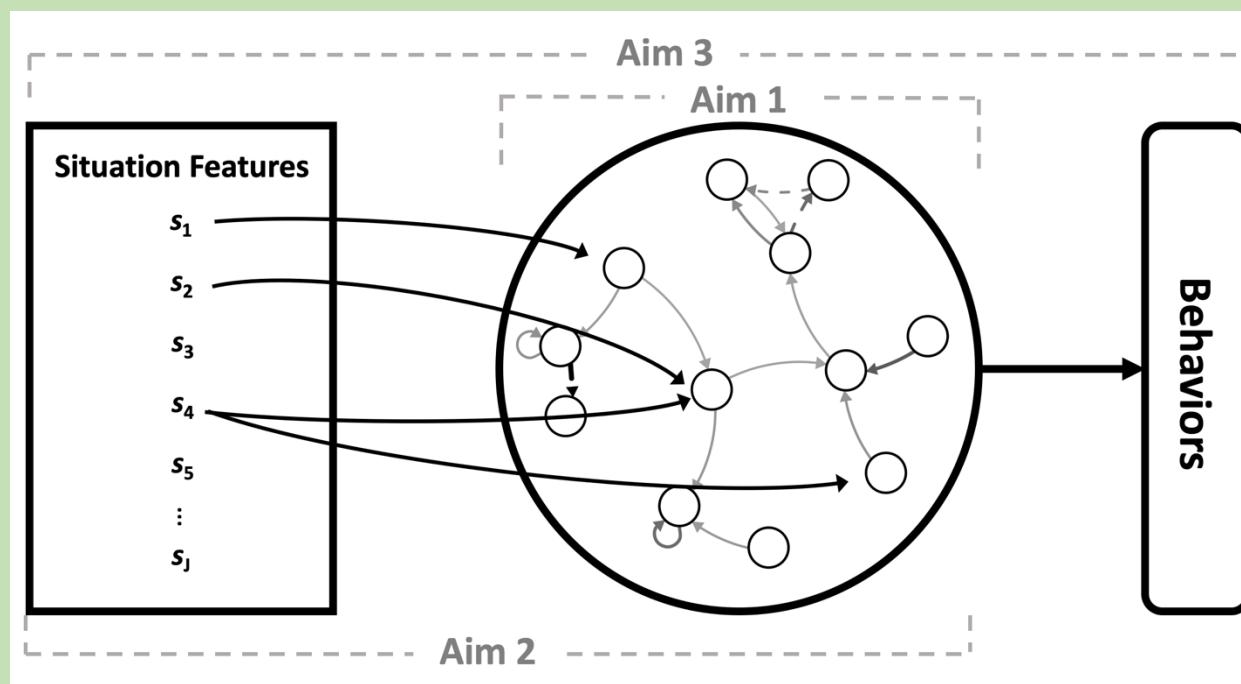
**Aim 2:** Using longitudinal data to understand how well-being unfolds across contexts.

Beck, et al.  
(2025, *Nature Human Behaviour*)

**Aim 3:** Predicting behavior using machine learning.

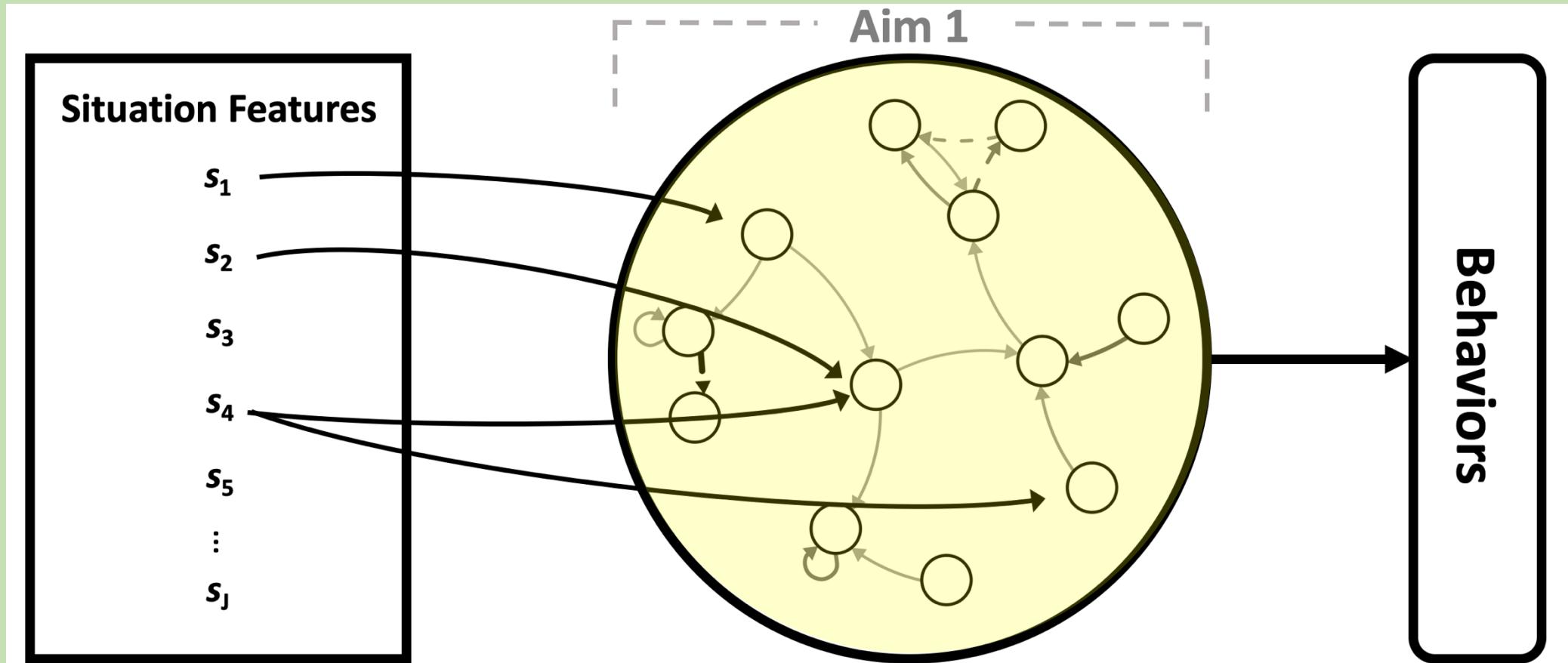
Beck & Jackson  
(2023, *Psych Science*)

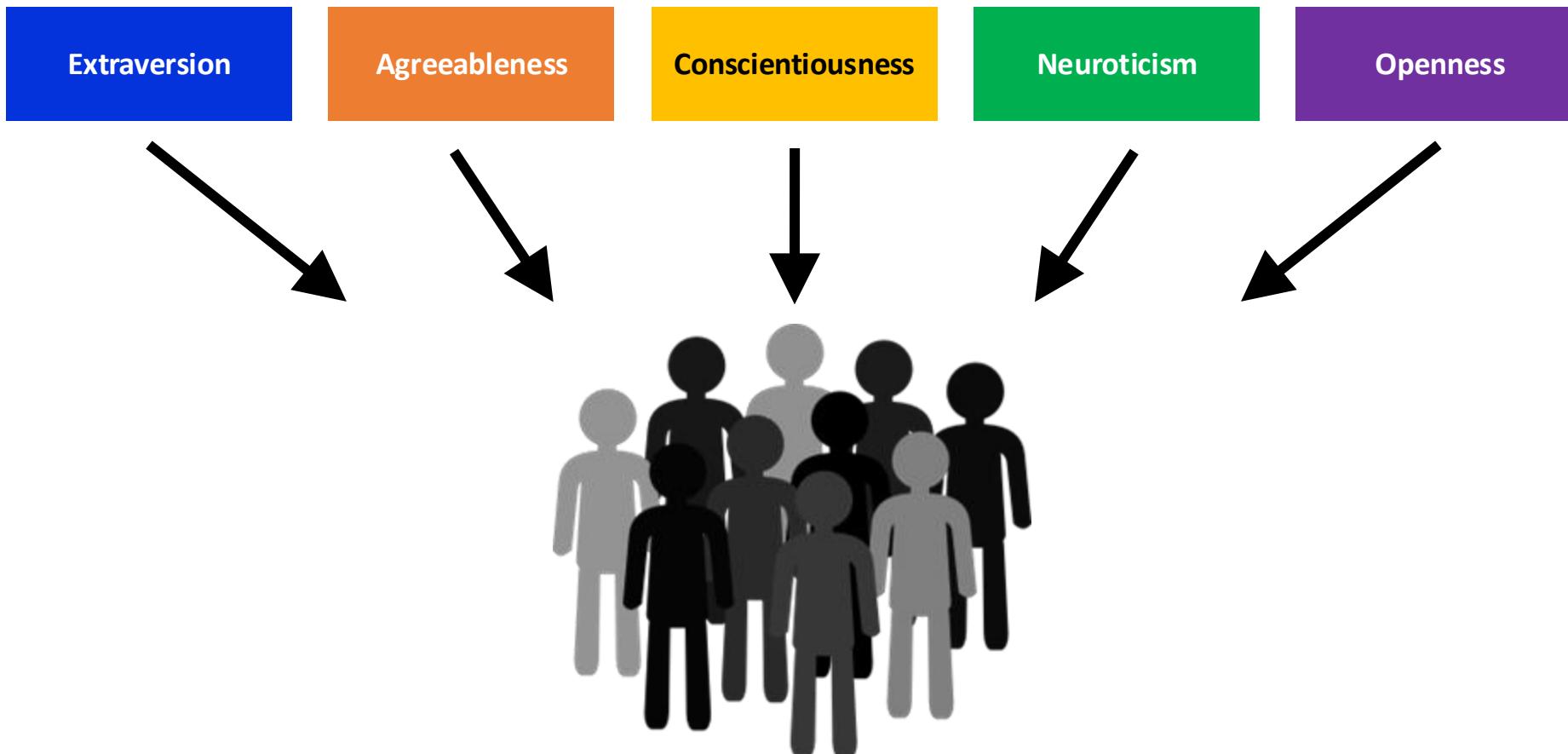
## Ongoing Directions



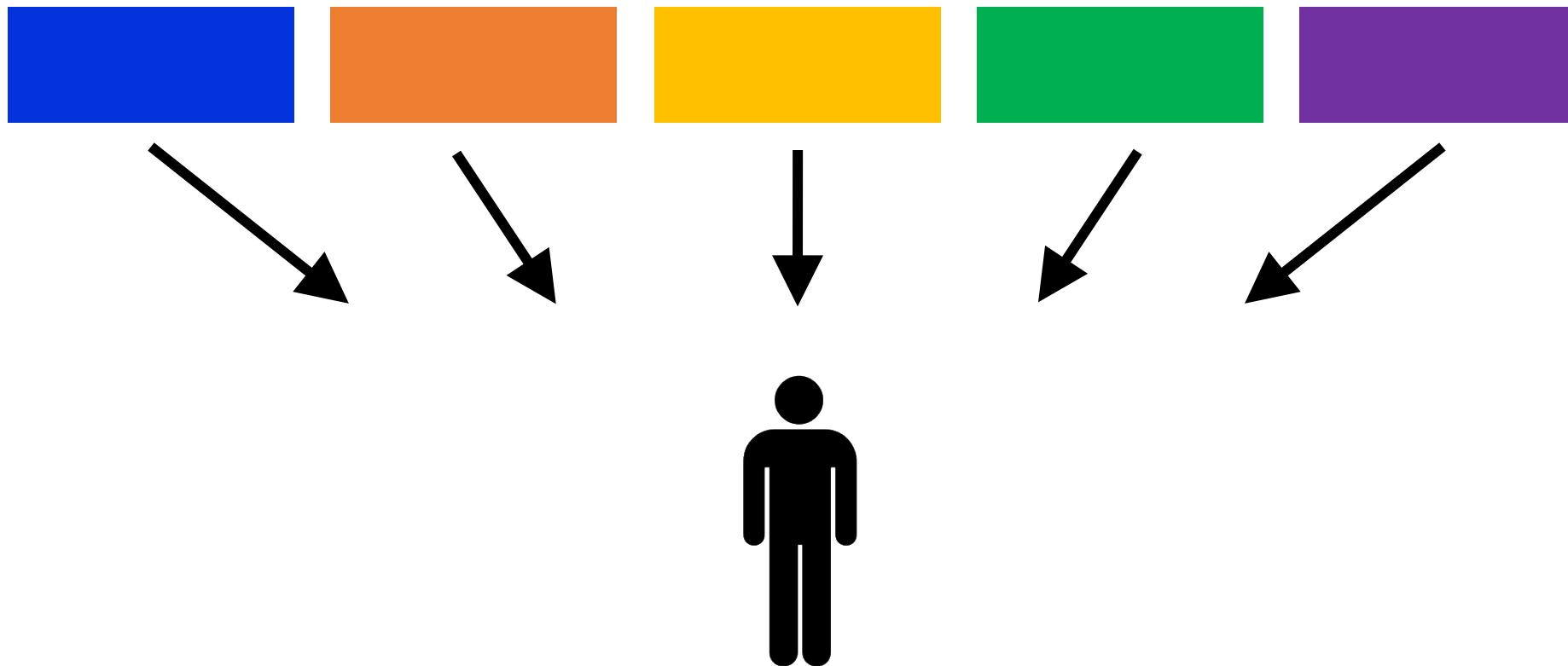
**Aim 1:** Bringing the individual back in the study of personality structure and change.

Beck & Jackson  
(2020, *JPSP*; 2021b; *EJP*)





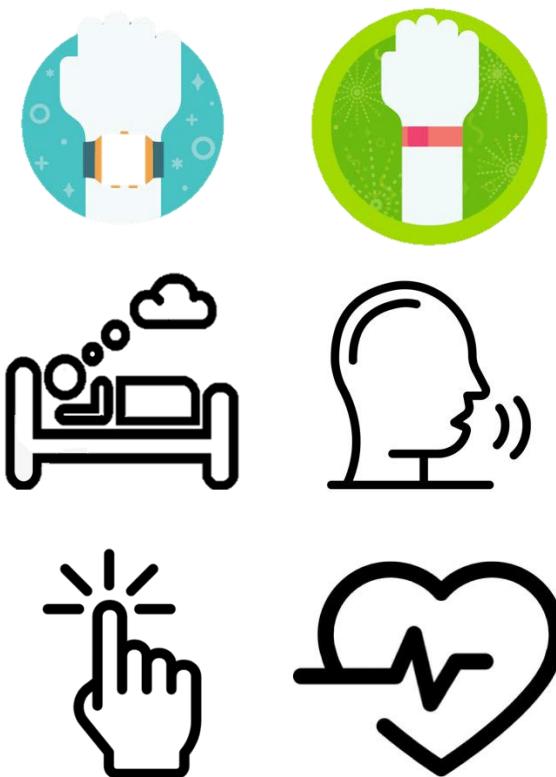
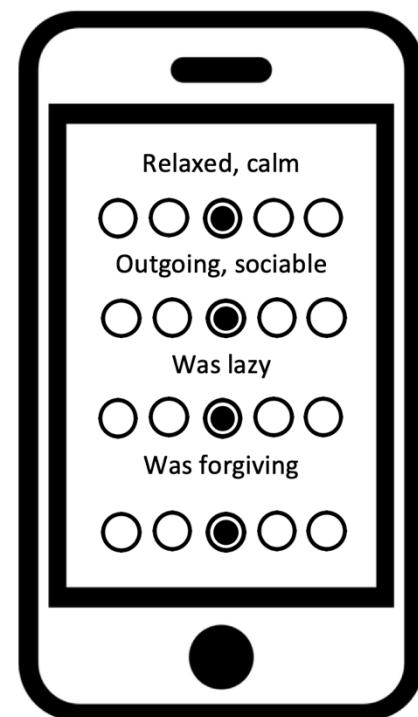
**Nomothetic  
Variable-Centered**



**Idiographic  
Person-Specific**

## 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

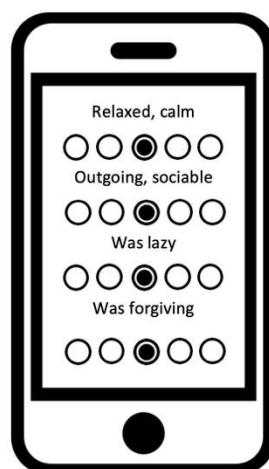
9 items from the Big Five Inventory (BFI)

## Procedure

4 assessments / day for 15 days

## Modeling

Graphical vector autoregression

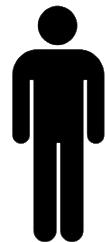




time	E	A	C	N	O
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					

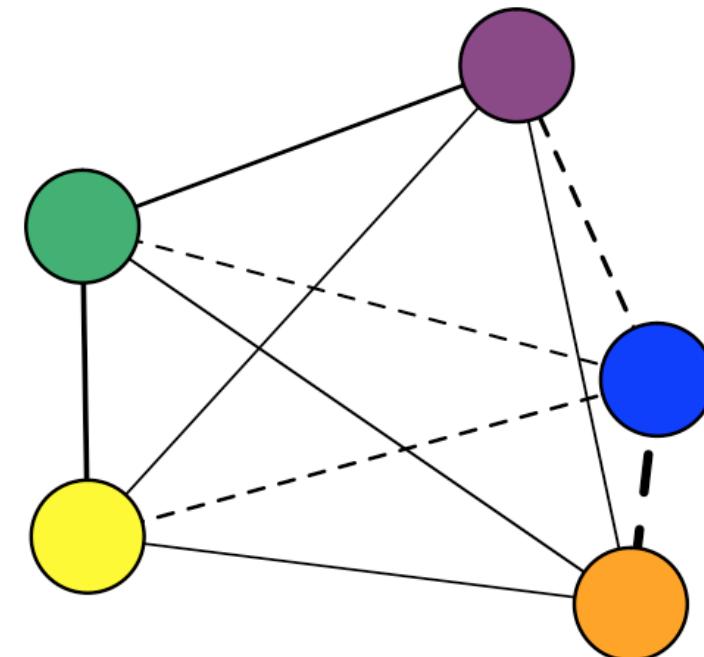
E				
A	0.02			
C	-0.05	0.08		
N	0.64	-0.12	-0.10	
O	0.26	-0.27	0.43	0.07

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

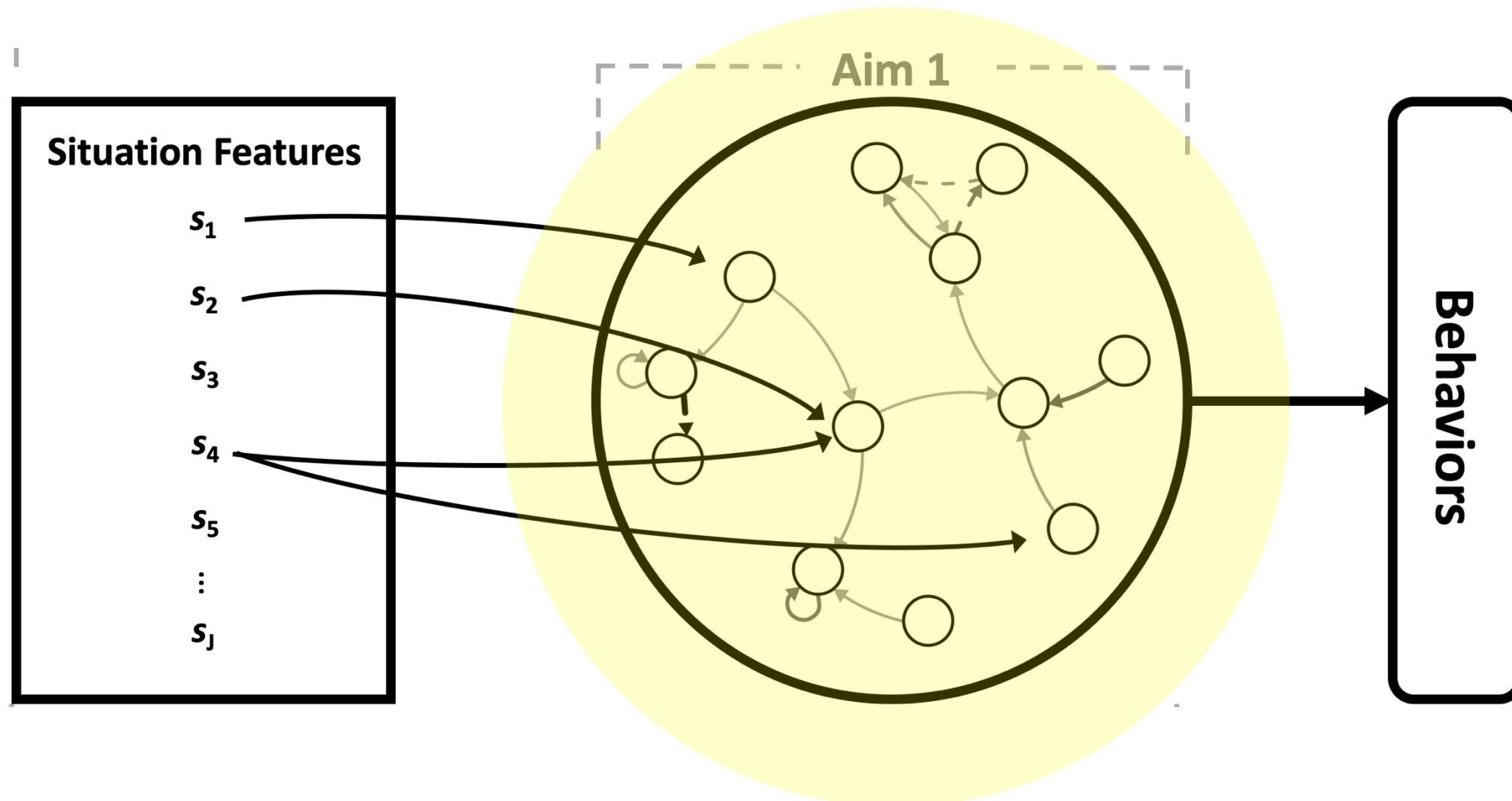


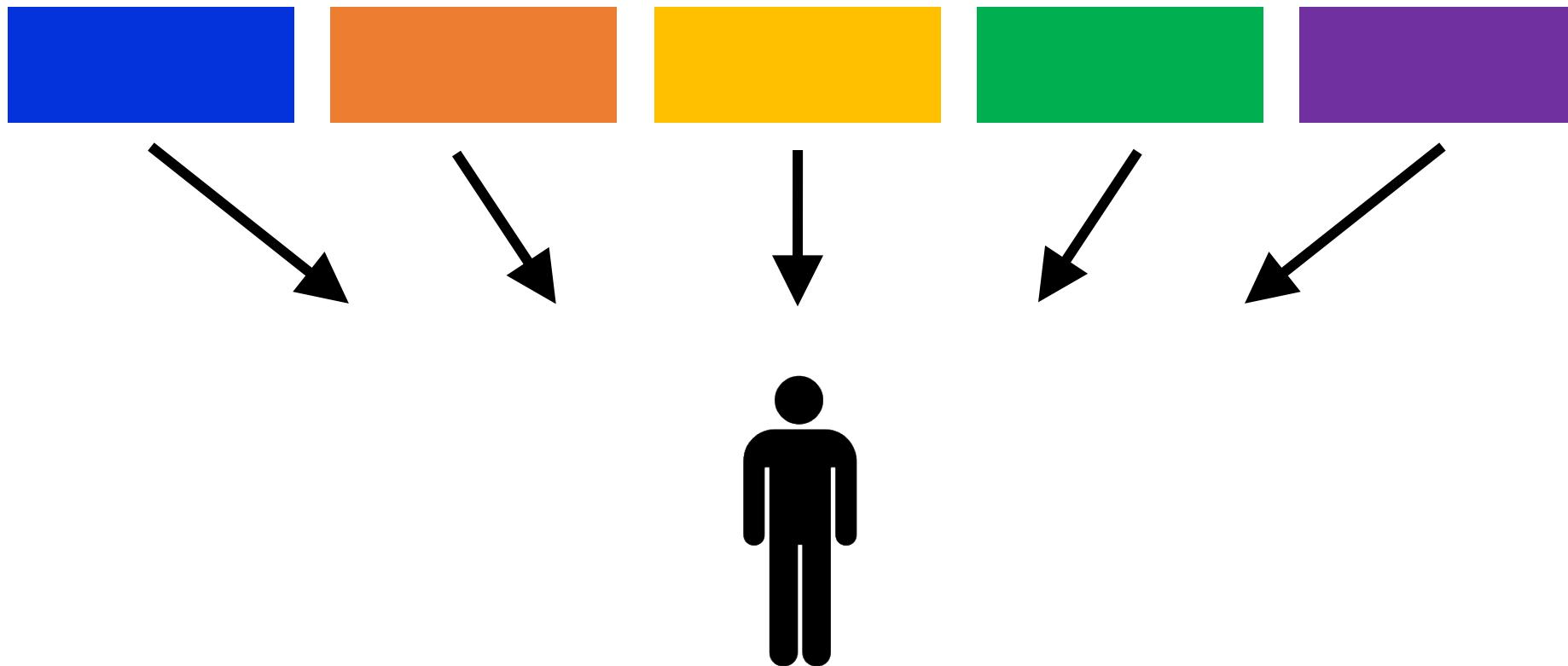
time **E A C N O**

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

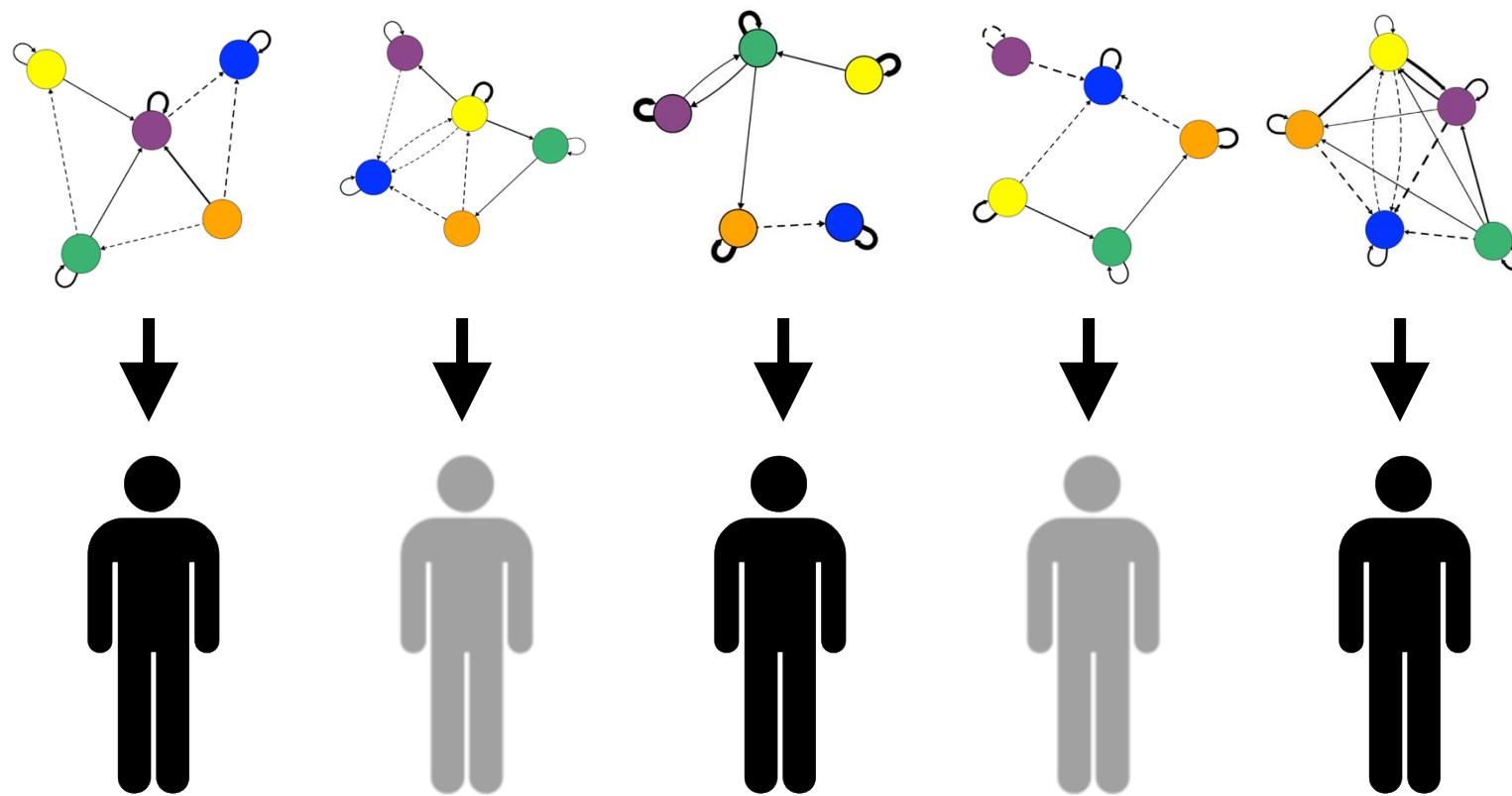


**Contemporaneous: Within Time-Points**  
 $x_{it} \leftrightarrow x_{jt}$





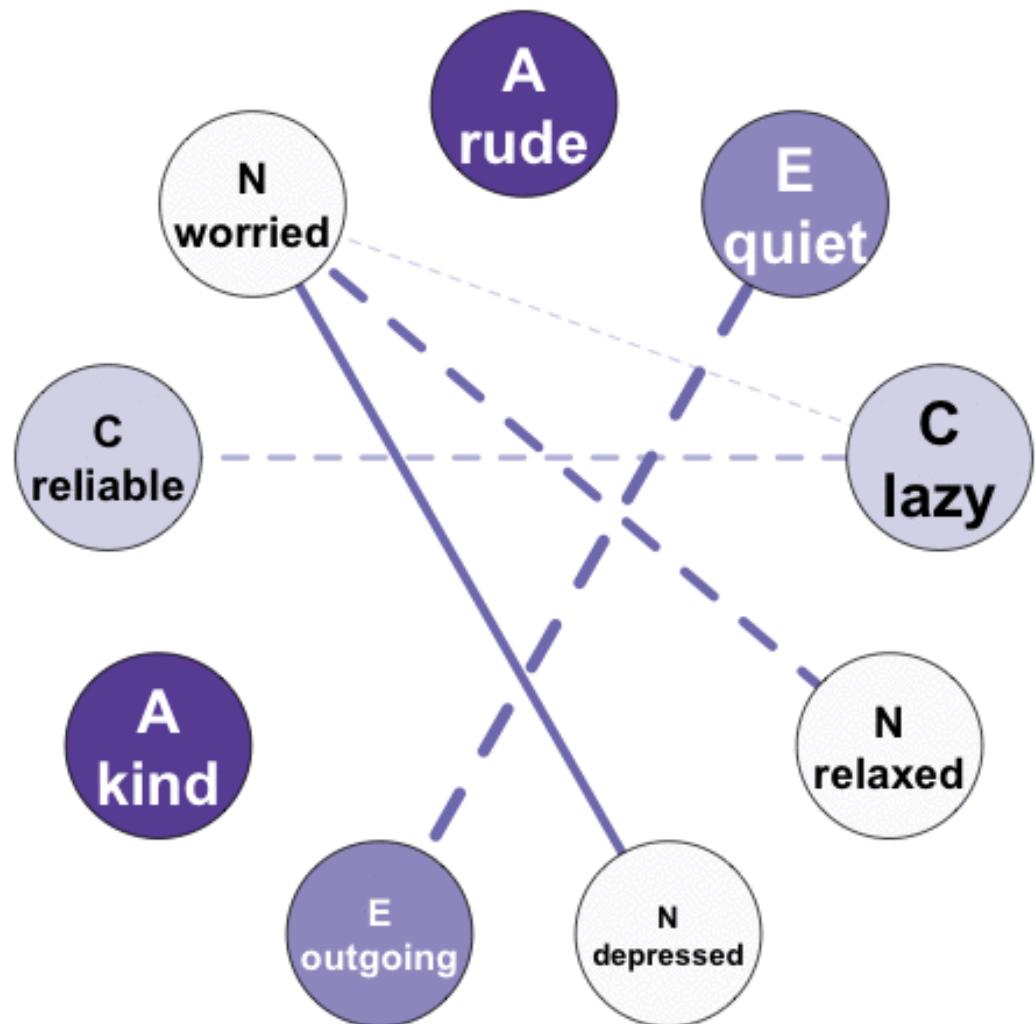
**Idiographic  
Person-Specific**



**Idiographic  
Person-Specific**

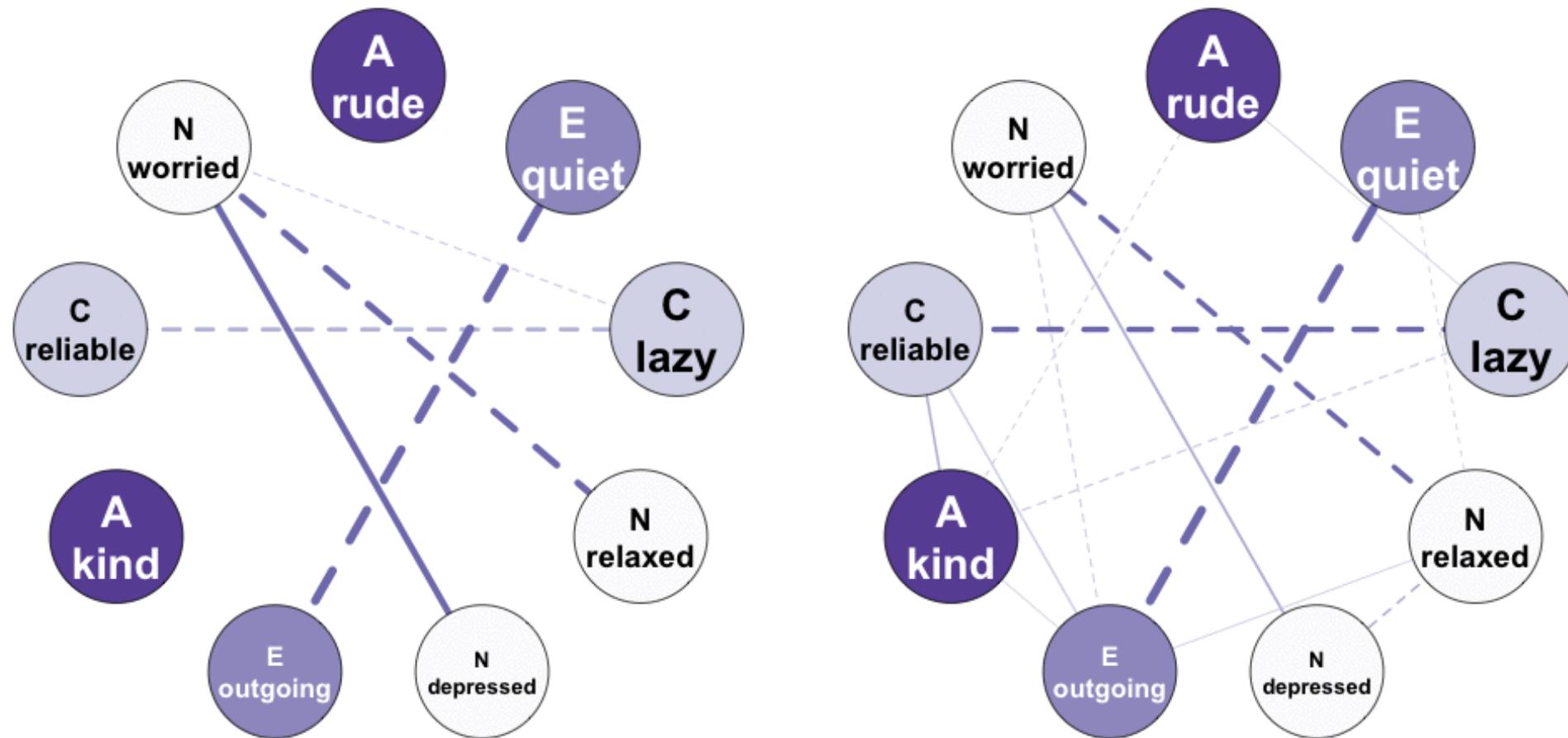
# RESULTS

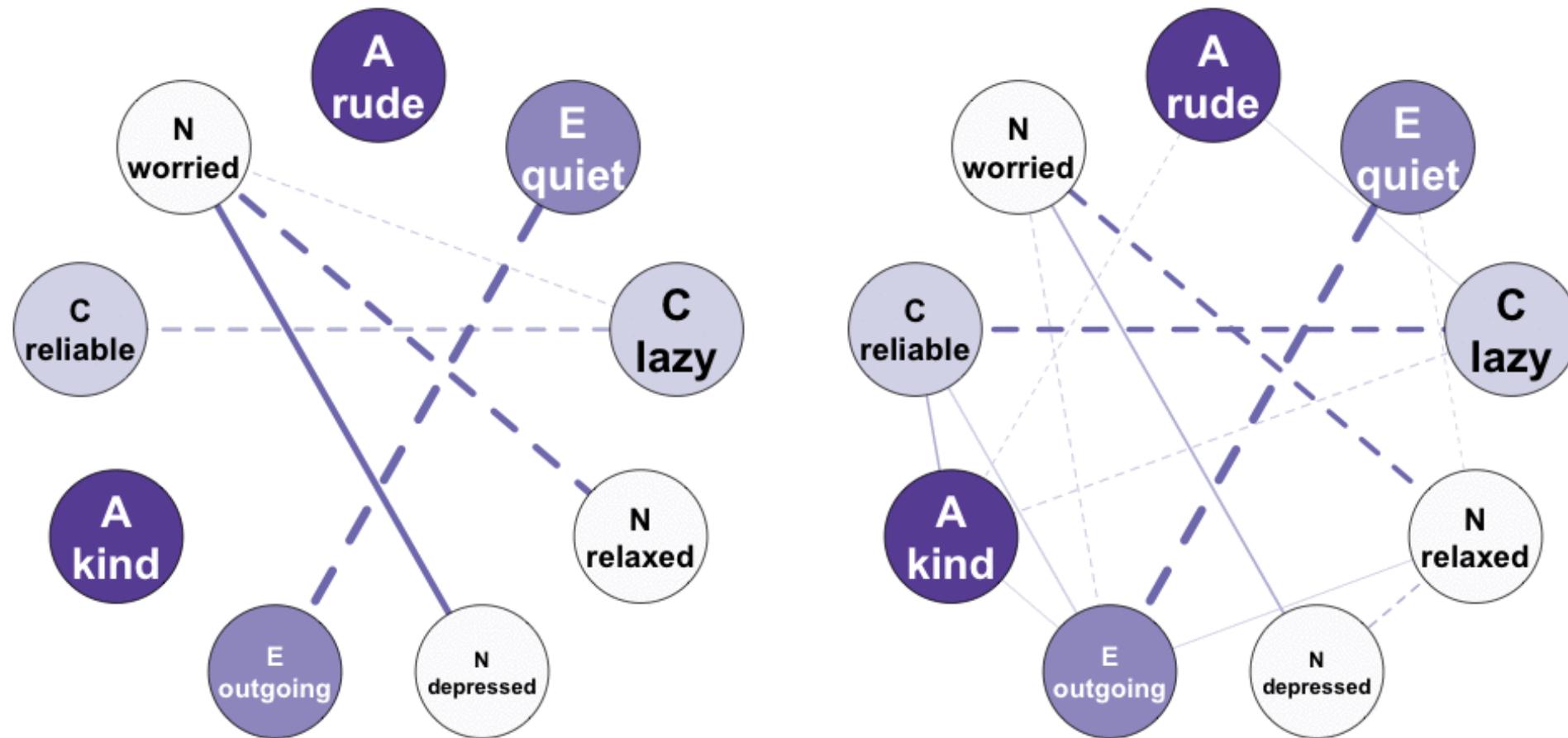
Aim 1

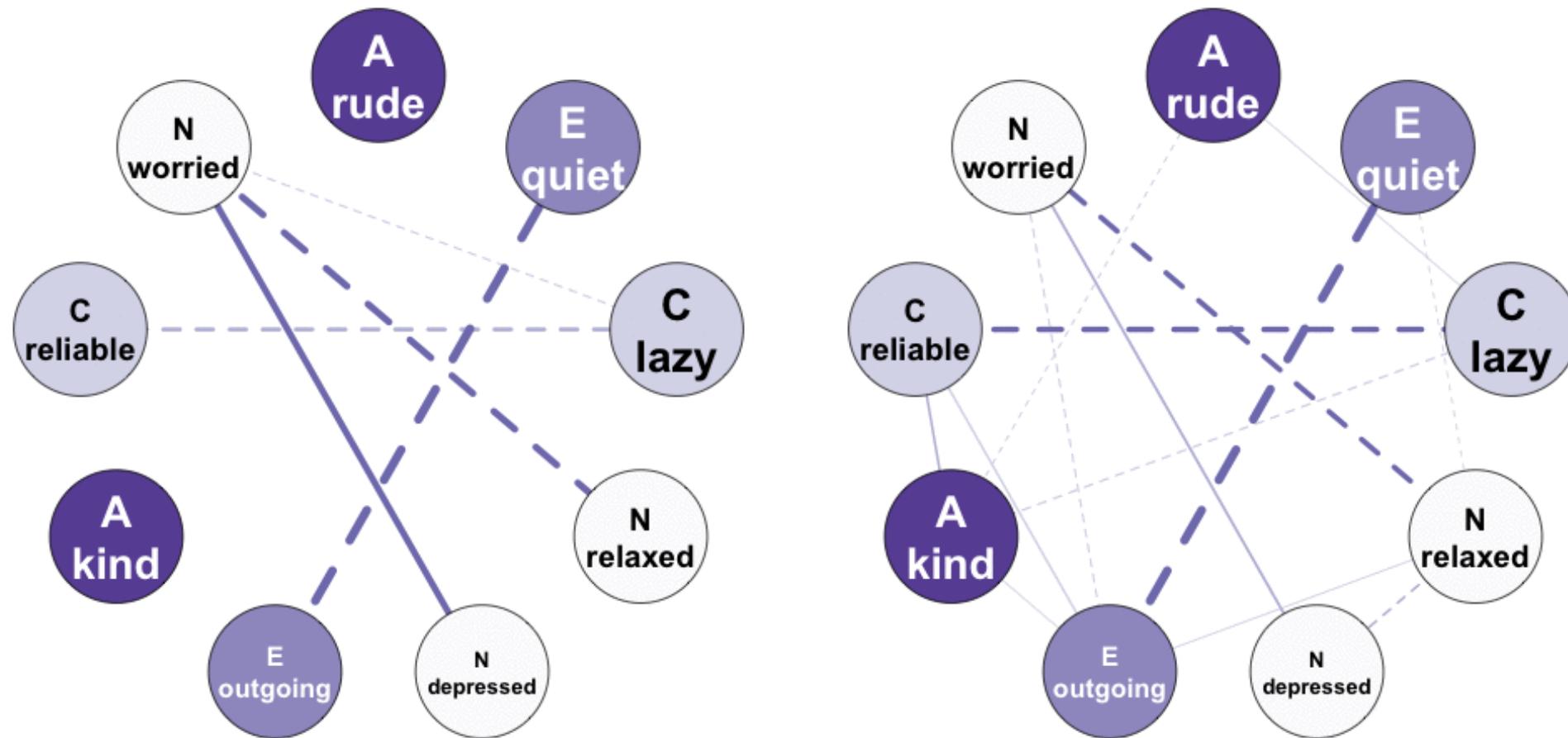


The structures differ across people.

But do they show expected longitudinal consistency?



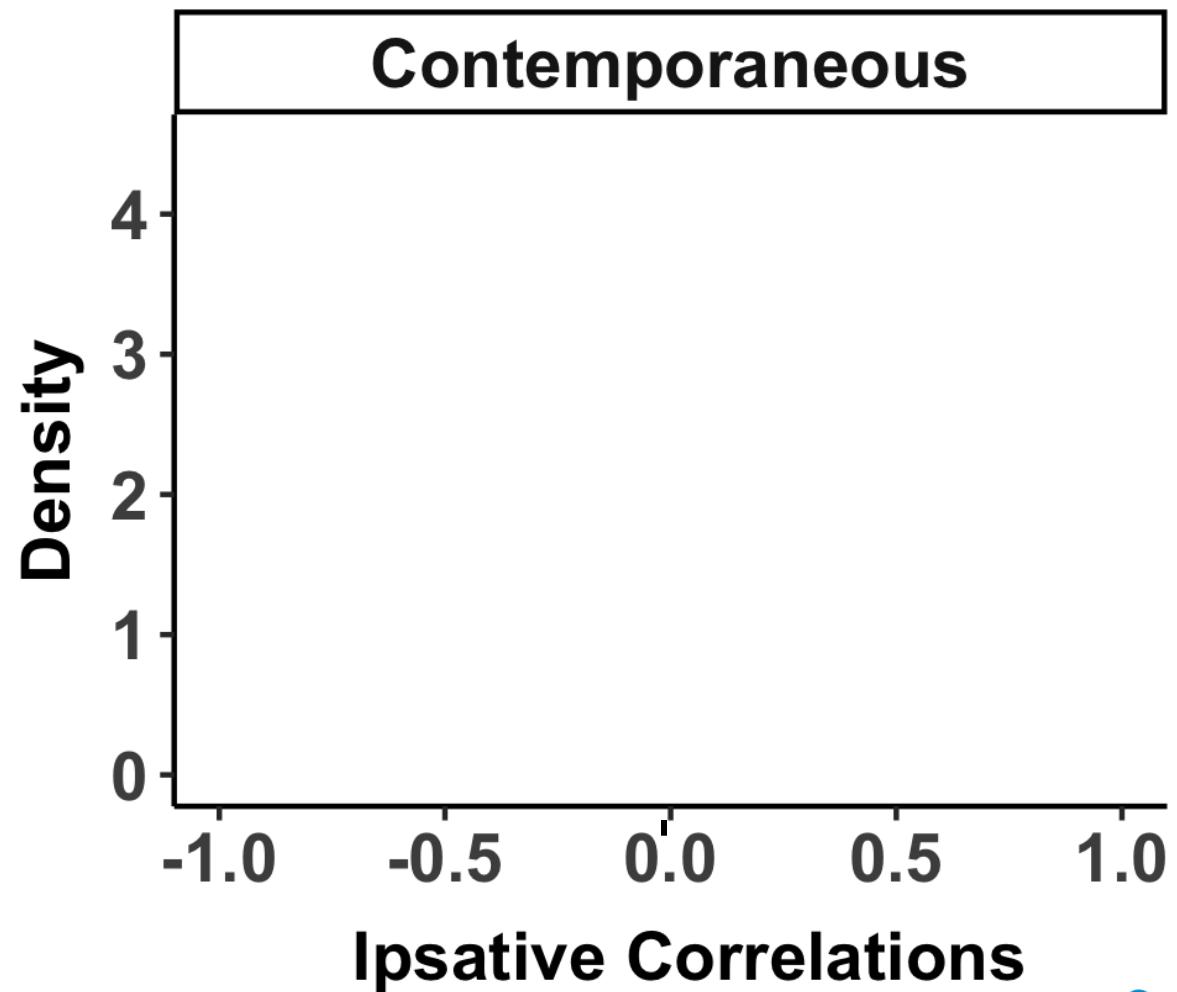




How consistent is  
idiographic personality  
across two  
years?

## Ipsative Network Consistency

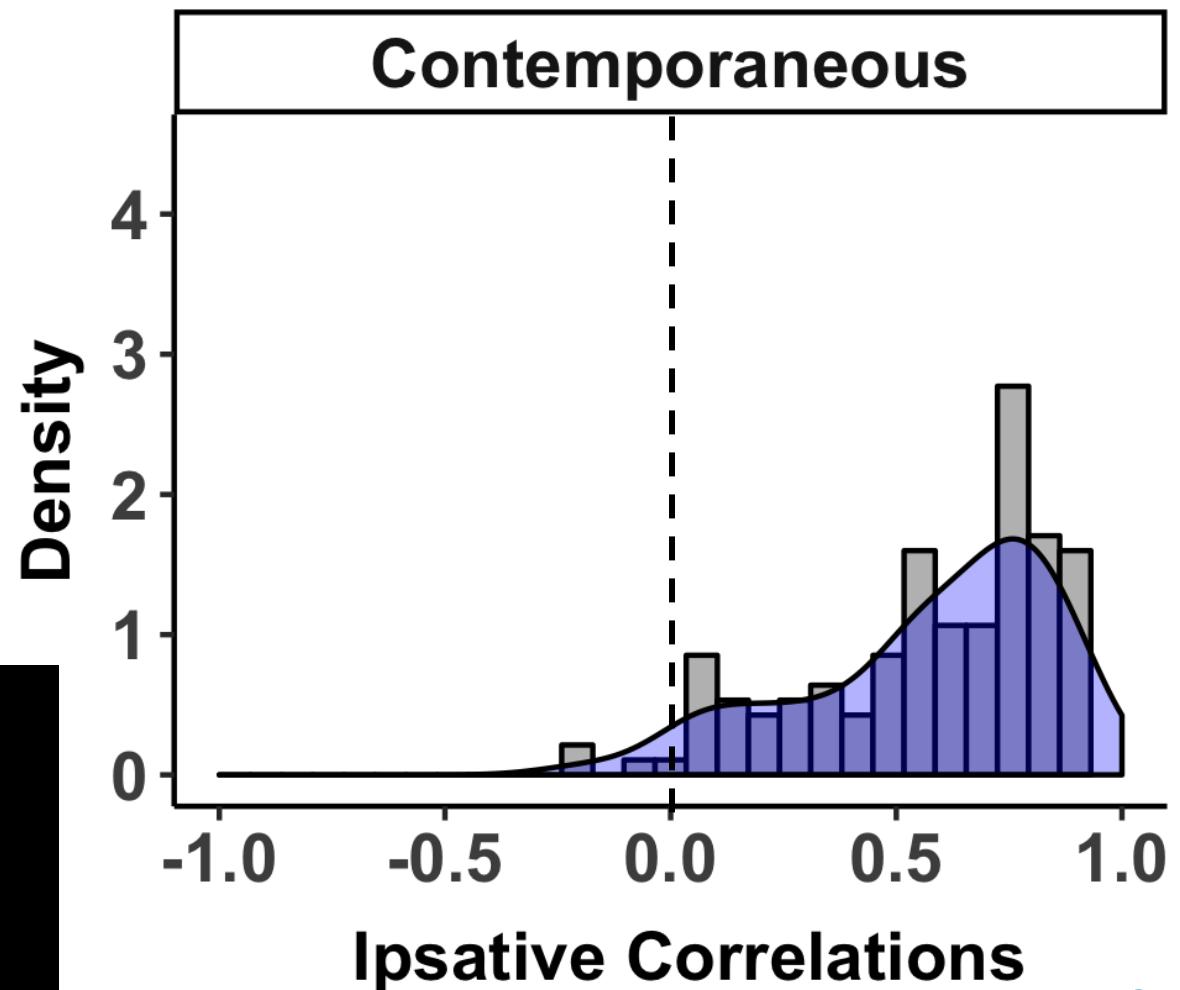
Contemporaneous



How consistent is  
idiographic personality  
across two  
years?

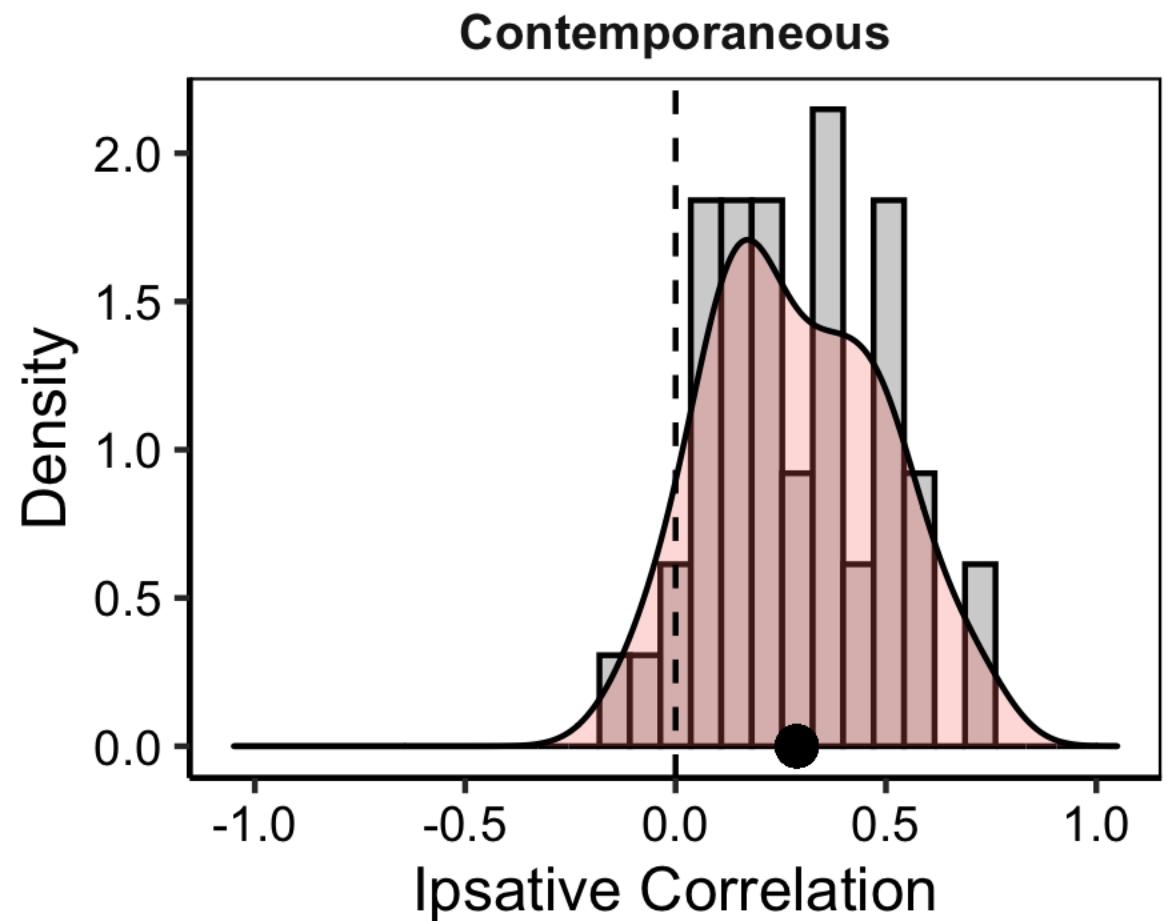
Idiographic Personality is  
consistent over two years.

## Ipsative Network Consistency



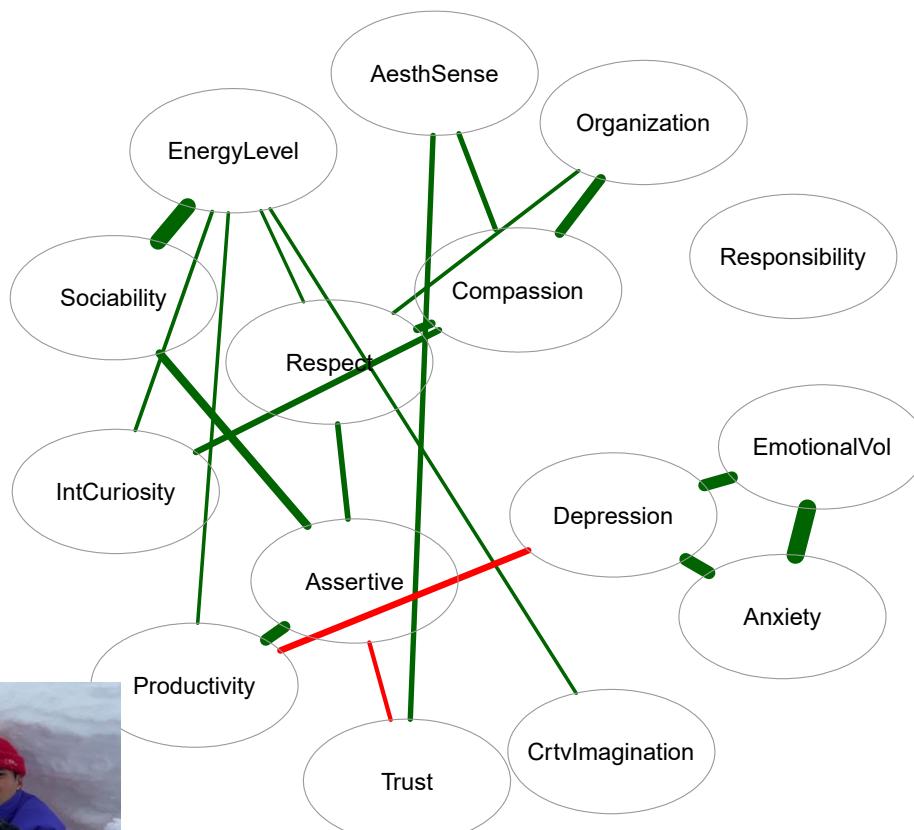
How consistent is  
idiographic personality  
across two  
years?

Idiographic Personality is  
consistent over two years AND  
global events.



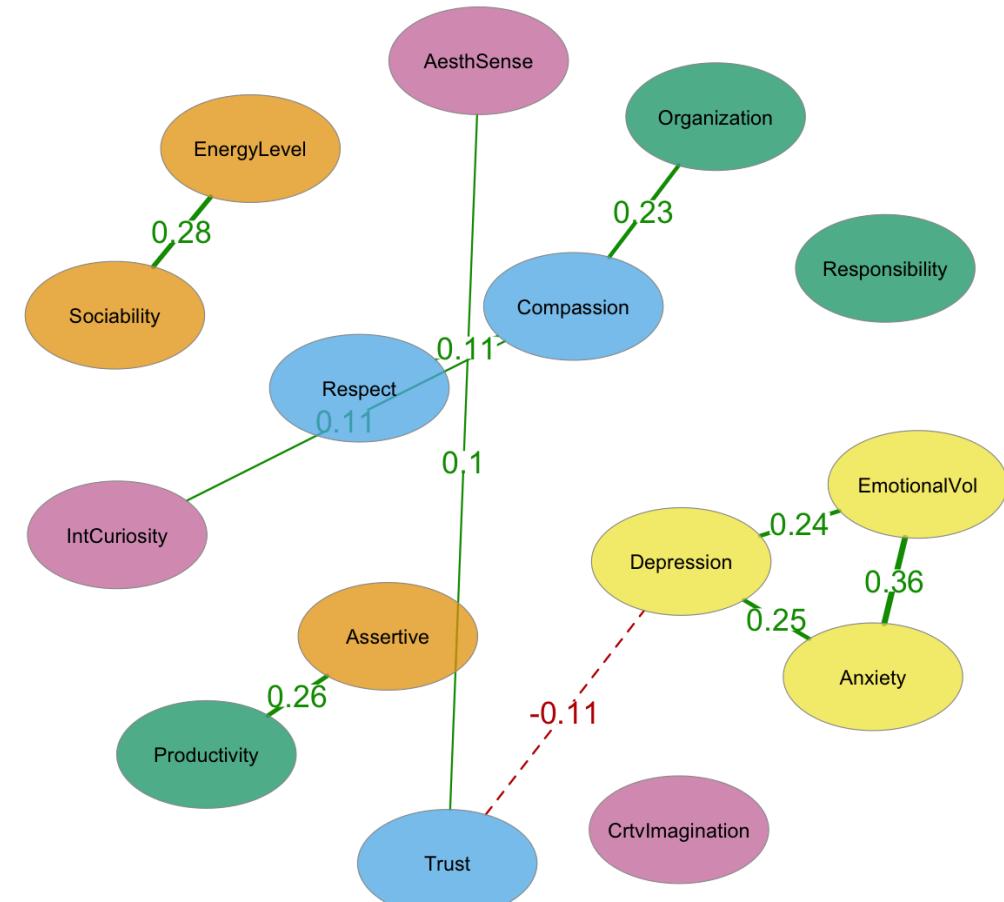
# Extension: Time-Varying Networks

Stationary Network



Colin J Lee

Estimation Point 1



Lee & Beck (under review)

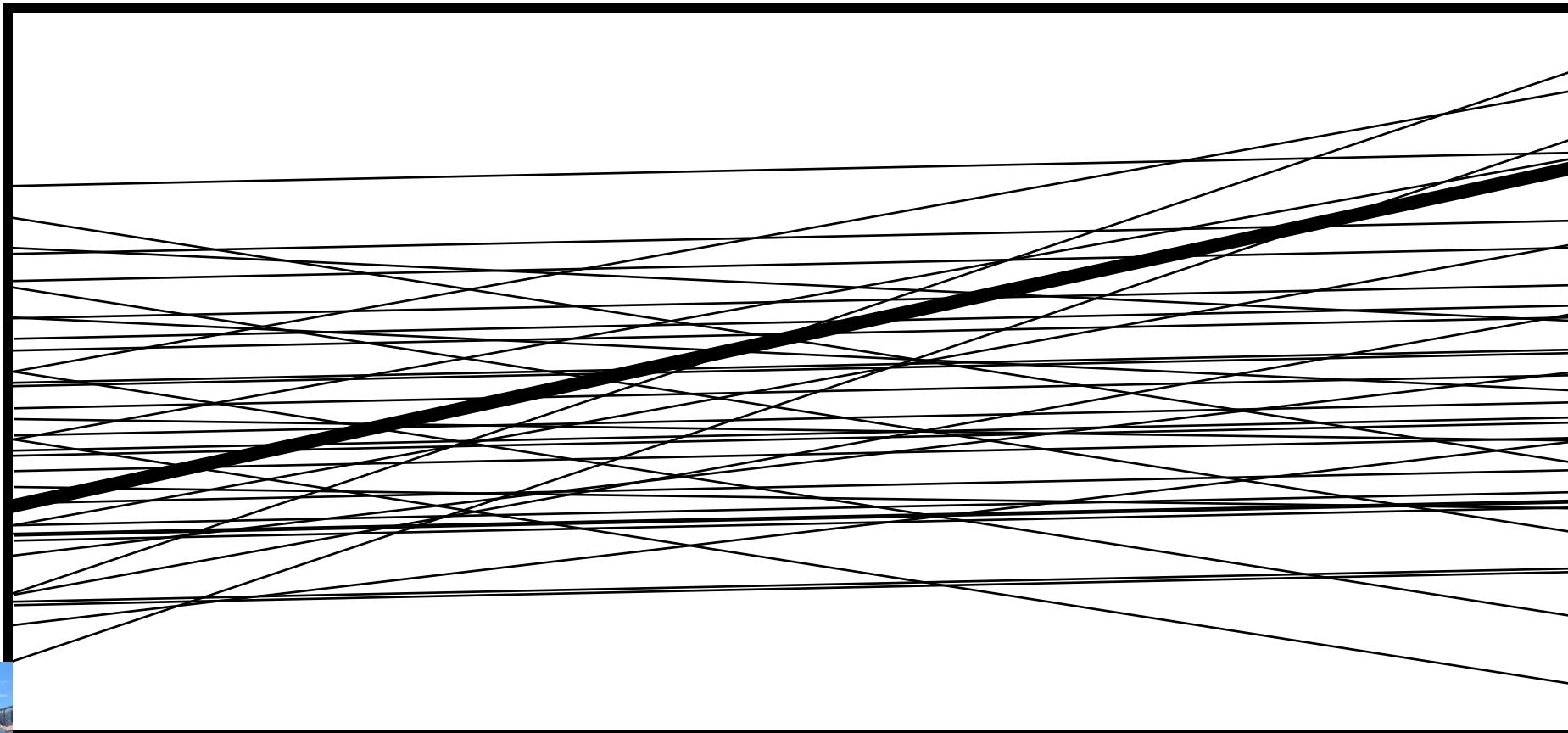
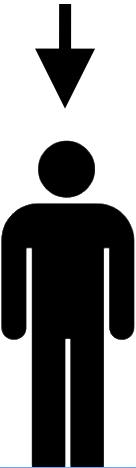
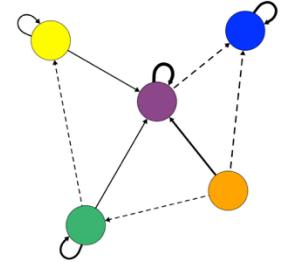
Extraversion

Agreeableness

Conscientiousness

Neuroticism

Openness

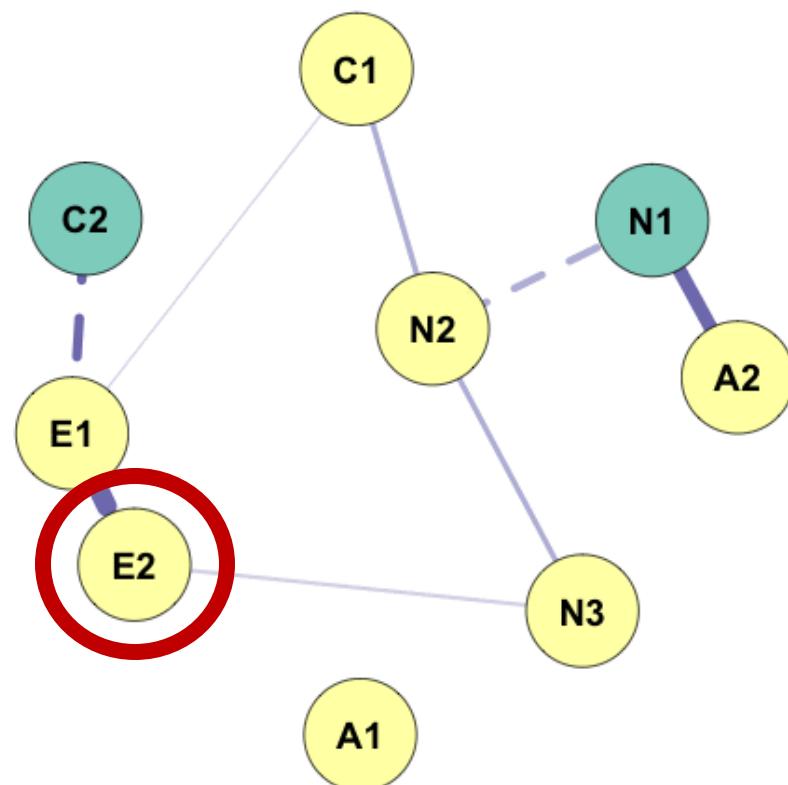


Adam Nissen



## Low Density, Degree

Contemporaneous Wave 1 for S62



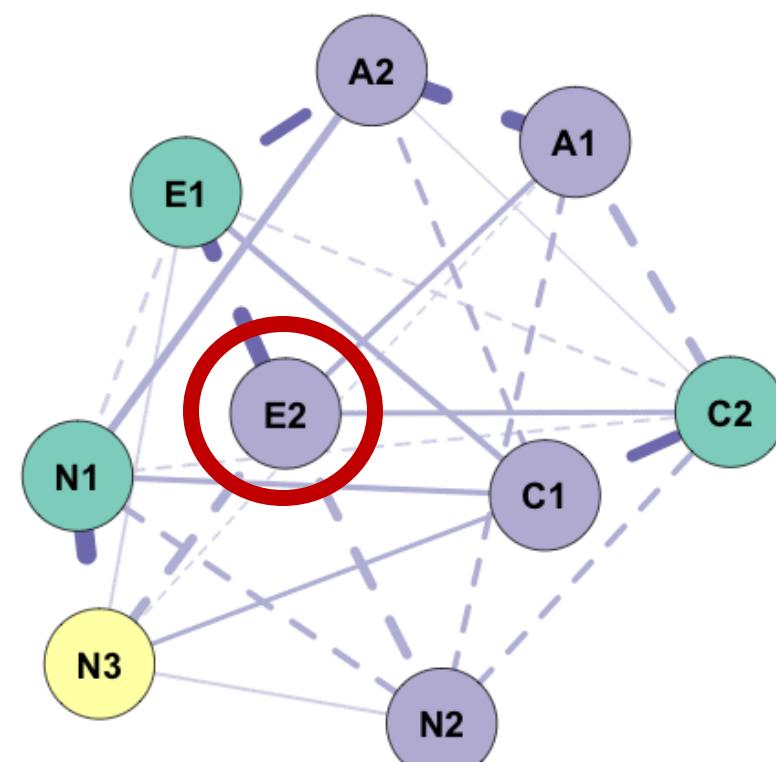
RIGIDITY



CHAOS

## High Density, Degree

Contemporaneous Wave 1 for S95

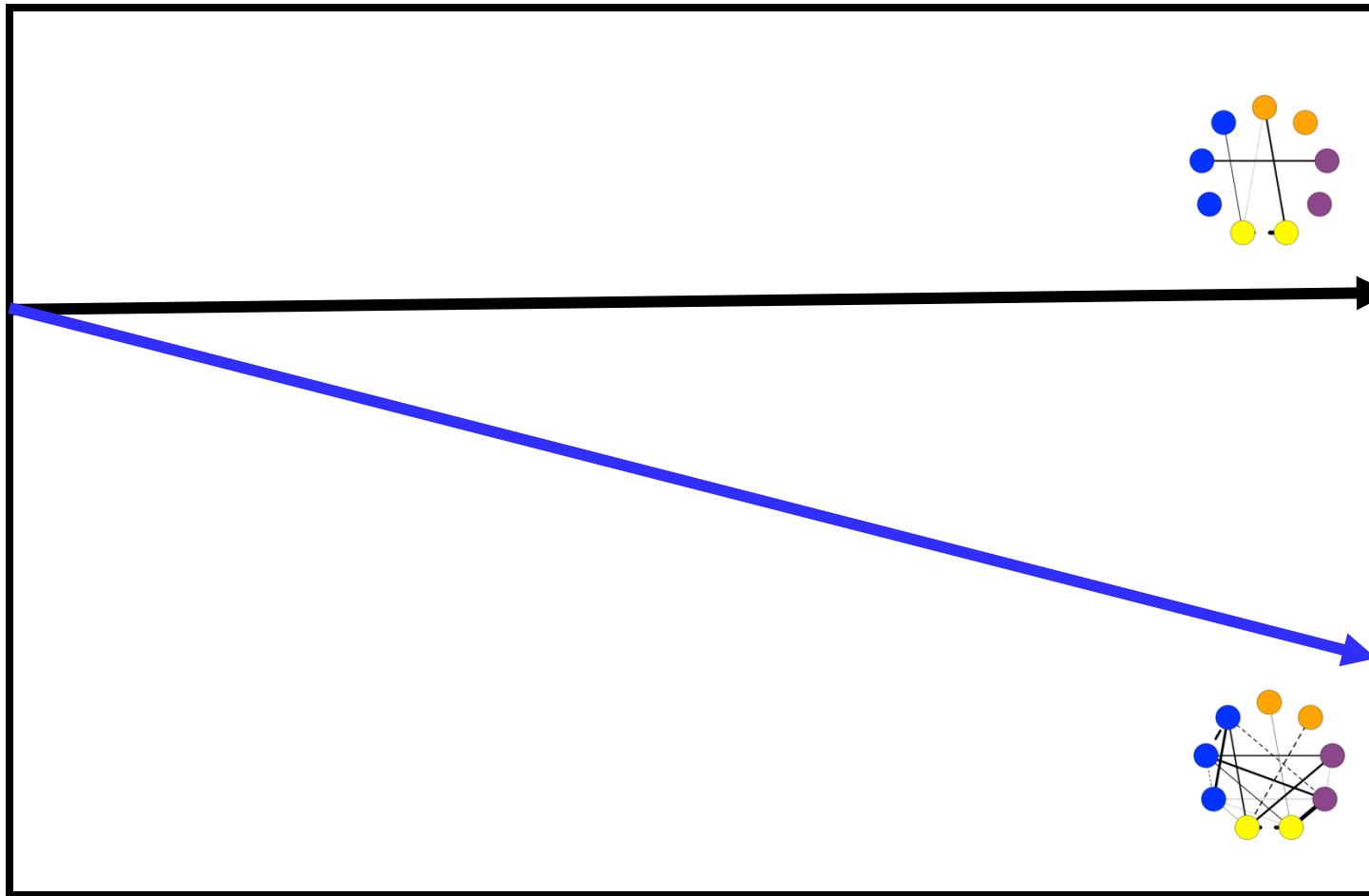


# Systems Perspectives: Persons in Context



Personality Trait Levels

Time (Years)



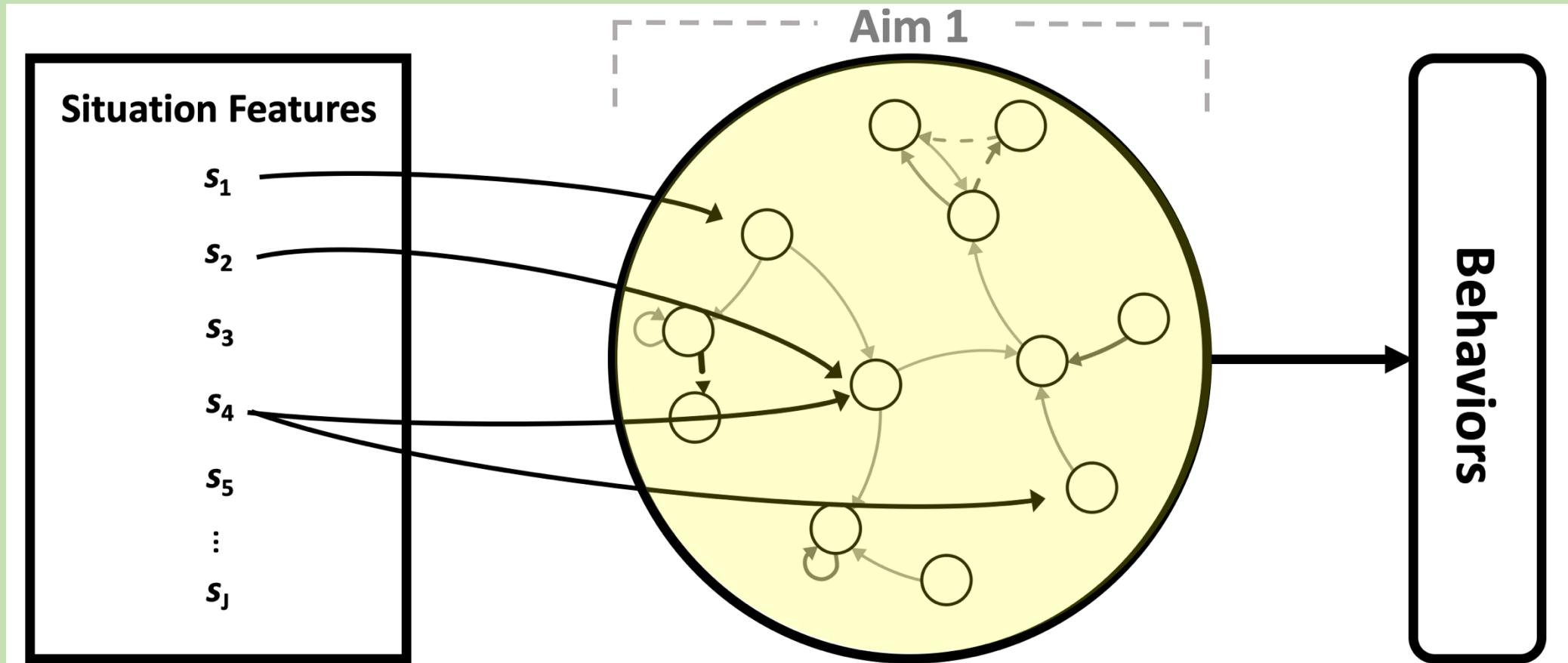
**Less  
vulnerable  
system**

**More  
vulnerable  
system**



**Aim 1:** Bringing the individual back in the study of personality structure and change.

Beck & Jackson  
(2020, *JPSP*; 2021b; *EJP*)



**Aim 1:** Bringing the individual back in the study of personality structure and change.

**Beck & Jackson**  
(2020, *JPSP*; 2021b; *EJP*)

**Idiographic personality structures are:**

**Unique (i.e. differ across people).**

**Relatively consistent over time.**

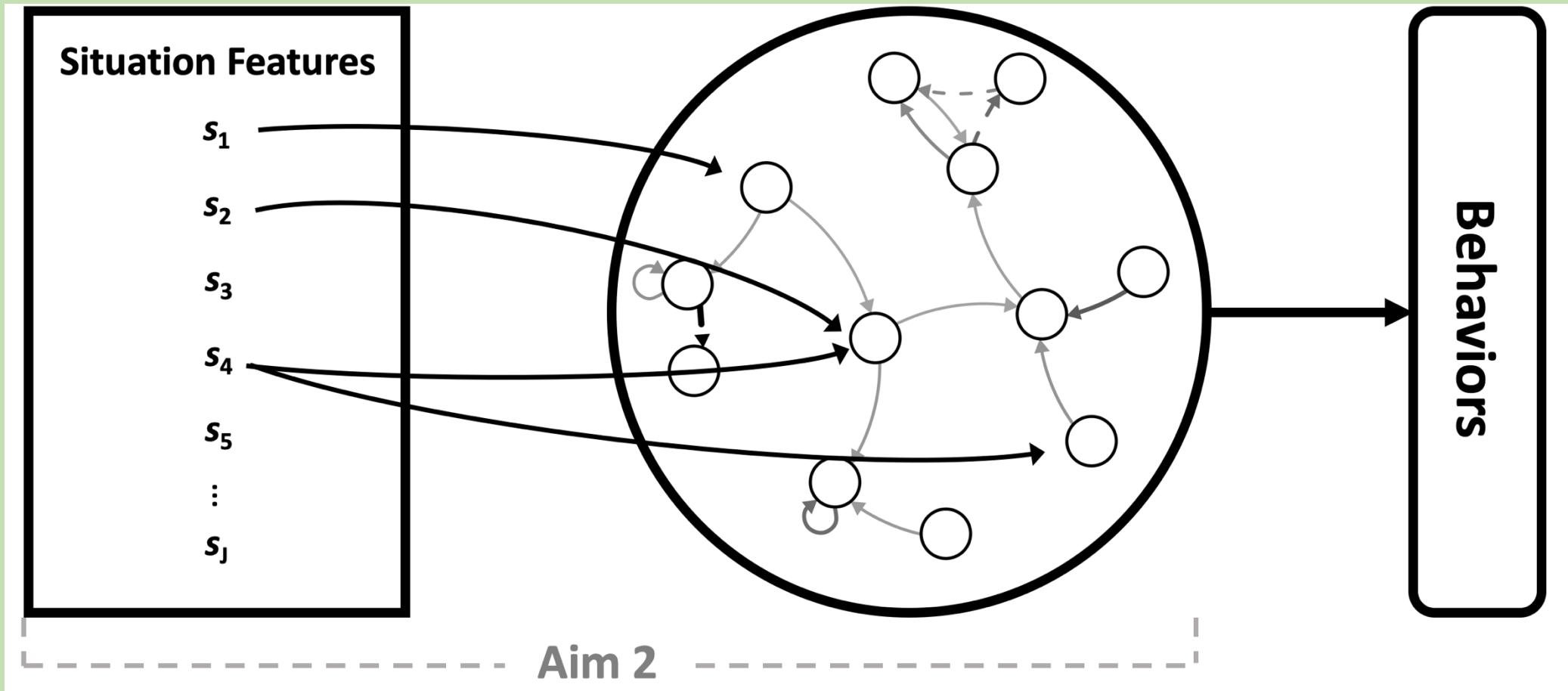
**Relatively consistent across global events.**

**Aim 1:** Individuals show unique personality structures that are relatively consistent across time and events.

Beck & Jackson  
(2020, *JPSP*; 2021b; *EJP*)

**Aim 2:** Using longitudinal data to understand how well-being unfolds across contexts.

Beck, et al.  
(revision submitted, *NHB*)

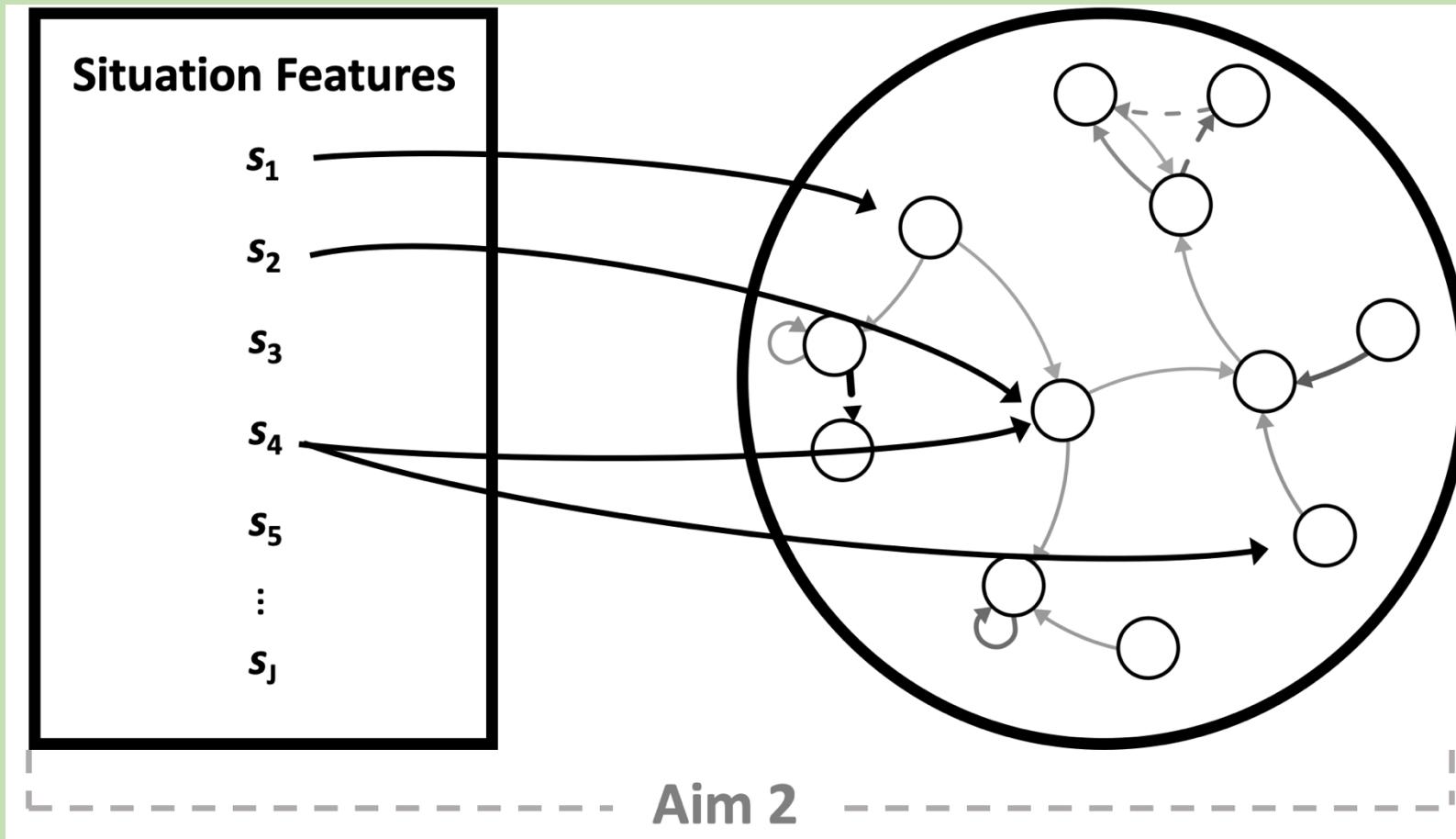


**Aim 1:** Individuals show unique personality structures that are relatively consistent across time and events.

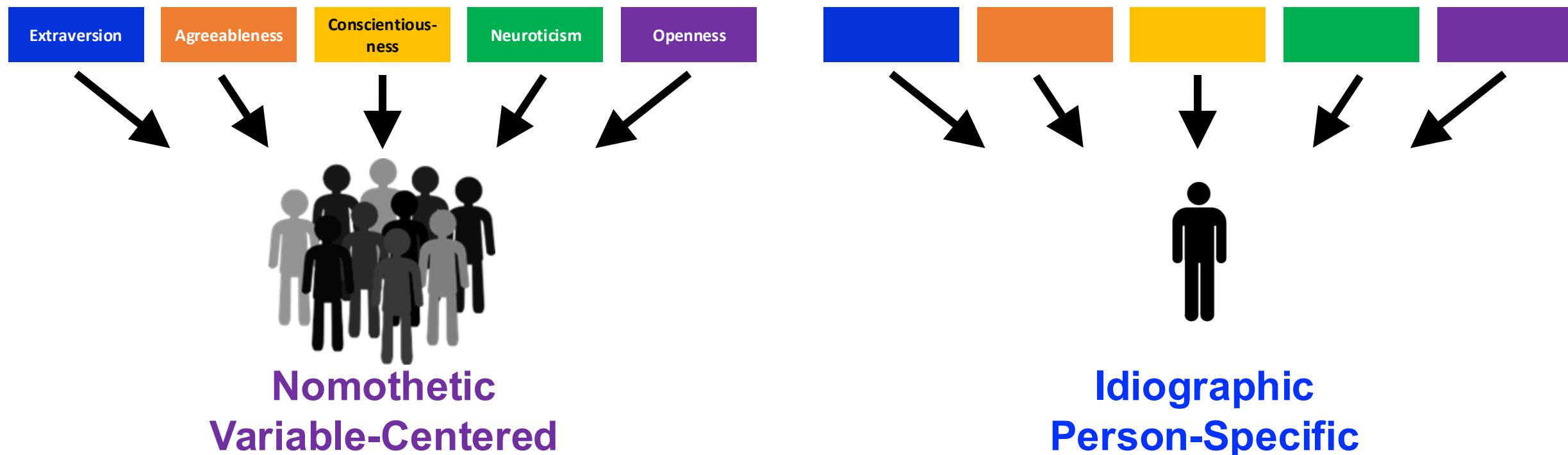
Beck & Jackson  
(2020, *JPSP*; 2021b; *EJP*)

**Aim 2:** Using longitudinal data to understand how well-being unfolds across contexts.

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\* = shared first authorship.



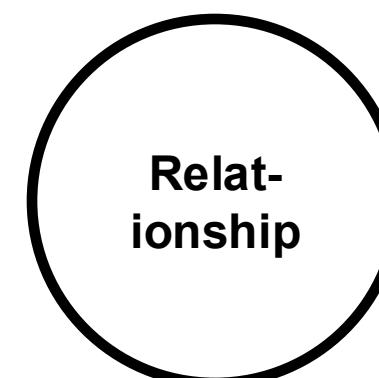
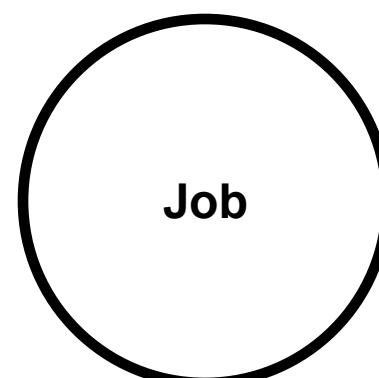
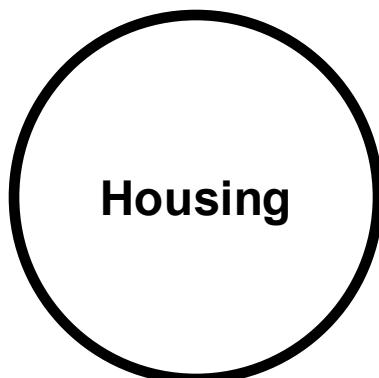
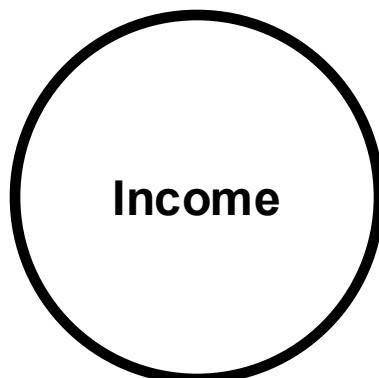
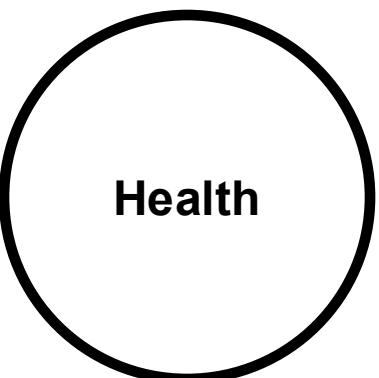


**Strong Theoretical Models**

**Rich longitudinal data**

**Unique patterns ignored**

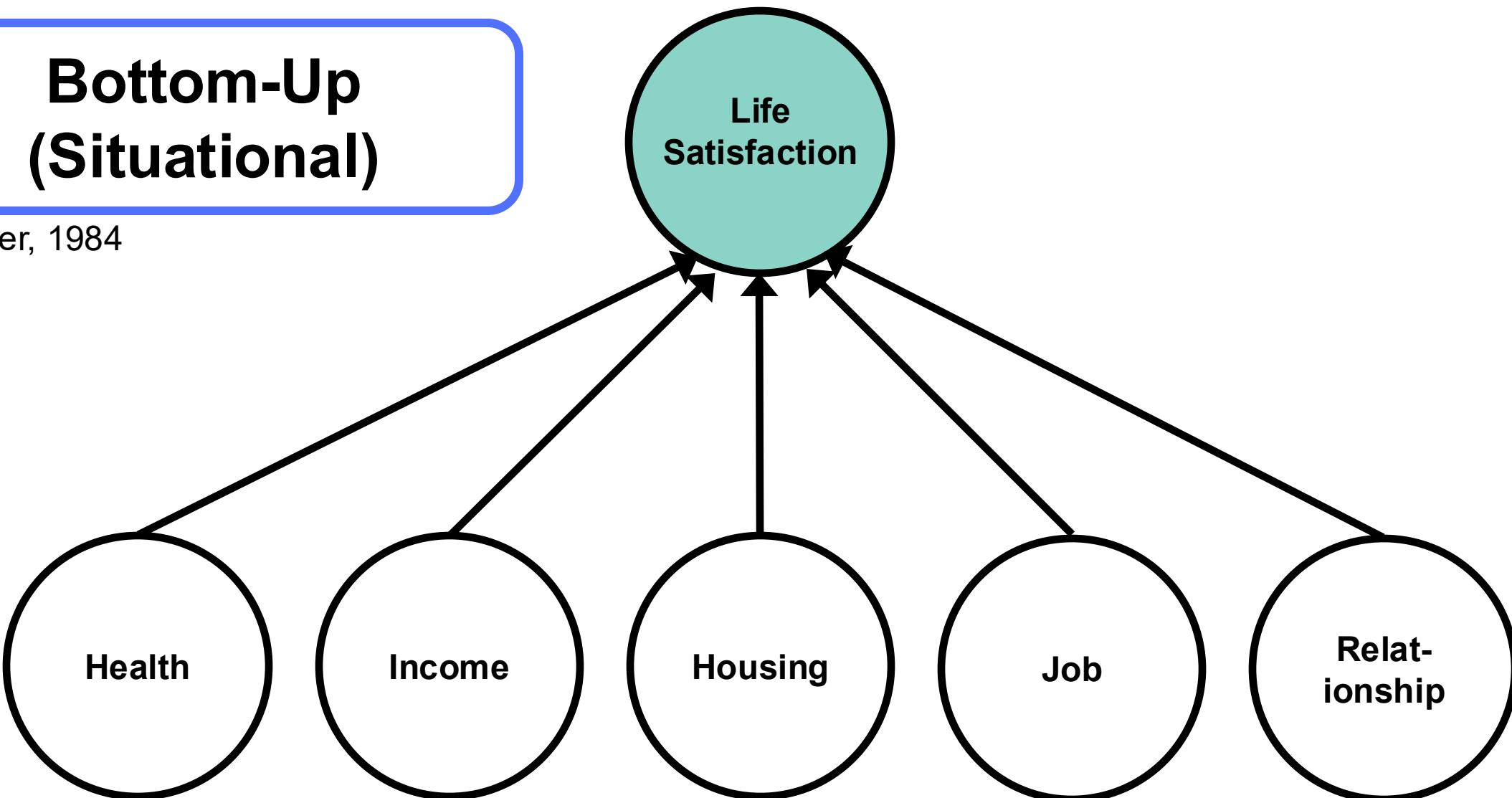
**Domain Satisfaction**



## Bottom-Up (Situational)

Diener, 1984

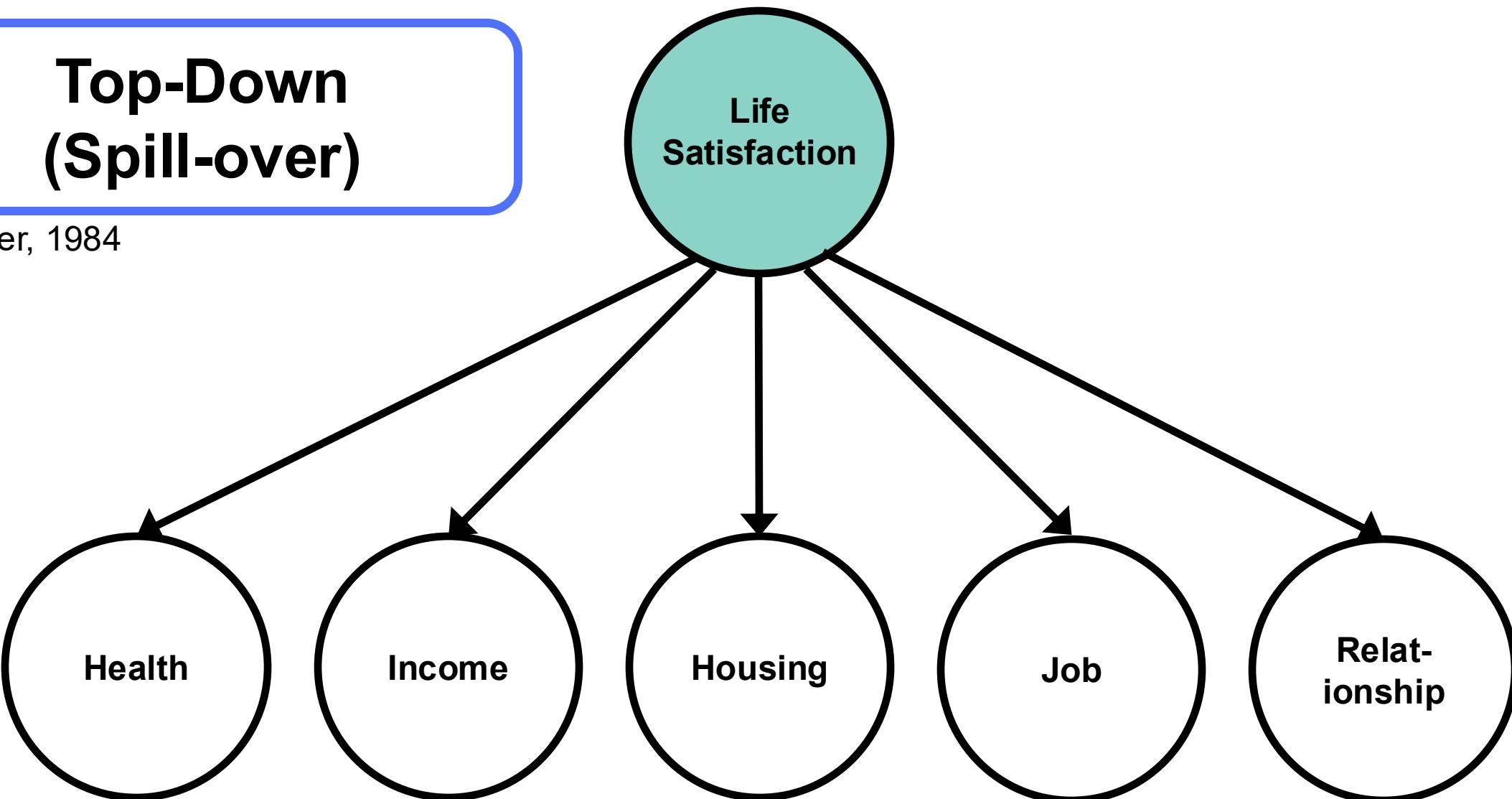
Domain Satisfaction



## Top-Down (Spill-over)

Diener, 1984

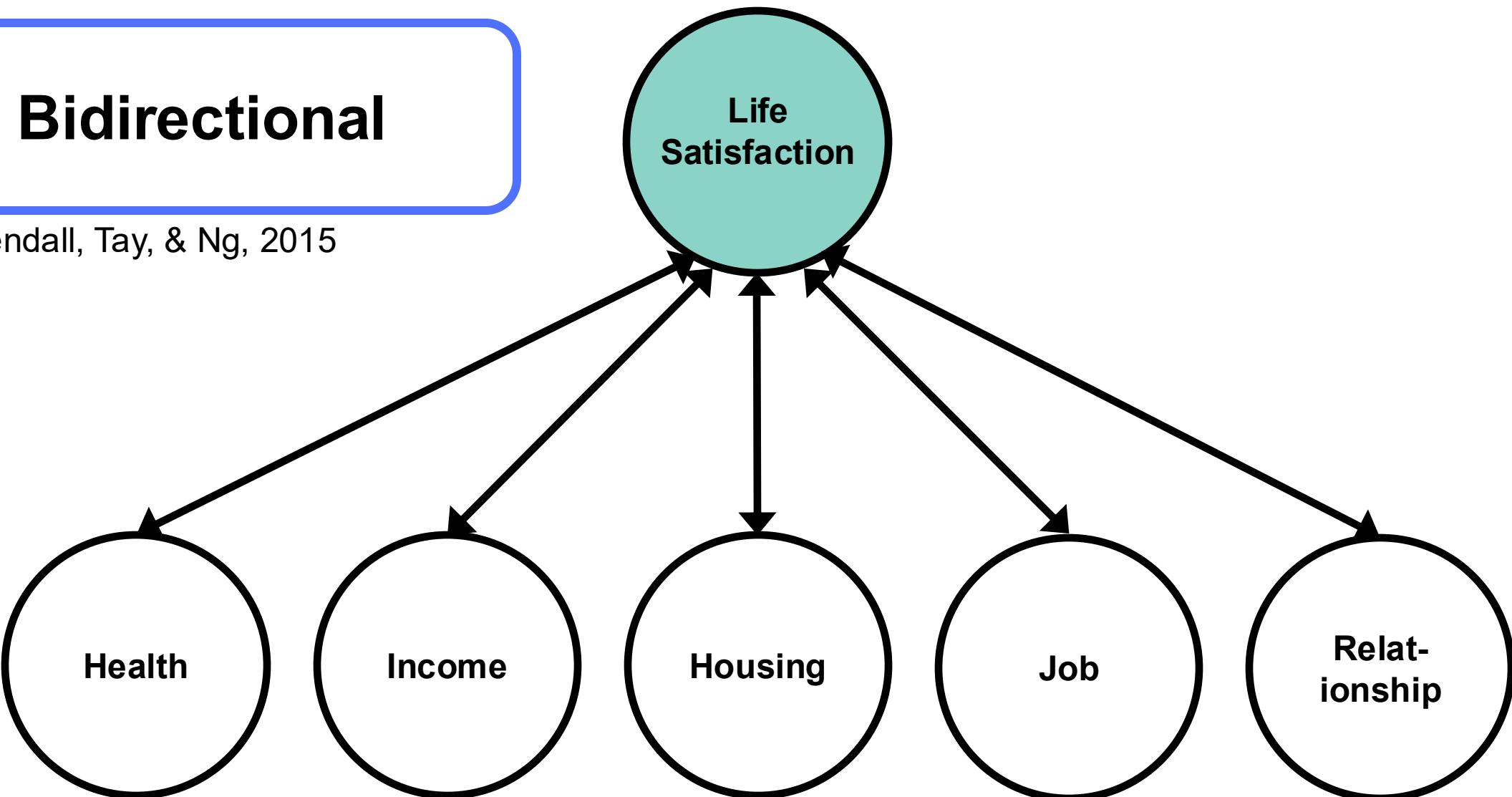
Domain Satisfaction



## Bidirectional

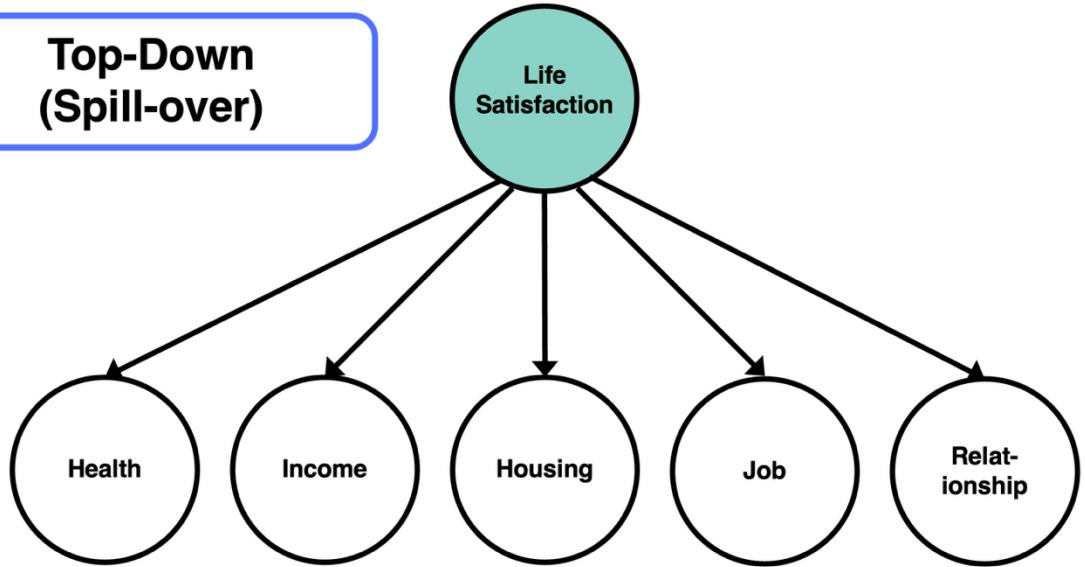
Kuykendall, Tay, & Ng, 2015

Domain Satisfaction



**Top-Down  
(Spill-over)**

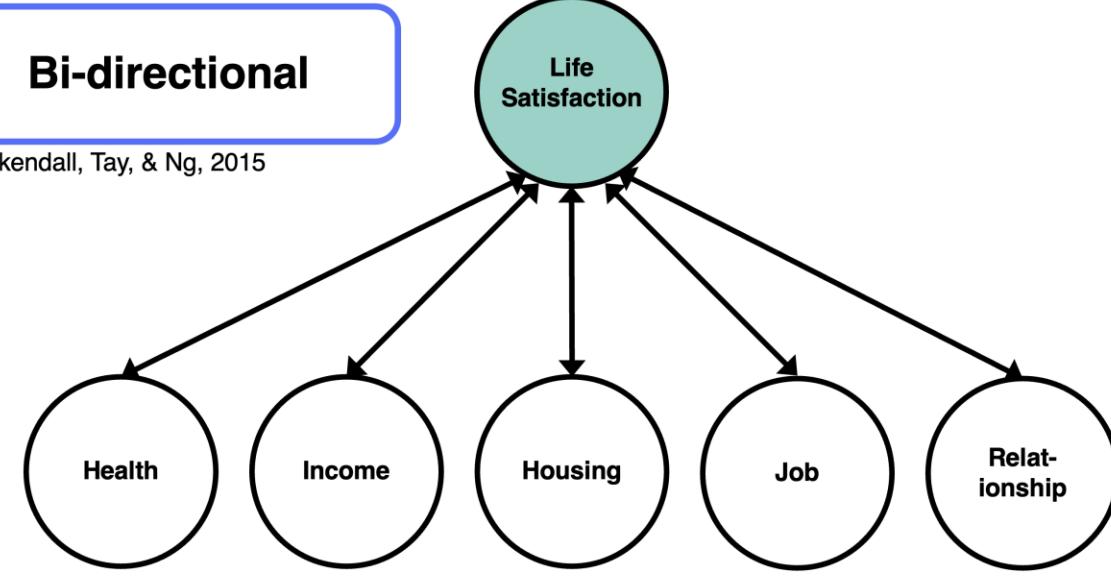
Domain Satisfaction



**Bi-directional**

Kuykendall, Tay, & Ng, 2015

Domain Satisfaction



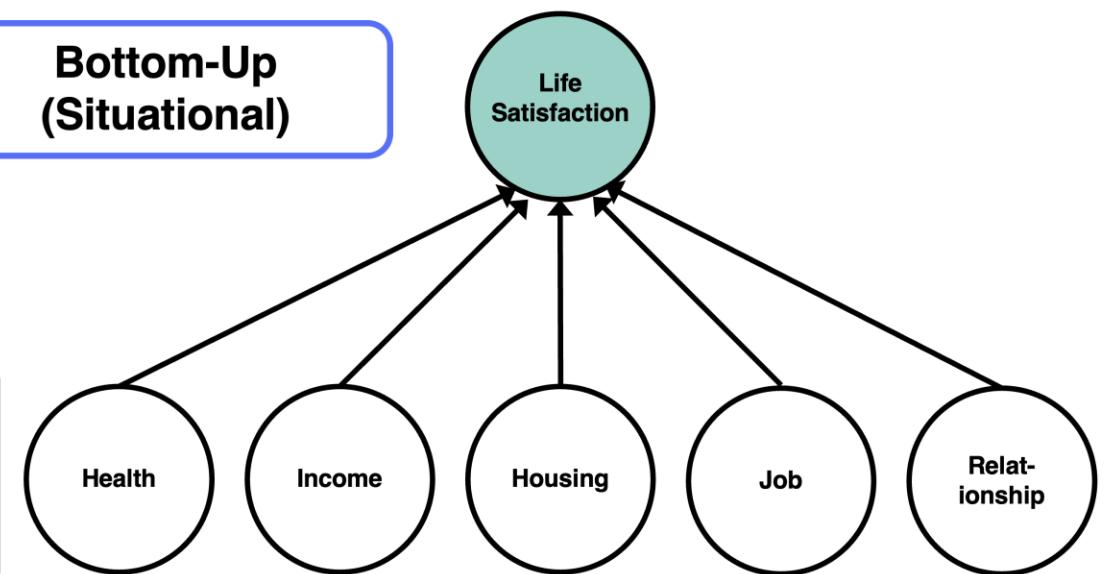
**Non-directional**

Domain Satisfaction

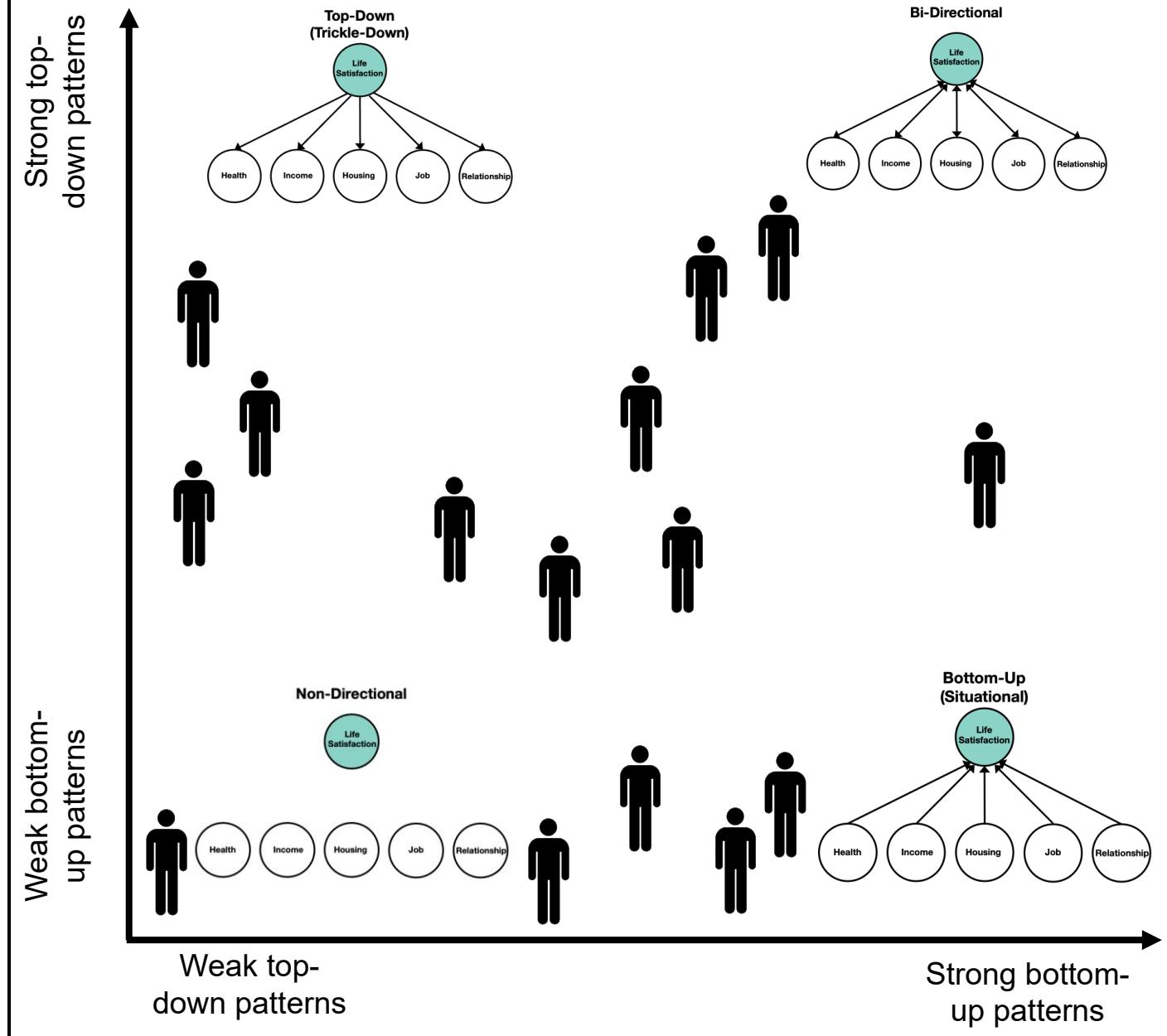


**Bottom-Up  
(Situational)**

Domain Satisfaction



# Personalised Perspectives on Happiness: For whom is each theory correct?



**GSOEP****HILDA****SHP****BHPS****LISS****Multilevel VAR(1) Models**

Epskamp et al., 2018

**Level 1:**

$$Y_{ptj} = \beta_{0pj} + \beta_{1pj} * V_{1,p,t-1} + \dots + \beta_{kpj} * V_{k,p,t-1} + \varepsilon_{ptj}$$

**Level 2:**

$$\beta_{0pj} = \gamma_{00j} + \gamma_{01j} * \bar{V}_{1,p} + \dots + \gamma_{01j} * \bar{V}_{kp} + r_{0pj}$$

$$\vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots$$

$$\beta_{kpj} = \gamma_{k0j} + \gamma_{k1j} * \bar{V}_{p,1} + \dots + \gamma_{kkj} * \bar{V}_{pj} + r_{kpj}$$

**Between-Person Effects  
(Level 2)**

$$\gamma_{01j} - \gamma_{0kj}$$

**Within-Person Effects  
(Level 1)**

$$\gamma_{10j} - \gamma_{kkj}$$

**Person-Specific Effects  
(Level 2 random effects)**

$$r_{0pj} - r_{kpj}$$

**GSOEP****HILDA****SHP****BHPS****LISS****Multilevel VAR(1) Models**

Epskamp et al., 2018

**Level 1:**

$$Y_{ptj} = \beta_{0pj} + \beta_{1pj} * V_{1,p,t-1} + \dots + \beta_{kpj} * V_{k,p,t-1} + \varepsilon_{ptj}$$

**Level 2:**

$$\beta_{0pj} = \gamma_{00j} + \gamma_{01j} * \bar{V}_{1,p} + \dots + \gamma_{01j} * \bar{V}_{kp} + r_{0pj}$$

$$\vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots \quad \vdots$$

$$\beta_{kpj} = \gamma_{k0j} + \gamma_{k1j} * \bar{V}_{p,1} + \dots + \gamma_{kkj} * \bar{V}_{pj} + r_{kpj}$$

**Between-Person Effects  
(Level 2)**

$$\gamma_{01j} - \gamma_{0kj}$$

**Within-Person Effects  
(Level 1)**

$$\gamma_{10j} - \gamma_{kkj}$$

**Person-Specific Effects  
(Level 2 random effects)**

$$r_{0pj} - r_{kpj}$$

# RESULTS

Aim 2

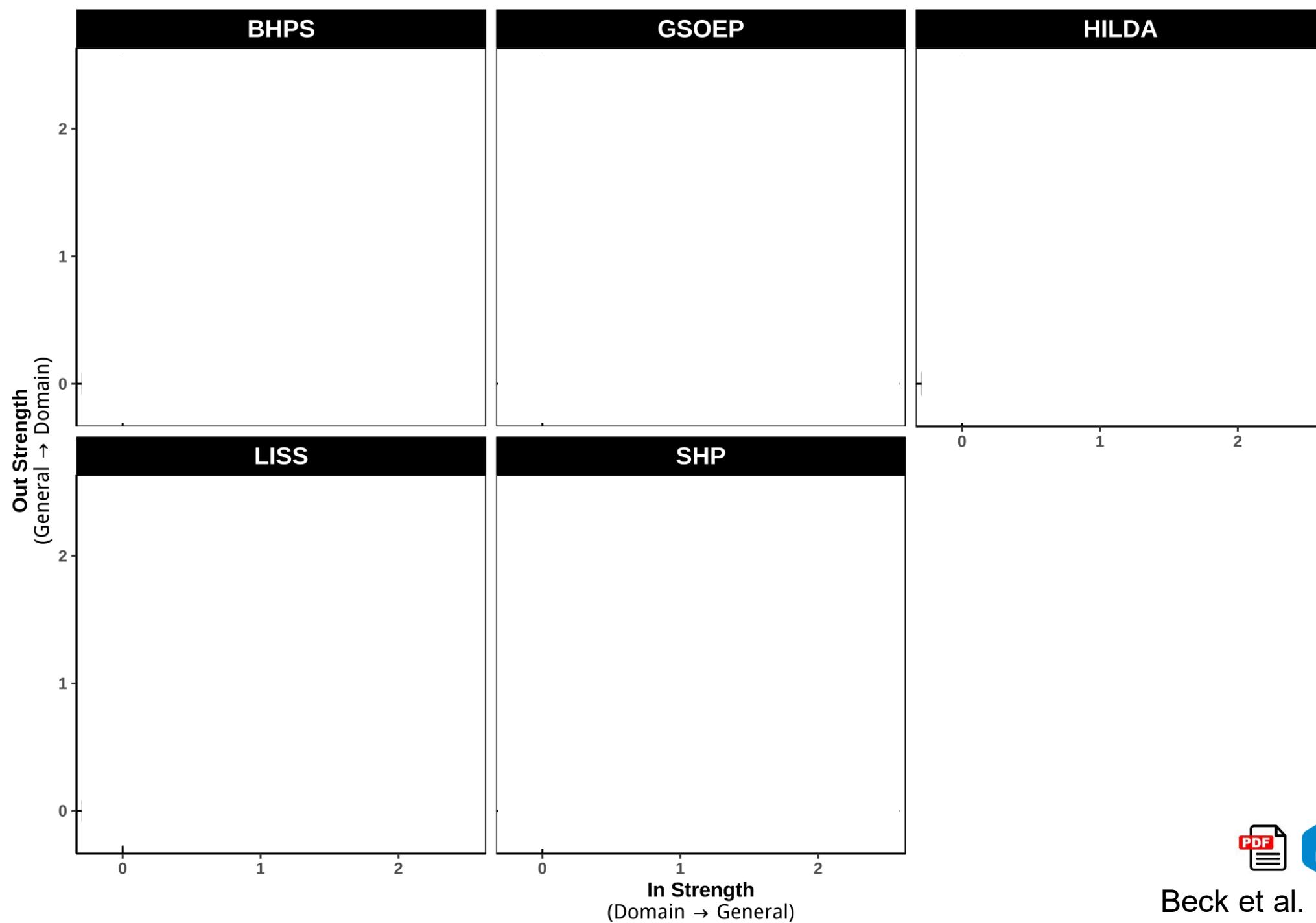
Top Down

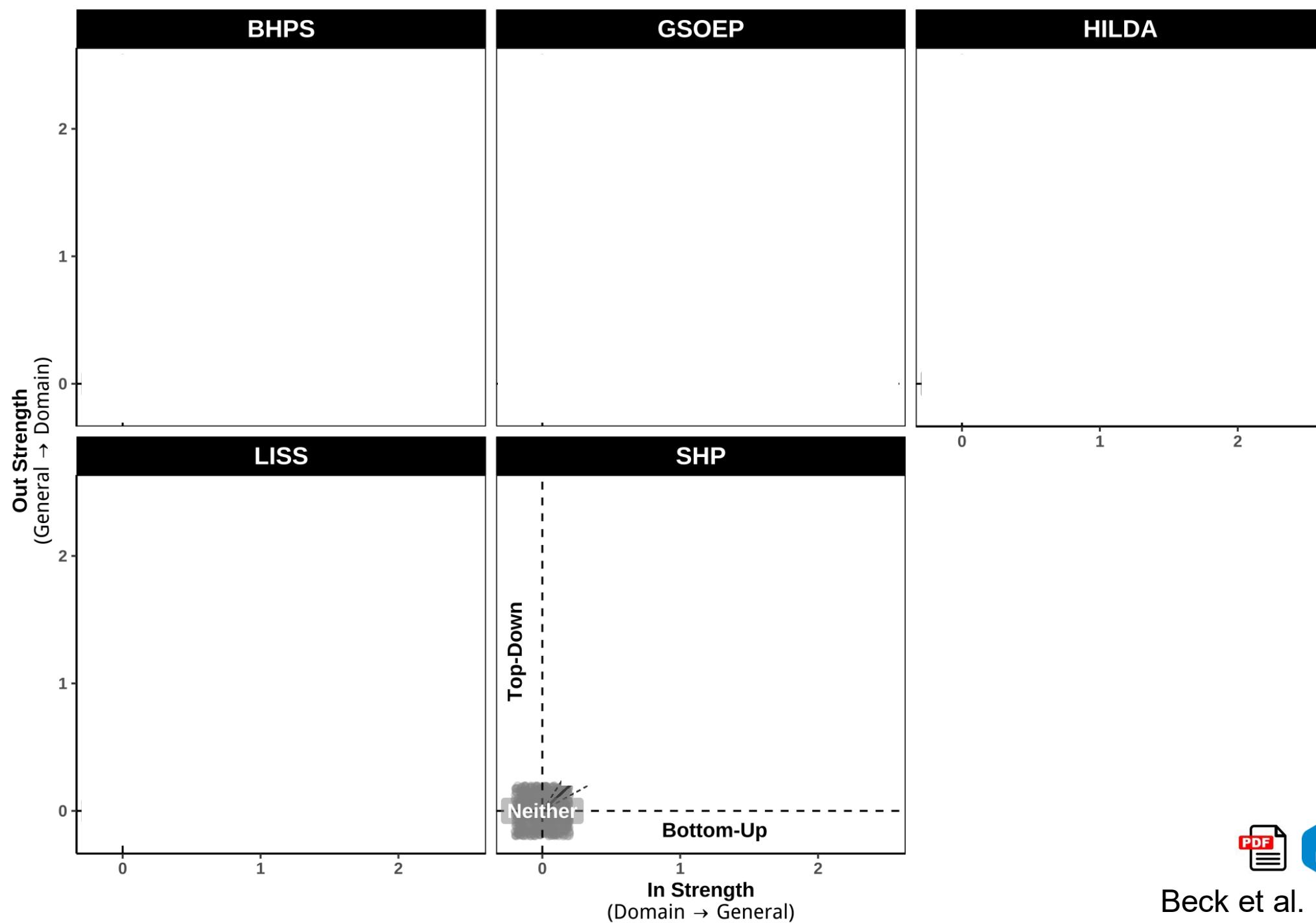
Bi-directional

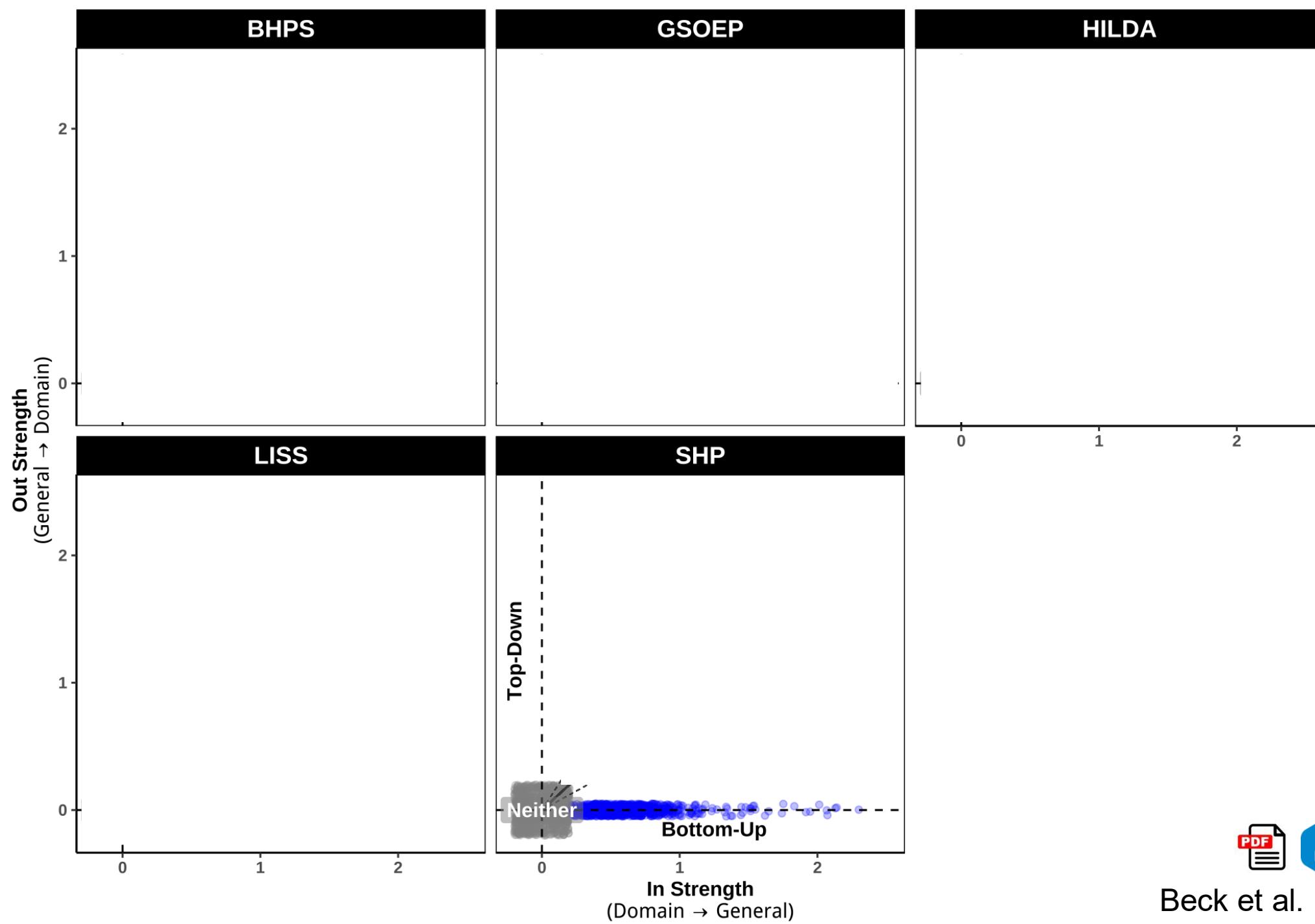
Non-Directional

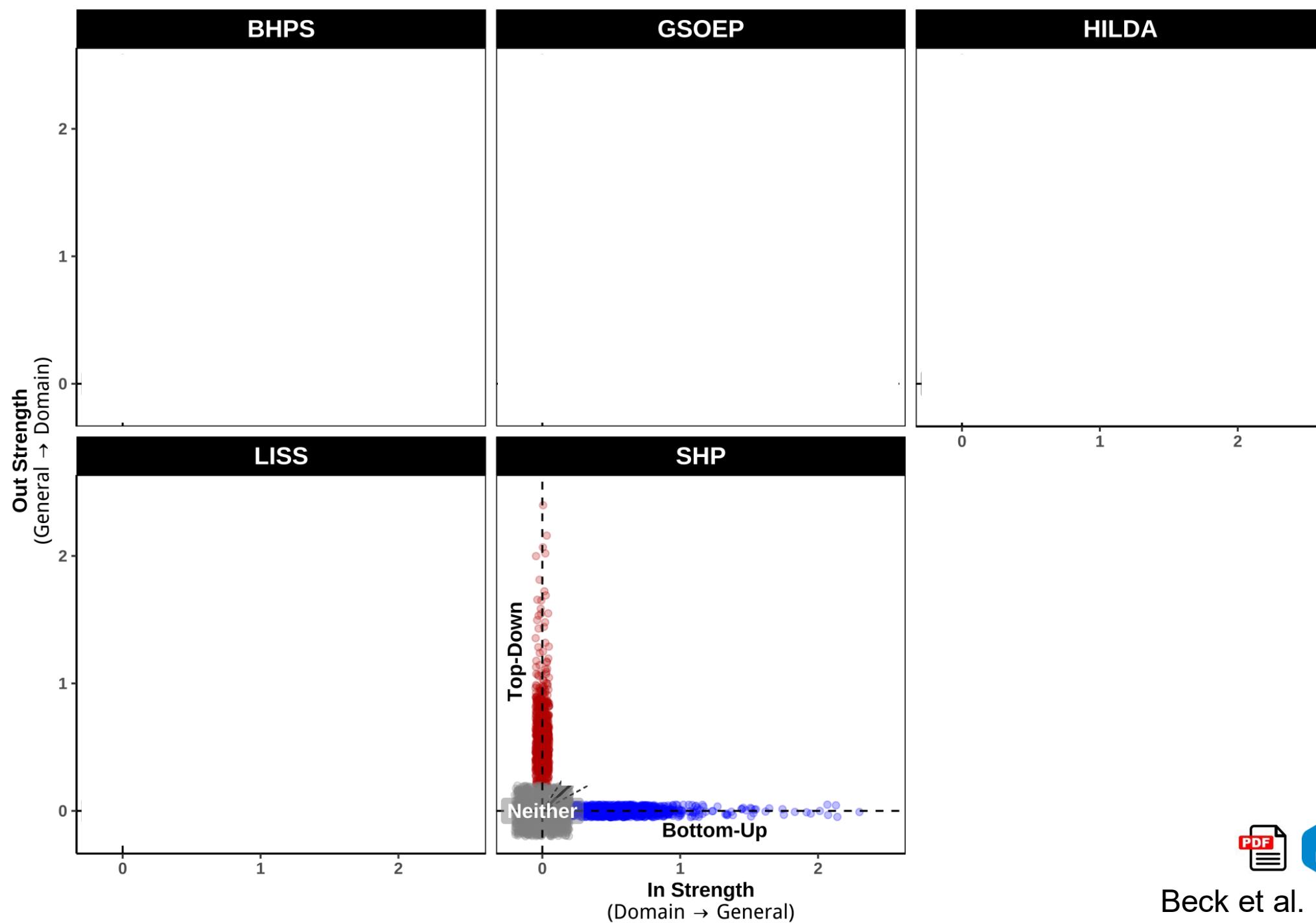
Bottom Up

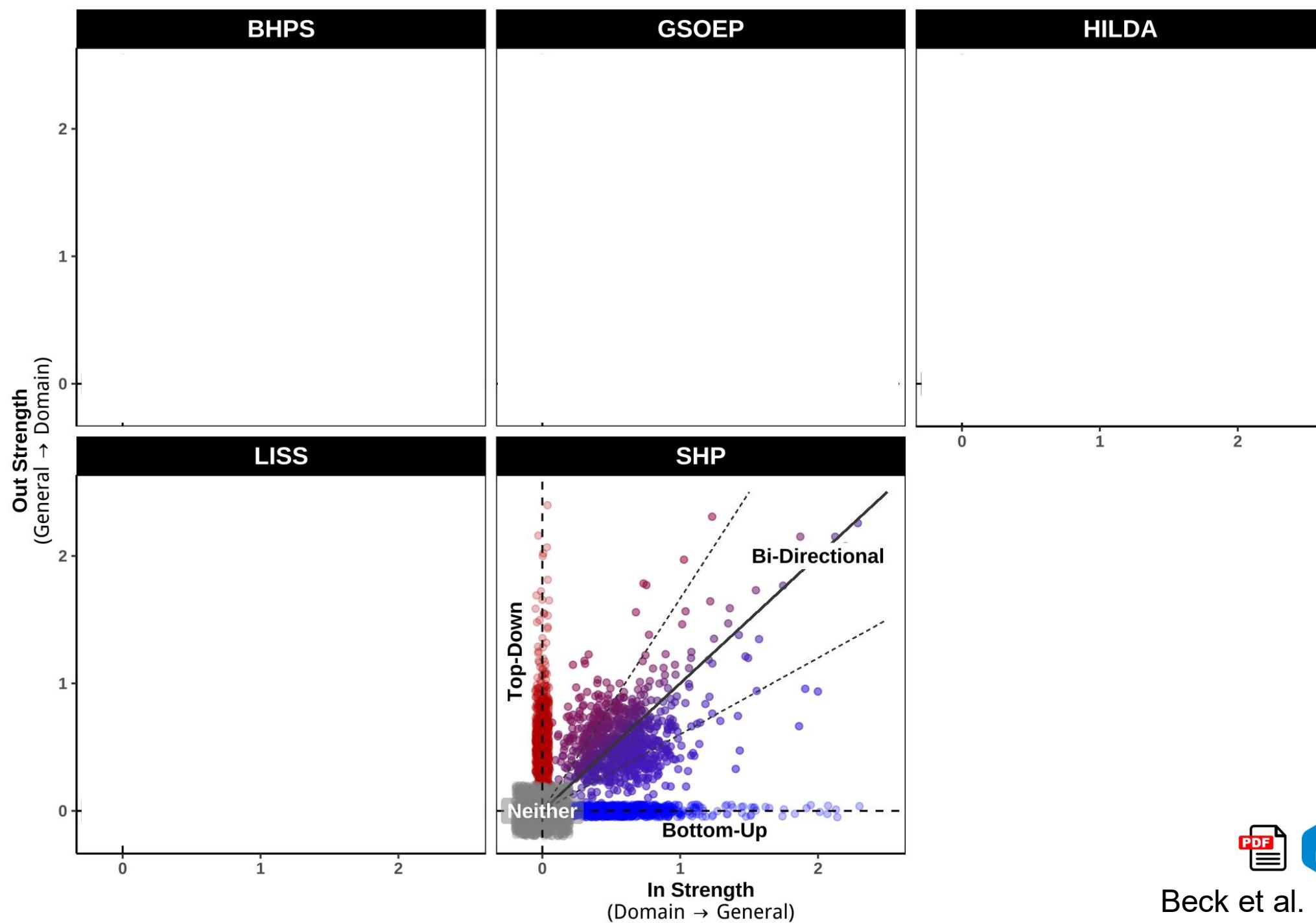


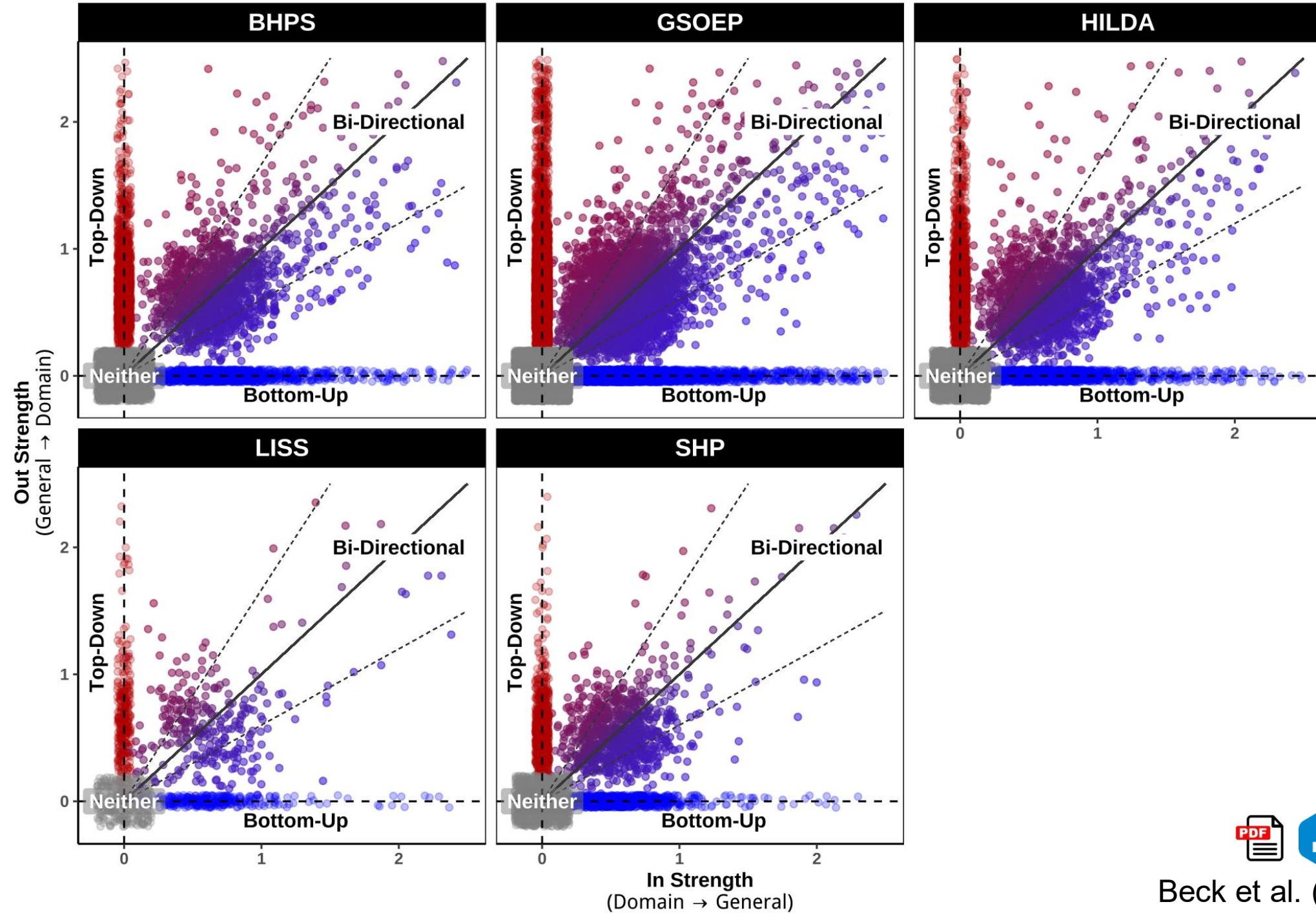


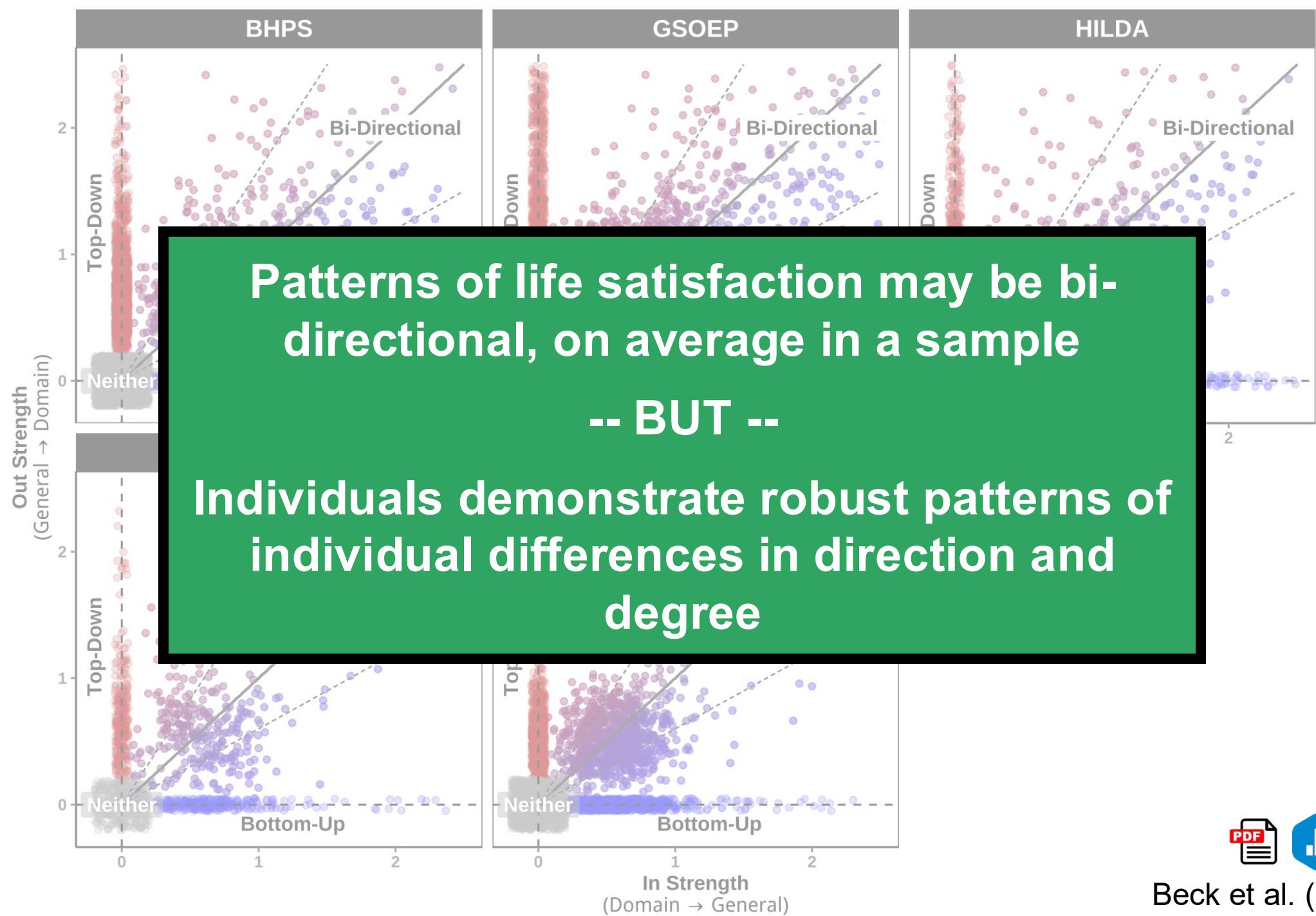










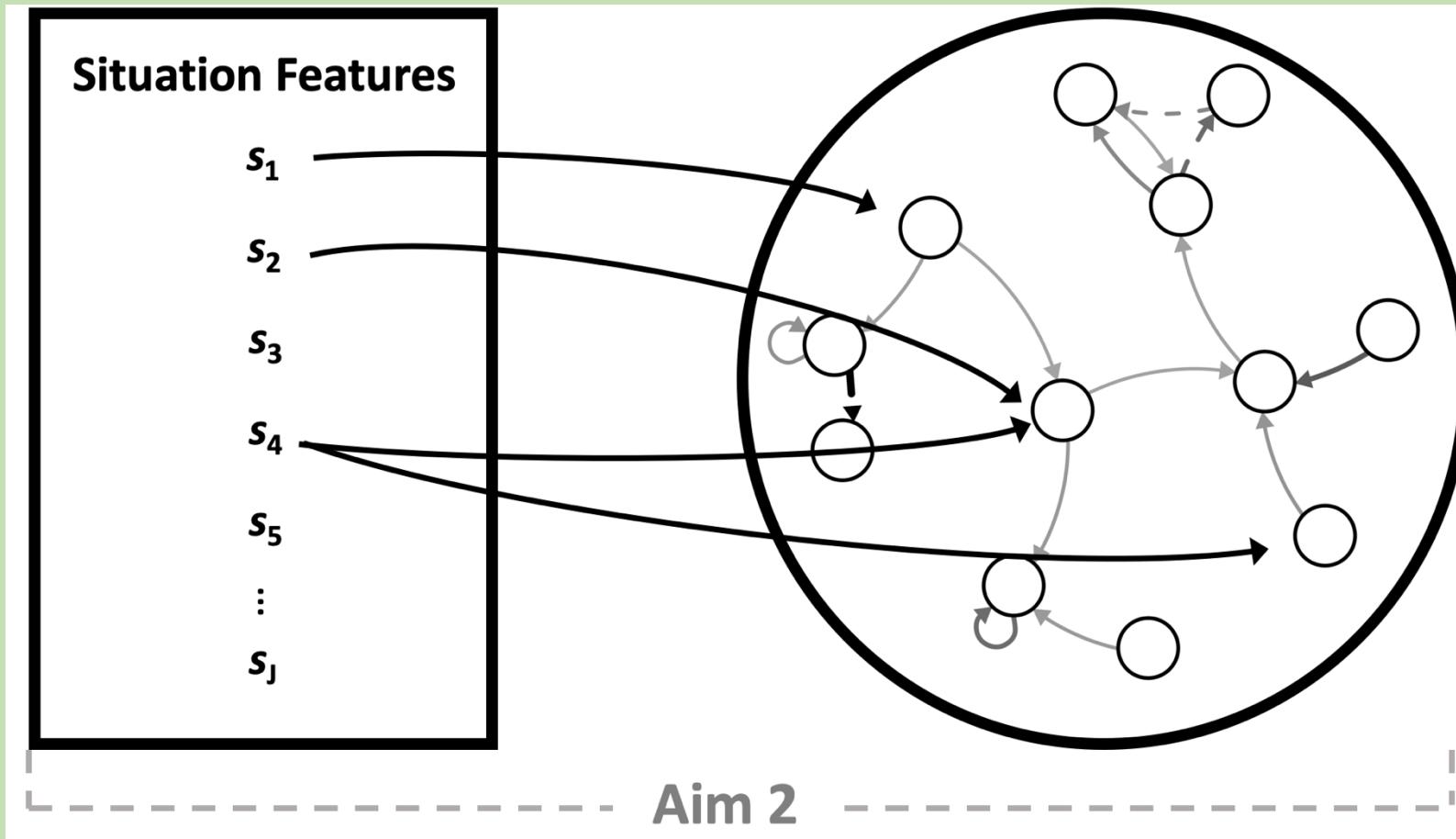


**Aim 1:** Individuals show unique personality structures that are relatively consistent across time and events.

Beck & Jackson  
(2020, *JPSP*; 2021b; *EJP*)

**Aim 2:** Using longitudinal data to understand how well-being unfolds across contexts.

Beck et al.  
(revision submitted, *NHB*)



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The dynamics of life and domain satisfaction:

Unfold differently across people

Do not appear well-captured by sample averages of idiographic dynamics

Have similar patterns of individual differences across samples

**Aim 1:** Individuals show unique personality structures that are relatively consistent across time and events.

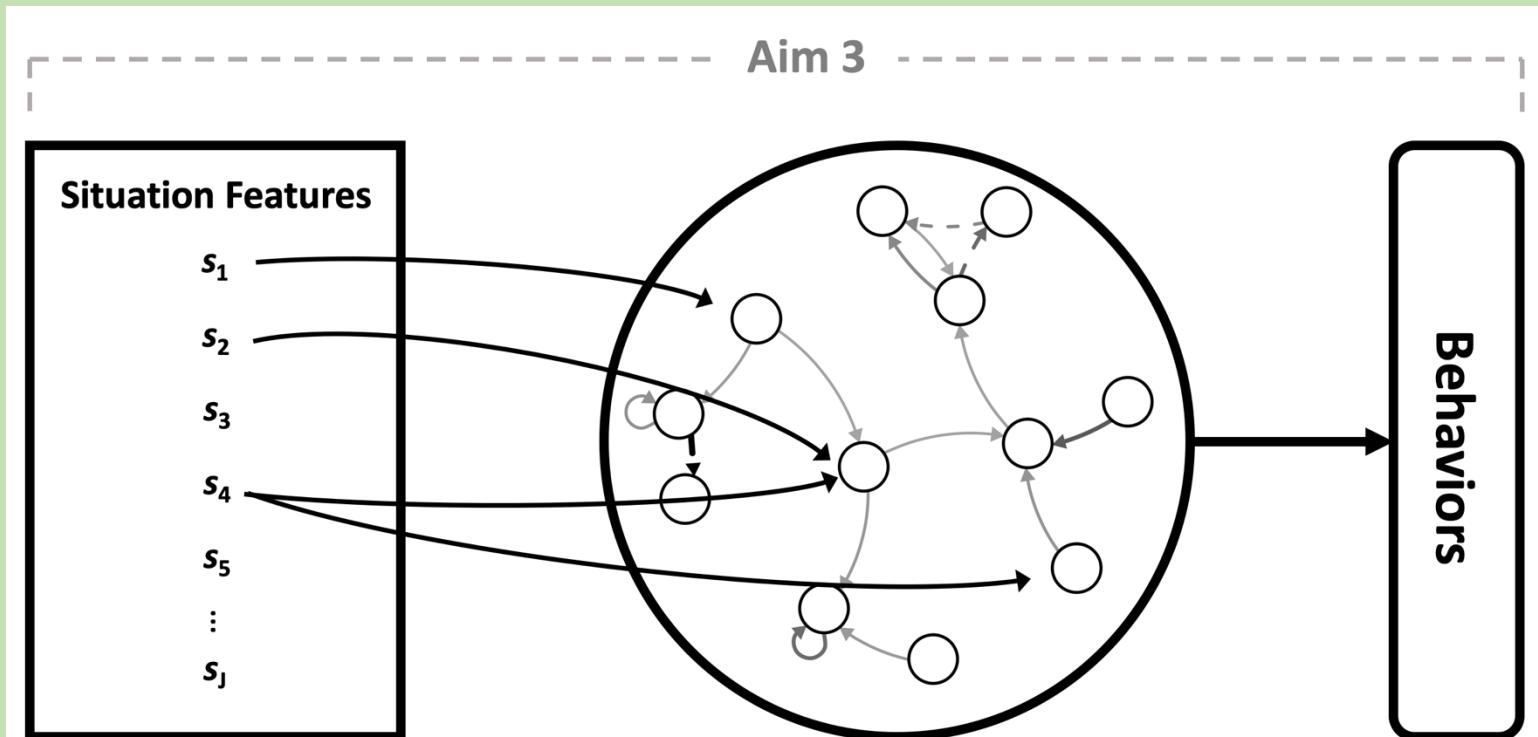
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Beck & Jackson  
(2023, *Psych Science*)



Psychological

Situations

Behavior /  
Experiences

# Critical Assumption

**Situations and experiences  
should have similar  
consequences across people.**

**People with similar levels of a  
personality characteristic  
should behave in similar ways.**

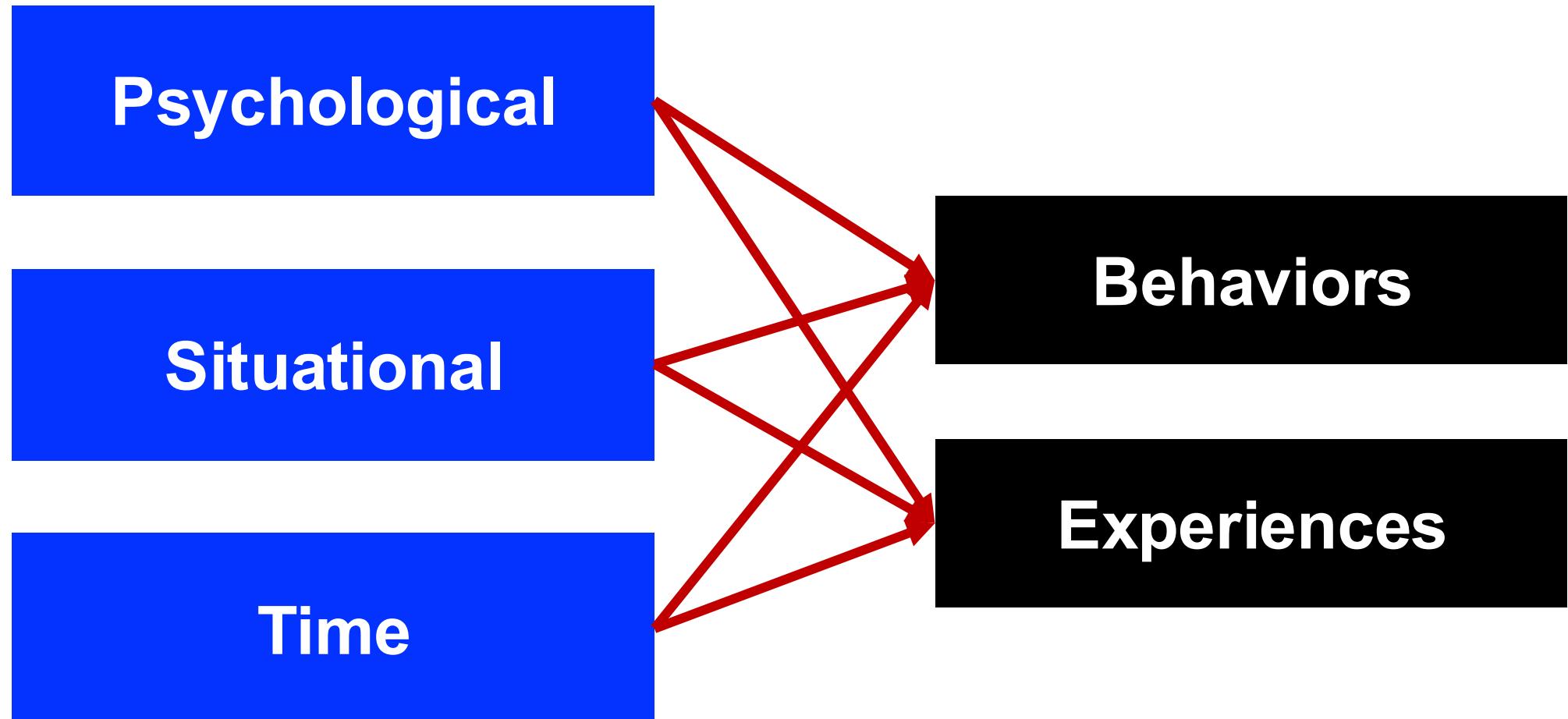
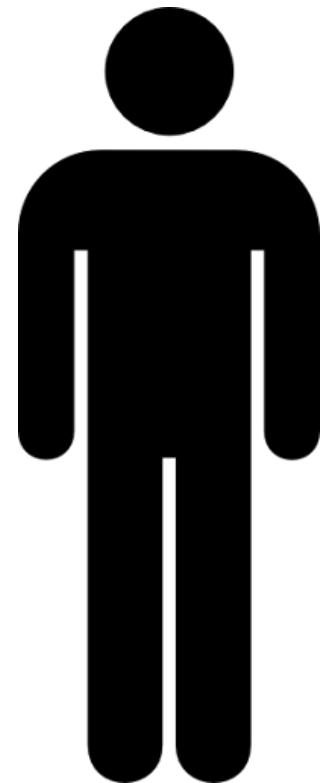


# Alternative Assumption

Situations and experiences  
should have *different*  
consequences across people.

People with similar levels of a  
personality characteristic *may*  
*not* behave in similar ways.

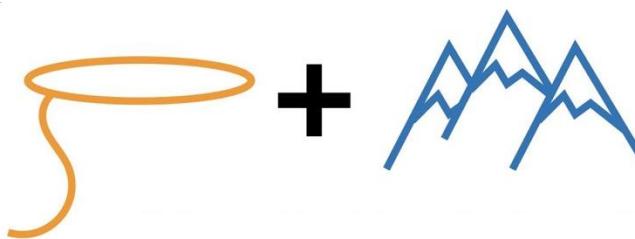




# Analytic Plan

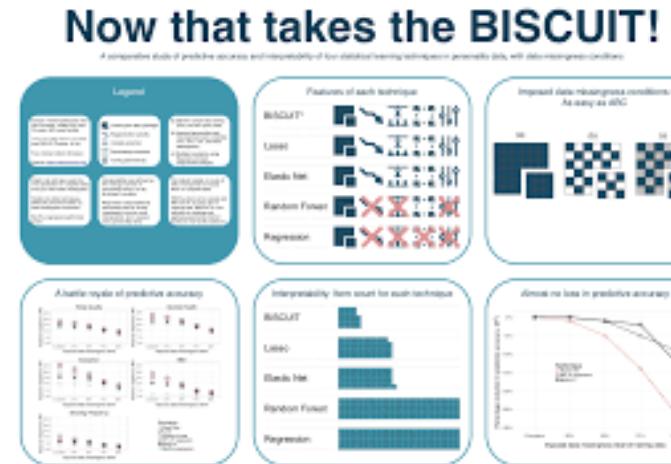
## 3 machine learning classification methods:

### Elastic Net

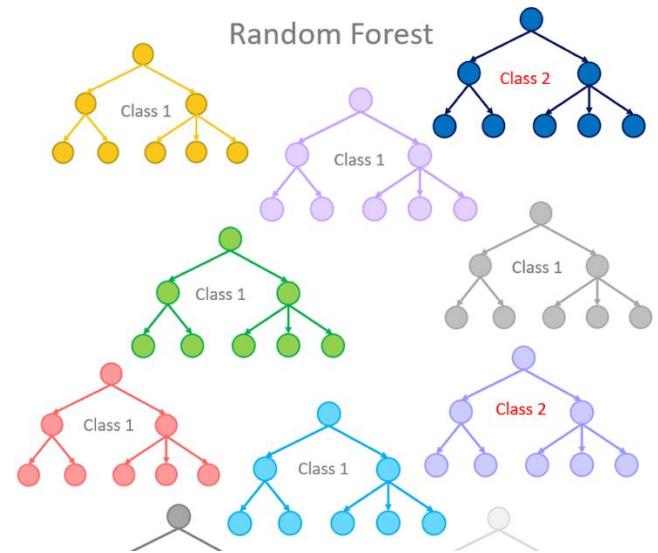


- Classification Accuracy
- Area under the receiver operating curve (AUC)

### BISCWIT



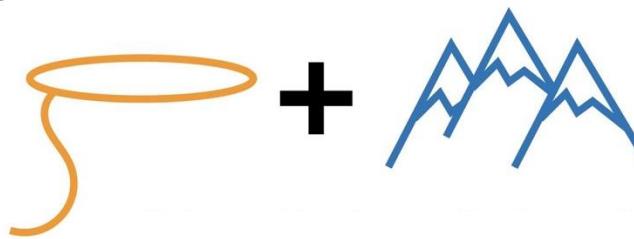
### Random Forest



# Analytic Plan

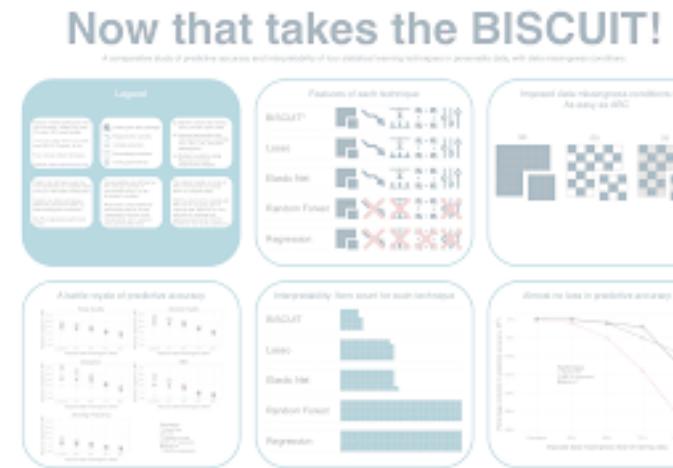
## 3 machine learning classification methods:

### Elastic Net

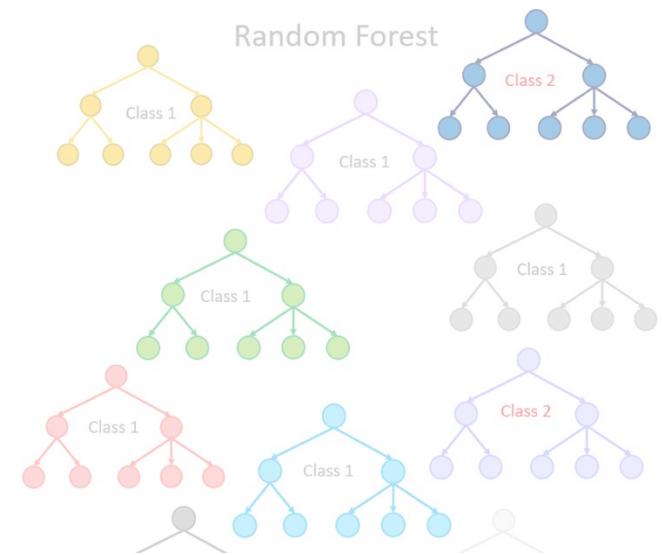


- Classification Accuracy
- Area under the receiver operating curve (AUC)

### BISCWIT



### Random Forest



# RESULTS

Aim 3

# Classification Accuracy

## Elastic Net

Median (SD)	N
-------------	---

---

Procrastination

Loneliness

Argument

Interacted

Studying

Sick

Tired



## Classification Accuracy

Elastic Net

**Classification accuracy was high, on average, with some variability across outcomes.**

Sick

Tired

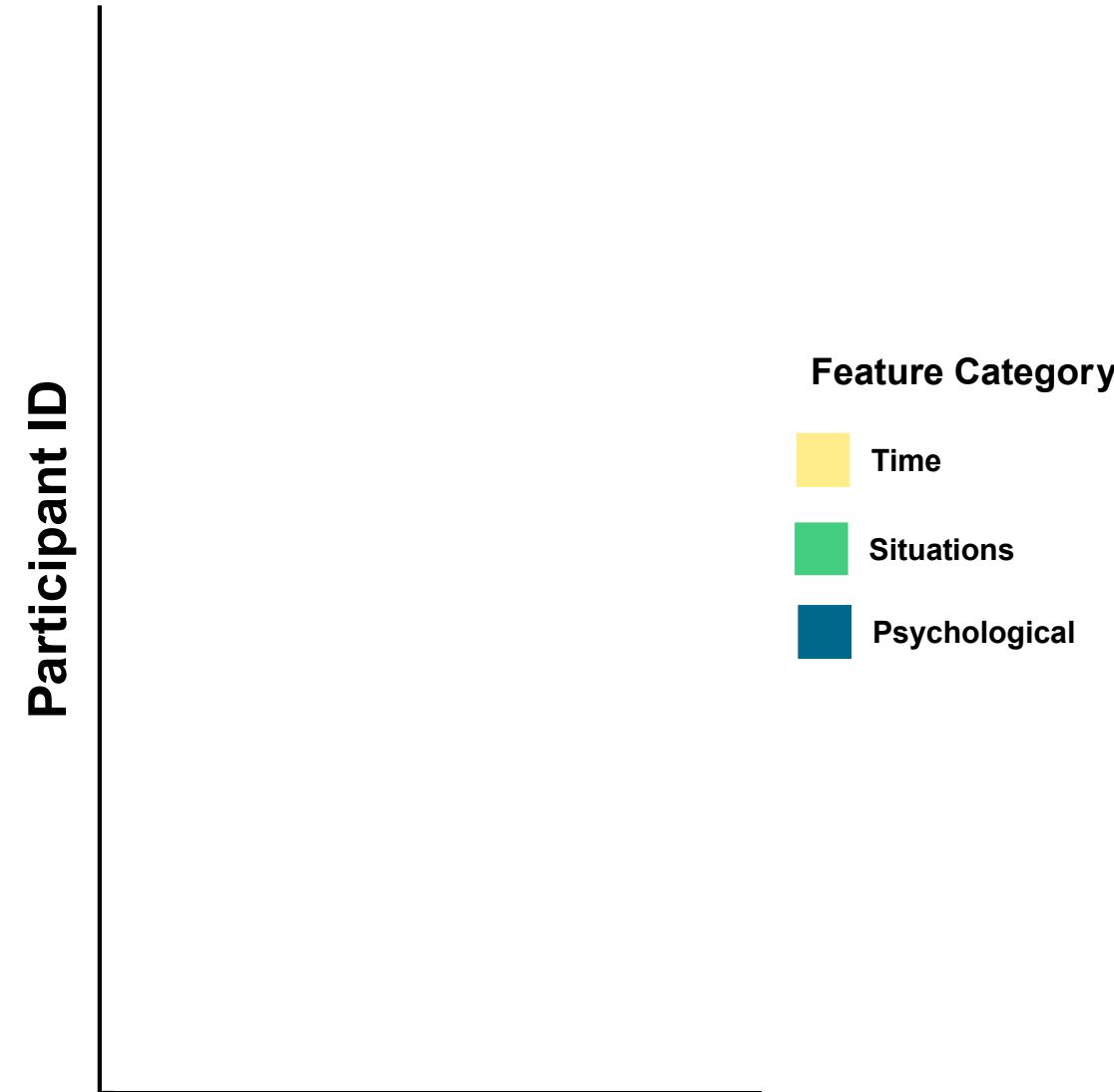


Do certain categories of features out-predict others?

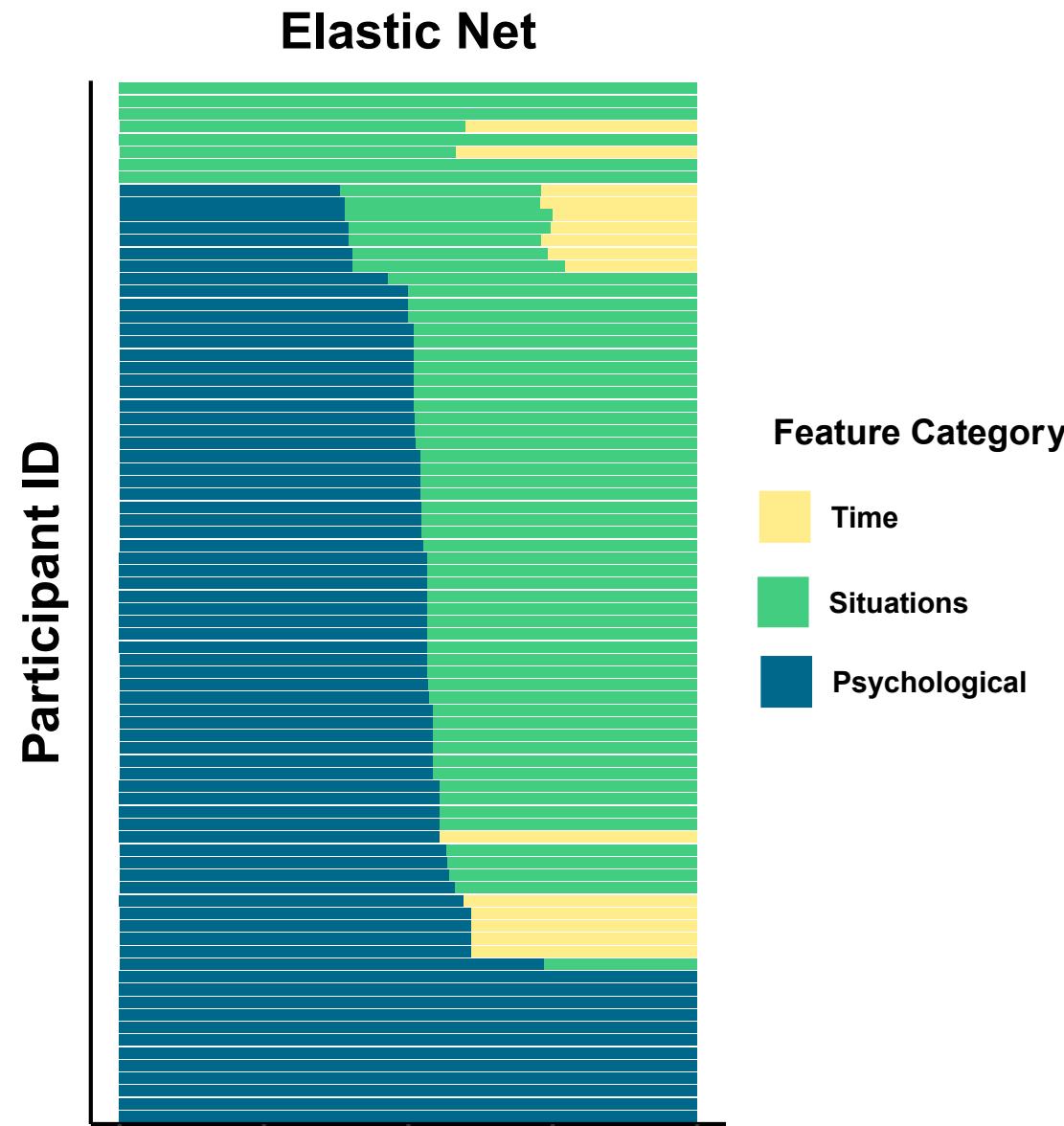


Do certain categories of features out-predict others?

### Elastic Net



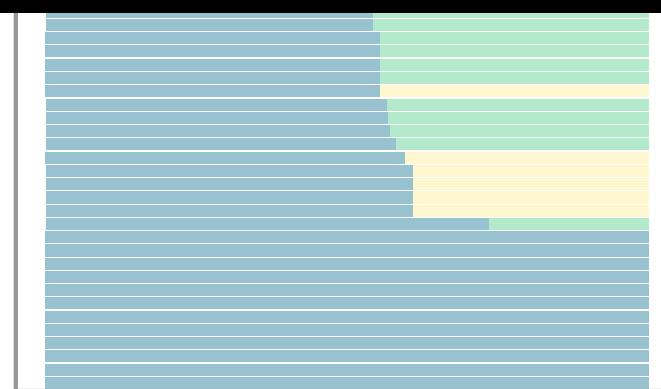
Do certain categories of features out-predict others?



## Do certain categories of features out-predict others?

### Elastic Net

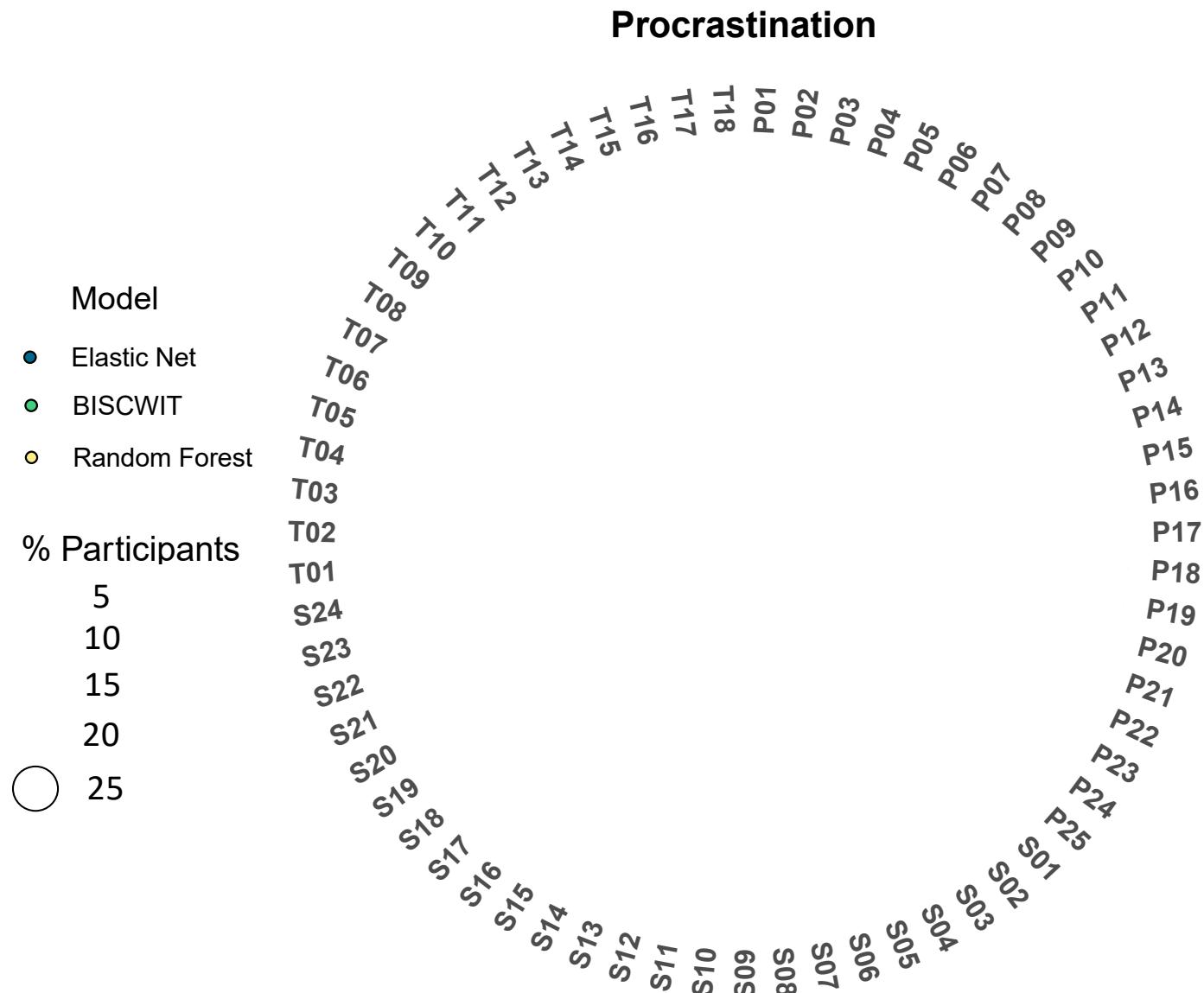
The relative contribution of person, situation, and timing features varies across people.



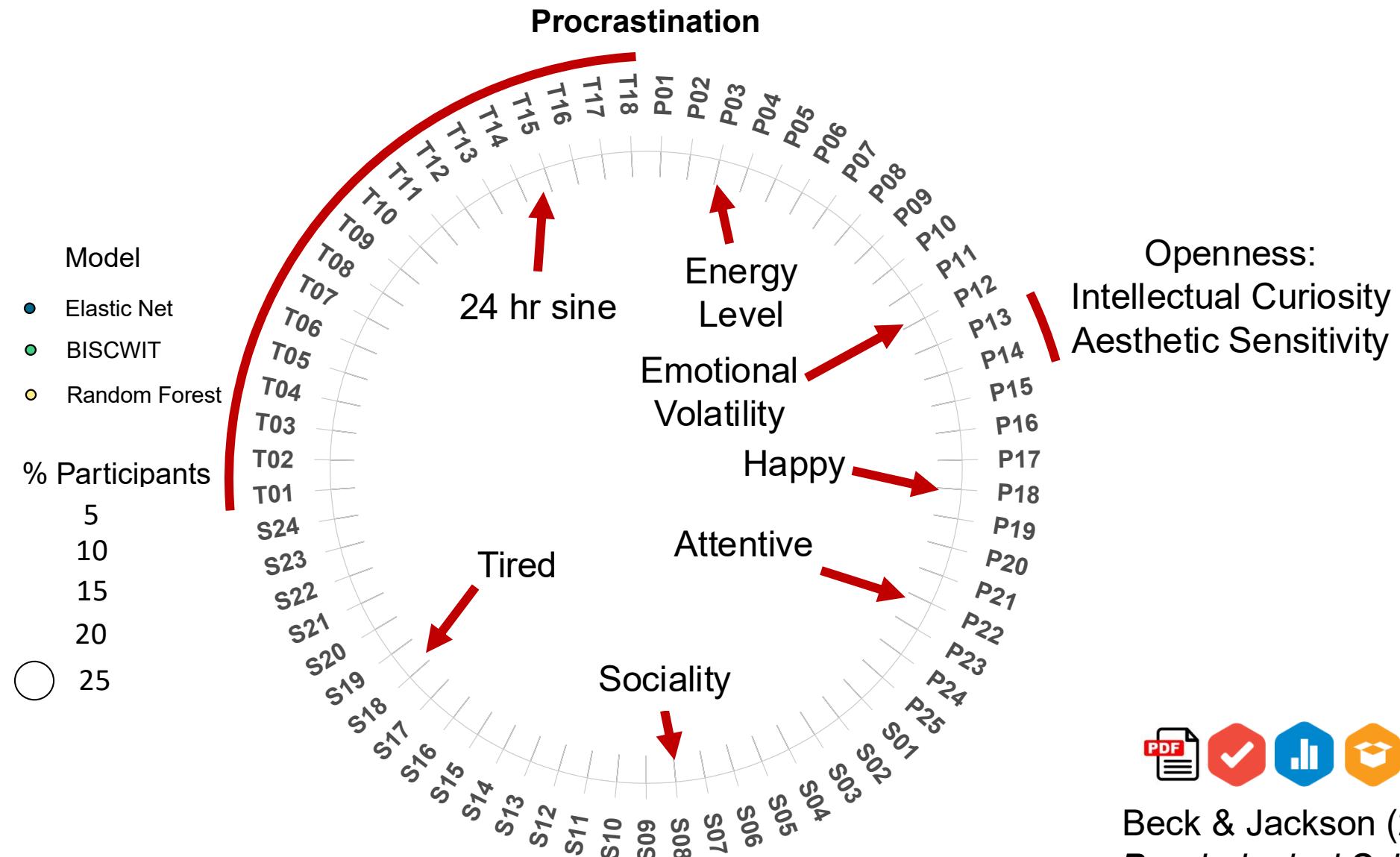
Which features play the strongest roles?



# Which features play the strongest roles?



# Which features play the strongest roles?



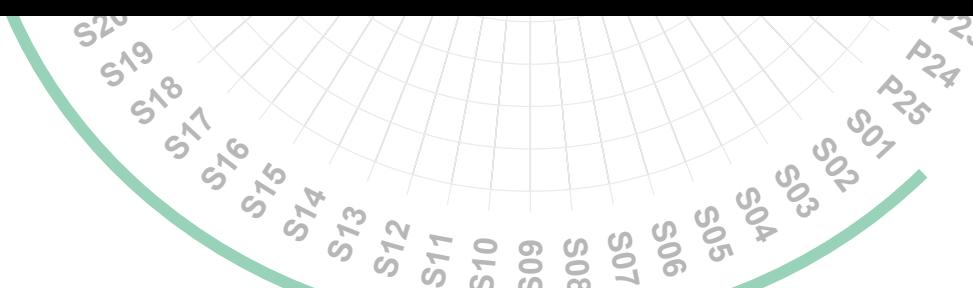
## Which features play the strongest roles?

Procrastination

No one feature dominated the prediction of any outcome (max ~35%).

Behaviors & experiences have unique antecedents.

○ 25



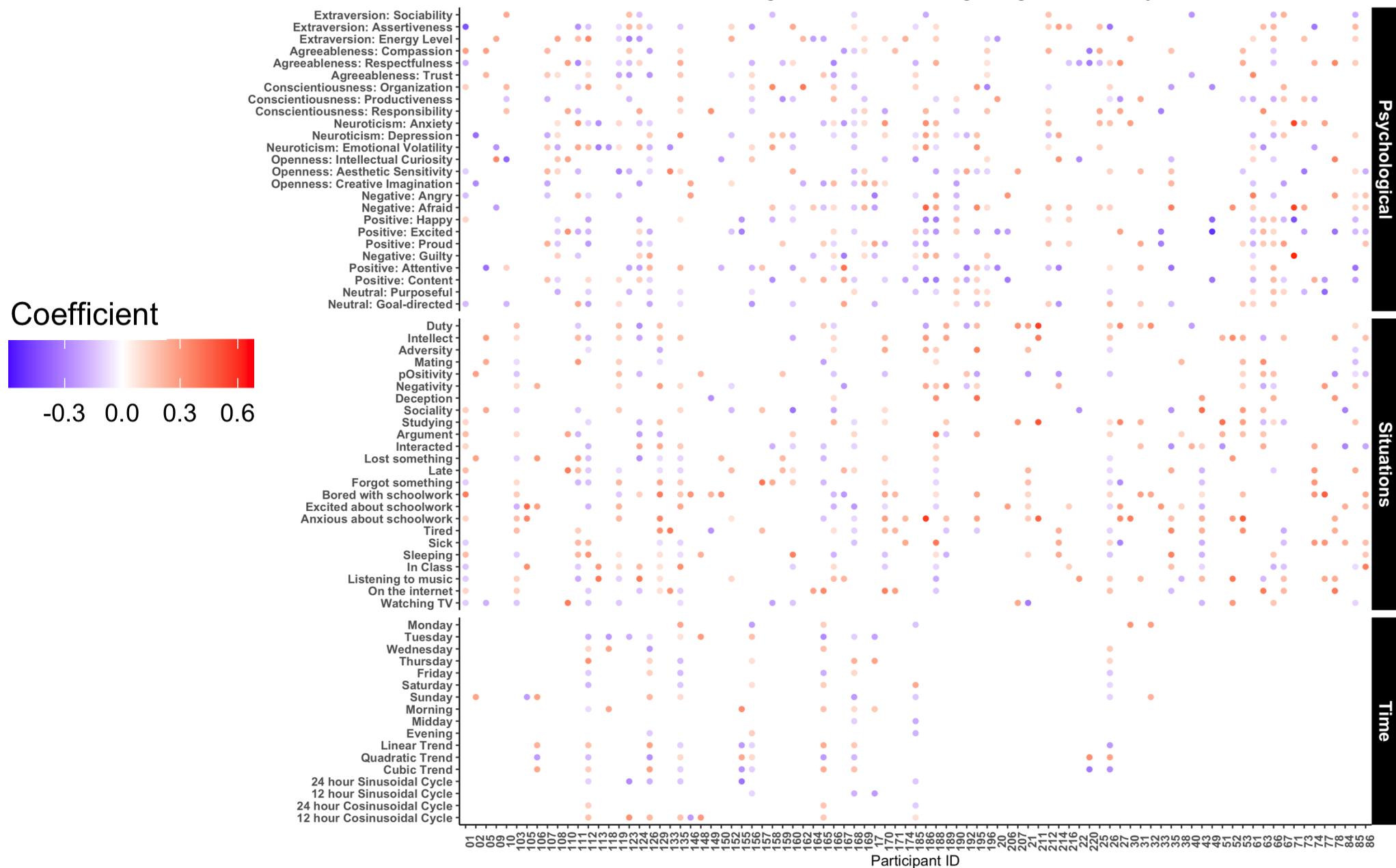
## Aim 1: Individuals

## Aim 2: Dynamics

## Aim 3: Integration

## Future Directions

BISCWIT Predicting Future Procrastinating Using Best Accuracy Models



## Aim 1: Individuals

## Aim 2: Dynamics

## Aim 3: Integration

## Future Directions

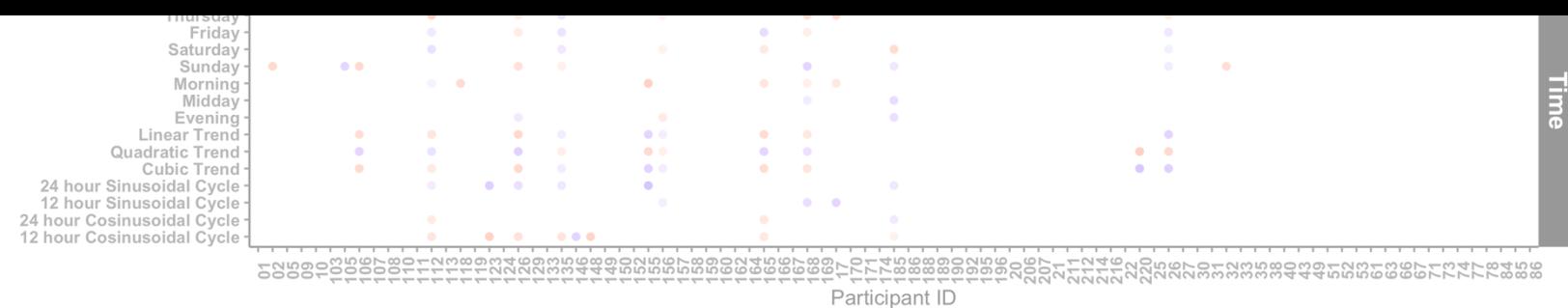
BISCWIT Predicting Future Procrastinating Using Best Accuracy Models



Coefficient



**Individuals' profiles of antecedents differed in presence and direction.**

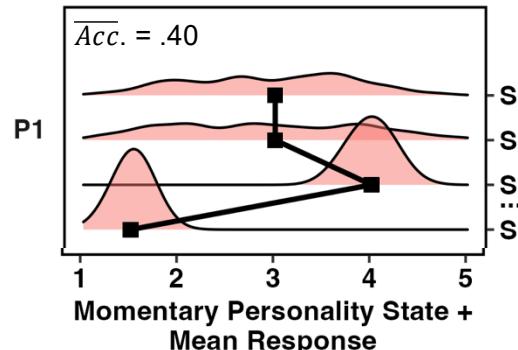


## AIM 3: Which assessment + conceptual framework is the most accurate model of behavior prediction?

### Conceptual Frameworks

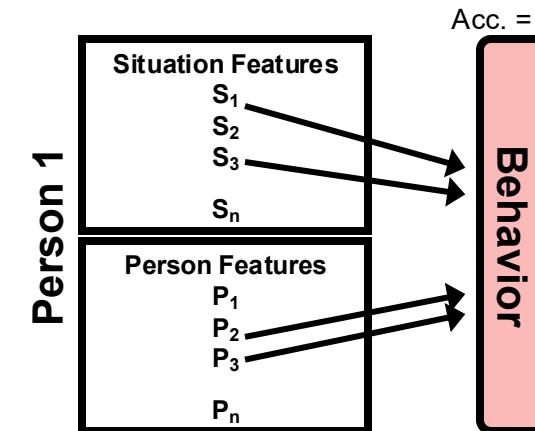
#### AIM 2A

*Conditional Frameworks*  
(e.g., Wright & Mischel, 1987)



#### AIM 2B

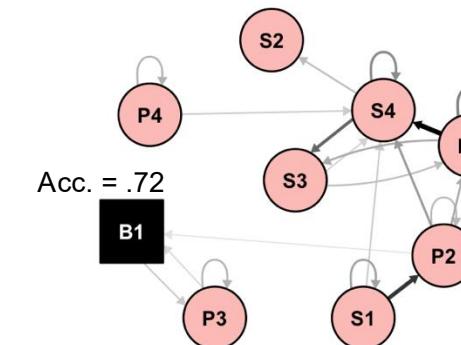
*Person x Situation Interaction Frameworks*  
(e.g., Funder, 2006)



#### AIM 2C

*Systems Frameworks*  
(Mischel & Shoda, 1995)

##### Person 1



### Traditional Model

#### *Predicting mean levels*

Mixed Effects Models with Situations Predicting Behavior  
(e.g., Sherman et al., 2015)

#### *Univariate PxS*

Mixed Effects Models w/ Trait x Situation Interactions Predicting Behavior  
(e.g., Sherman et al., 2015)

#### *Static Dynamics*

Vector Autoregressive Models (VAR)  
(e.g., Beck & Jackson, 2020a)

### Model Innovation

#### *Predicting variability*

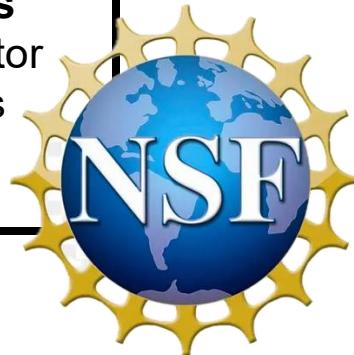
Bayesian Univariate  
Generalized Mixed Effects  
Location Scale Models  
(e.g., Williams et al., 2021)

#### *Multivariate PxS*

2 Machine Learning Classification Models: (1) Elastic Net Regression and (2) BISCWIT  
(e.g., Beck & Jackson, 2022)

#### *Time-Varying Dynamics*

Time-Varying Mixed Vector Autoregressive Models (mVAR)  
(e.g., Haselbeck et al., 2021)



**Aim 1:** Individuals show unique personality structures that are relatively consistent across time and events.

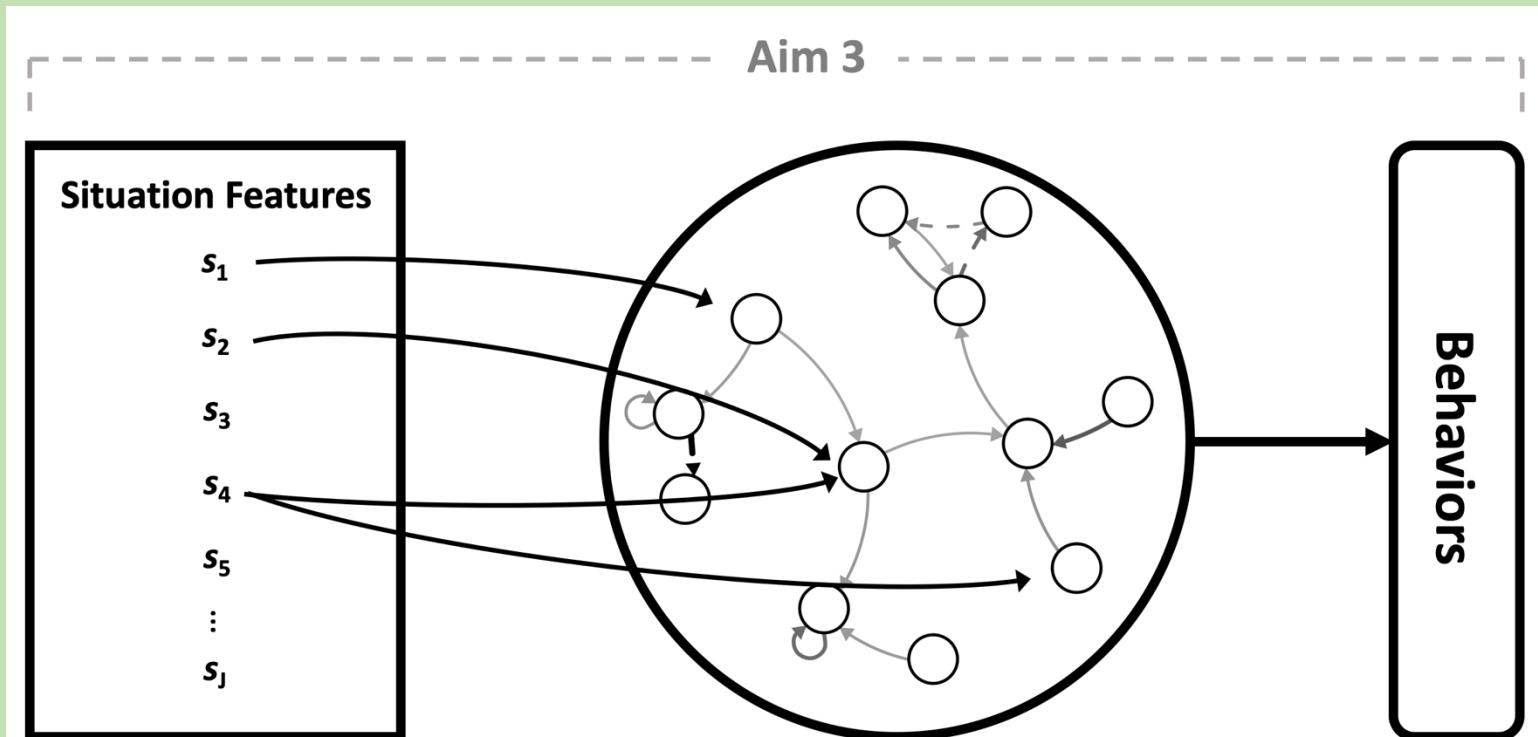
Beck & Jackson  
(2020, *JPSP*; 2021b; *EJP*)

**Aim 2:** The dynamics of well-being unfold differently across people.

Beck et al.  
(revision submitted, *NHB*)

**Aim 3:** Predicting behavior using machine learning.

Beck & Jackson  
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Beck & Jackson  
(2023, *Psych Science*)

The antecedents of behaviors and experiences:

Can be used to accurately predict those behaviors and experiences

Differ across people

Vary in the degree of psychological, situational, and timing antecedents

**Aim 1:** Individuals show unique personality structures that are relatively consistent across time and events.

**Beck & Jackson**  
(2020, *JPSP*; 2021b; *EJP*)

**Aim 2:** The dynamics of well-being unfold differently across people.

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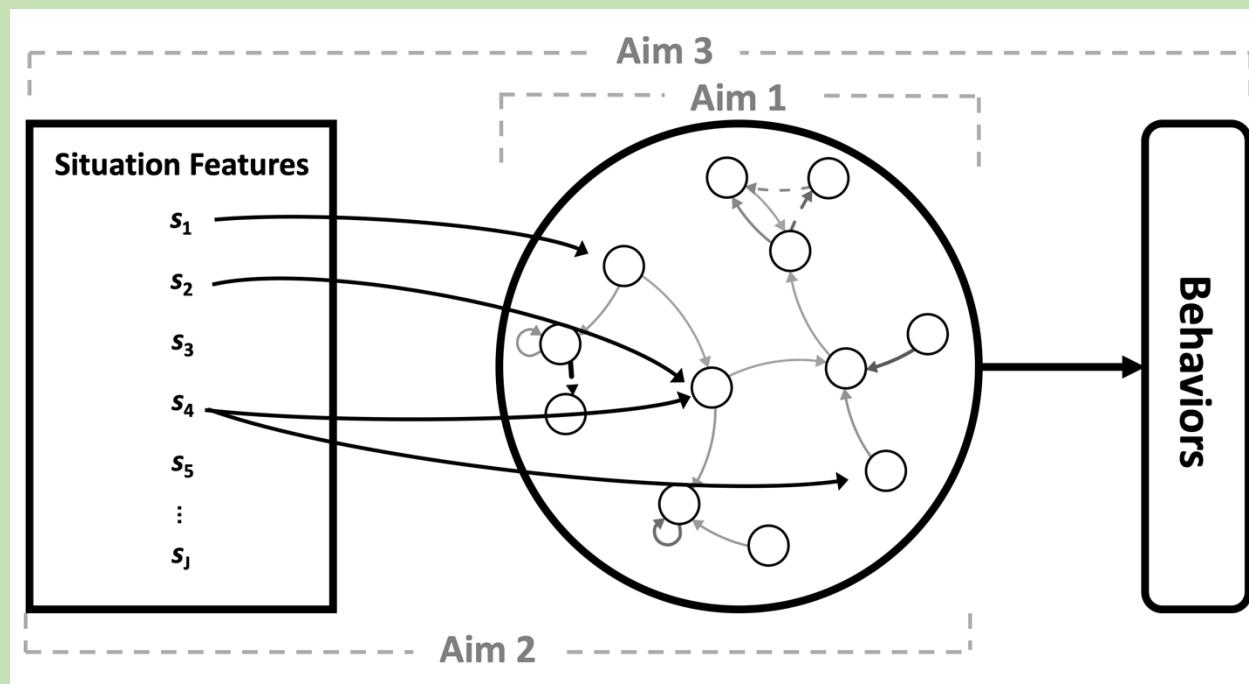
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(2023, *Psych Science*)

## Ongoing Directions



# Other Ongoing Directions

Multilevel Structure

Personality as a Dynamic System

Personalized Assessment

Revisiting Cattell's Data Box

Integrating Across Time Scales

Revitalizing Grand Theories of Personality

# Personalized Assessment

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

We have no idea. That's an empirical question!

# 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.

# The Personalizing Personality Study

## Study Design

UCDAVIS

Washington  
University in St.Louis



● N = 200

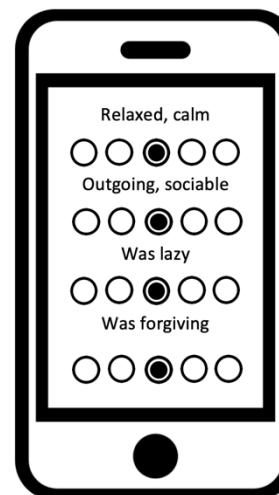
● N = 200

### Baseline Surveys

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



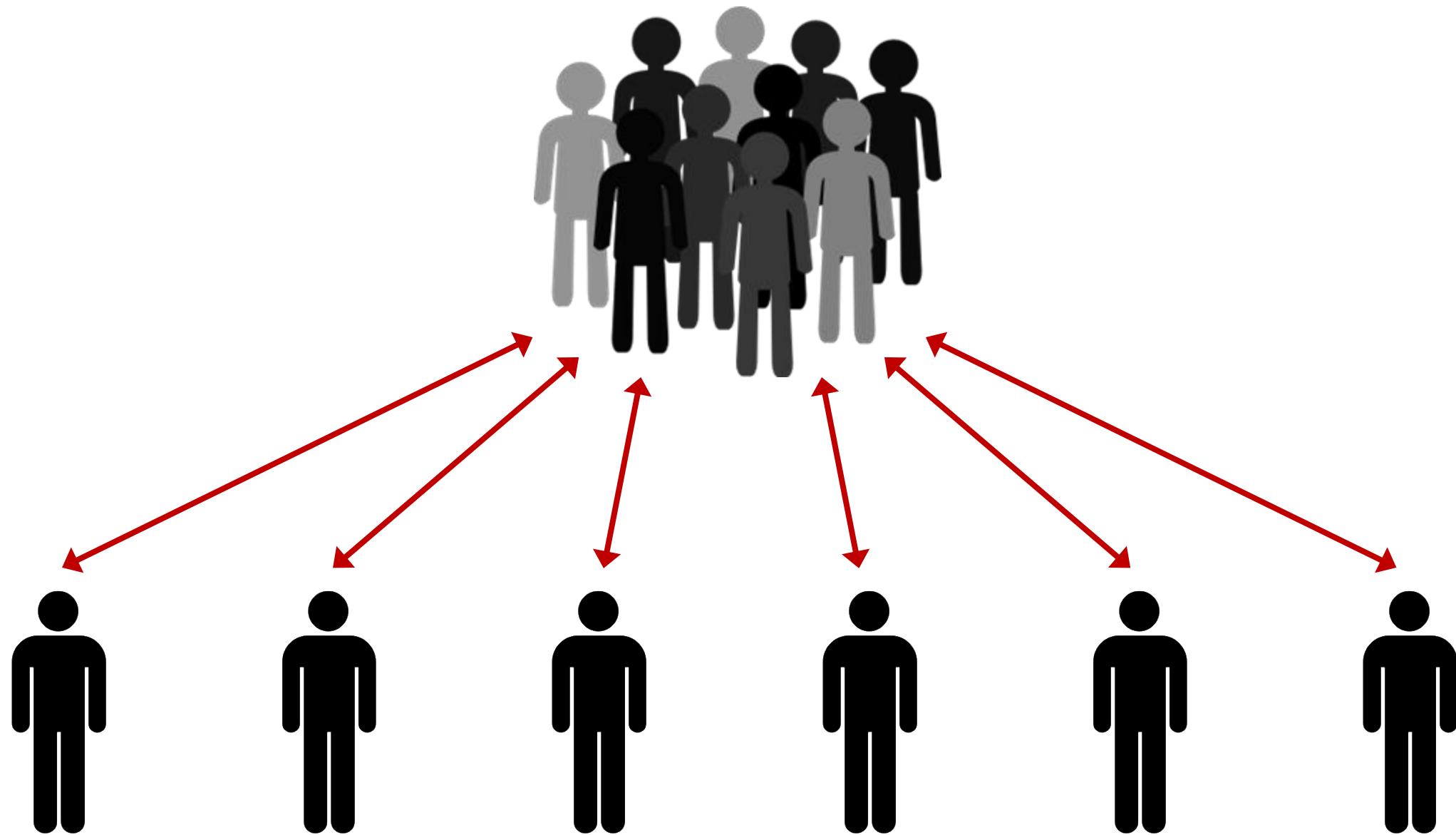
BCS-2336406



### 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

# Bottom-Up Psychological Science

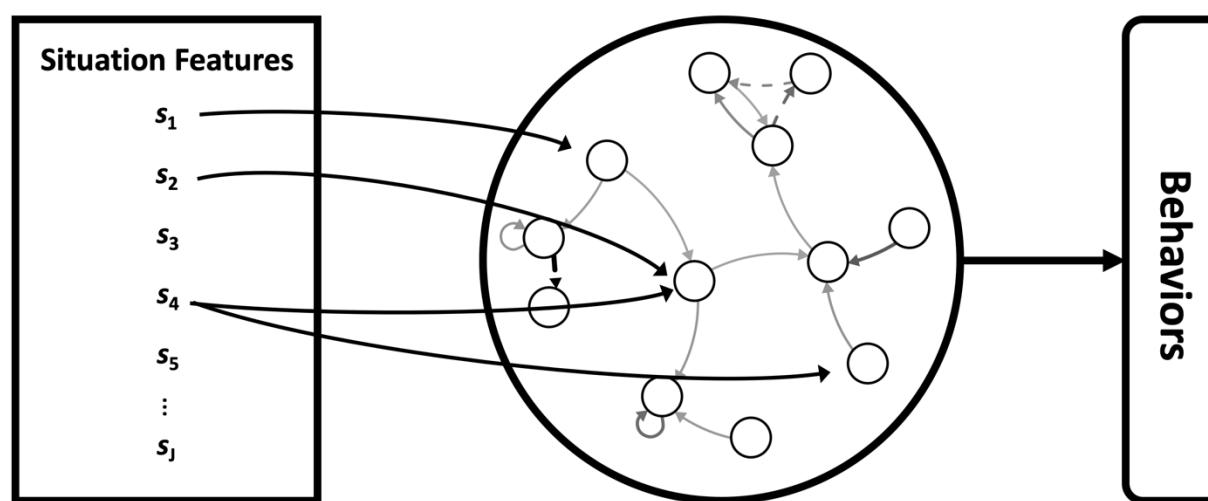


# Persons in Context: Systems Theories

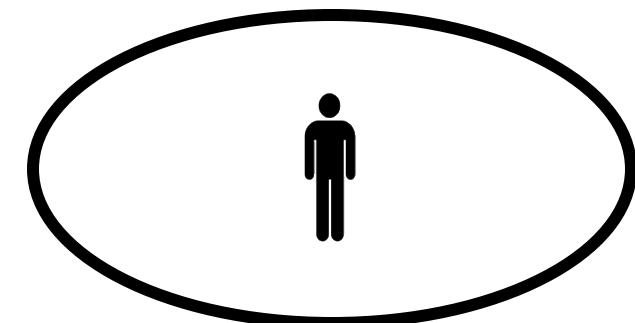
**Ecological Systems Theory**  
(e.g., Bronfenbrenner, 1979)



**Cognitive Affective Personality System**  
(e.g., Mischel & Shoda, 1995)



**Field Theory**  
(e.g., Lewin, 1936)



e.g., Lewin, 1936

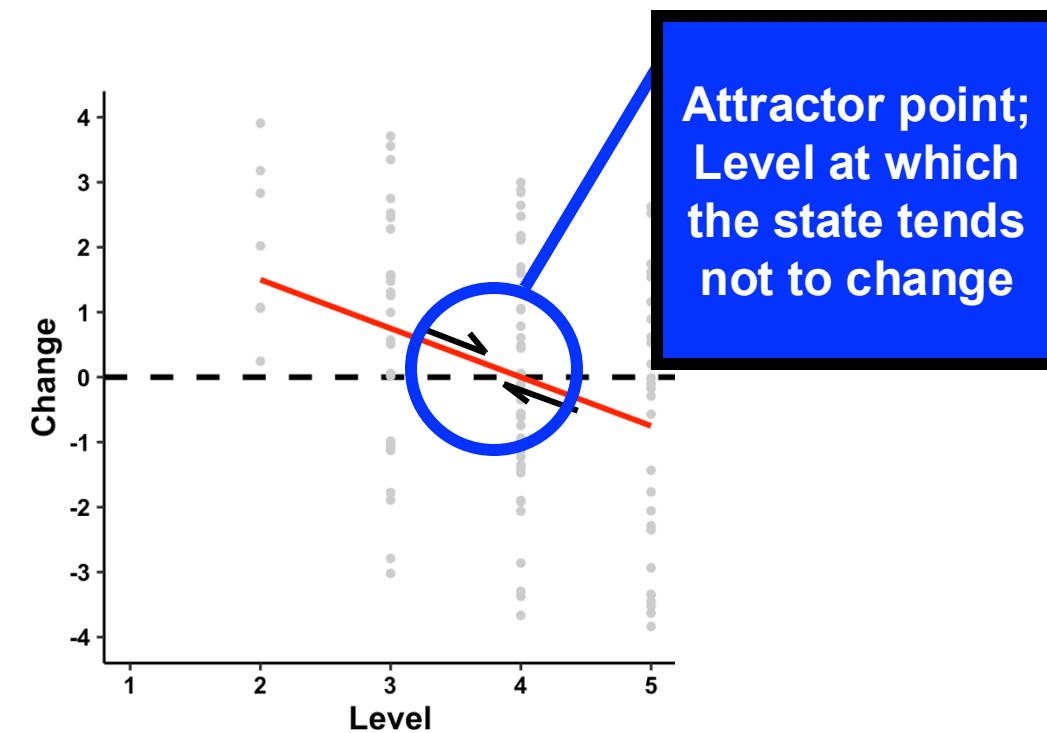
# Personality As a System: Habits, Goals, and Tendencies

Looking across individuals,  
individual differences appear in:

**Attractor location**  
(x at which change is 0)

**Attractor strength**  
(slope;  $b_1$ )

$$\frac{dp}{dt} = b_0 + b_1 p$$



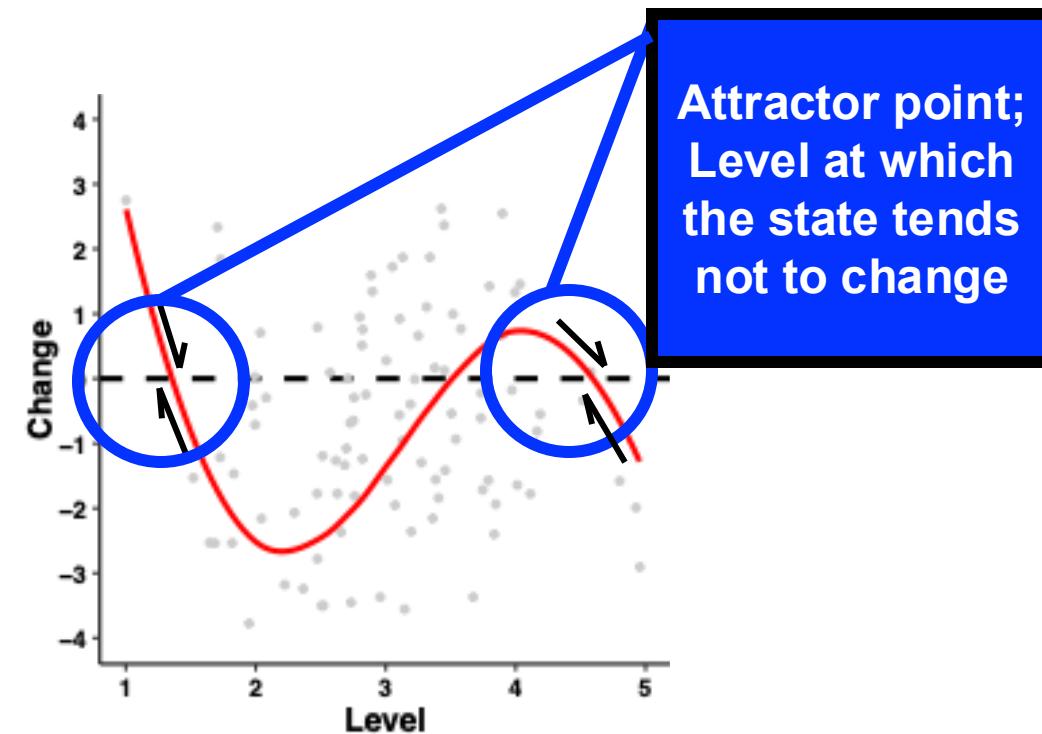
# Personality As a System: Habits, Goals, and Tendencies

Looking across individuals,  
individual differences appear in:

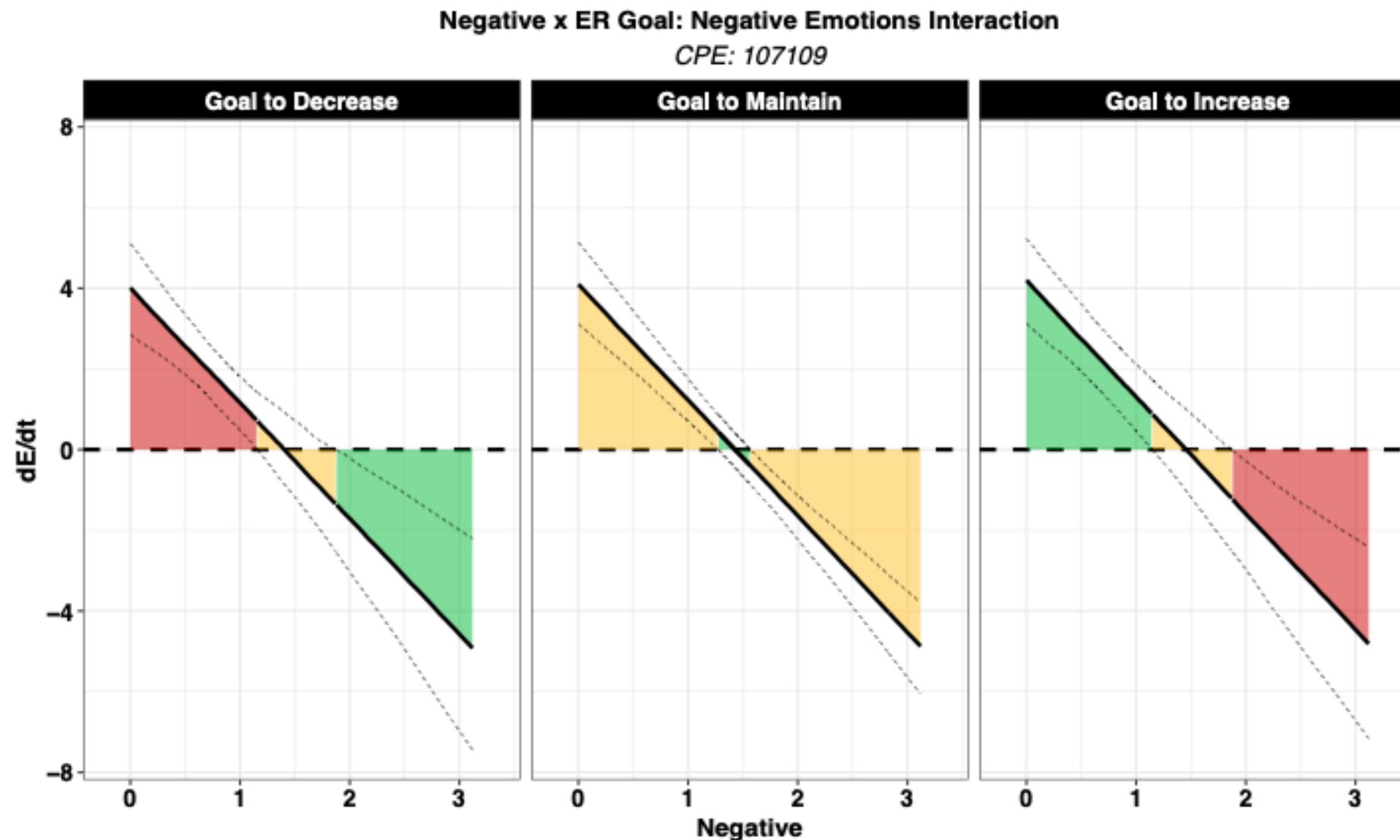
$$\frac{dp}{dt} = b_0 + b_1 p + b_2 p^2 + b_3 p^3$$

**Attractor location**  
(x at which change is 0)

**Attractor strength**  
(slope;  $b_1$ )



# Personality As a System: Habits, Goals, and Tendencies



# Ongoing Work in My Lab



**Adam Nissen**

Persons-in-contexts and systems perspectives on well-being of sexual and gender minorities

**Winkie Ma**

Unique structure of narcissism in daily life and antecedents and consequences of narcissism

**Colin Lee**

Person-specific personality state profiles and multivariate dynamic systems models of personality

**Evan Warfel**

Text-based analysis and merging qualitative and quantitative methods

**Elizabeth Long**

Cardinal / central traits; linking central traits to dynamic theories of personality

**Anabel Büchner**

Personality as attractors, utility of unique assessment

# Introducing PECORINO

## Personality Consortium on Research in Idiographics and Nomothetics

- **Mission statement:** PECORINO is dedicated to advancing the field of personality science by bridging the gap between the study of individual persons and the exploration of general laws of personality functioning. Our mission is to integrate idiographic and nomothetic approaches to create a more comprehensive understanding of personality.

# Introducing PECORINO: Get Involved!

## Mailing List

[pecorino\\_group@googlegroups.com](mailto:pecorino_group@googlegroups.com)

## Contact Us

[pecorino.consortium@gmail.com](mailto:pecorino.consortium@gmail.com)

## Website

<http://pecorinoconsortium.wixsite.com/pecorino>

The consortium emerged out of an expert meeting and pre-conference on the topic “Dynamics of Personality: Integrating Nomothetic and Idiographic Approaches into a Synthetic Framework” funded by the European Association of Personality Psychology and organized by Niclas Kuper, Nick Modersitzki, Le Vy Phan, Markus Quirin, and John Rauthmann.

# What is personality?

“Personality is the **dynamic organization** within the individual of those **psychophysical systems** that determine his **unique adjustments to the environment**.”



(Allport, 1937, p. 32)

e.g., Allport, 1937, 1961, 1968

**Aim 1:** Individuals show unique personality structures that are relatively consistent across time and events.

Beck & Jackson  
(2020, *JPSP*; 2021b; *EJP*)

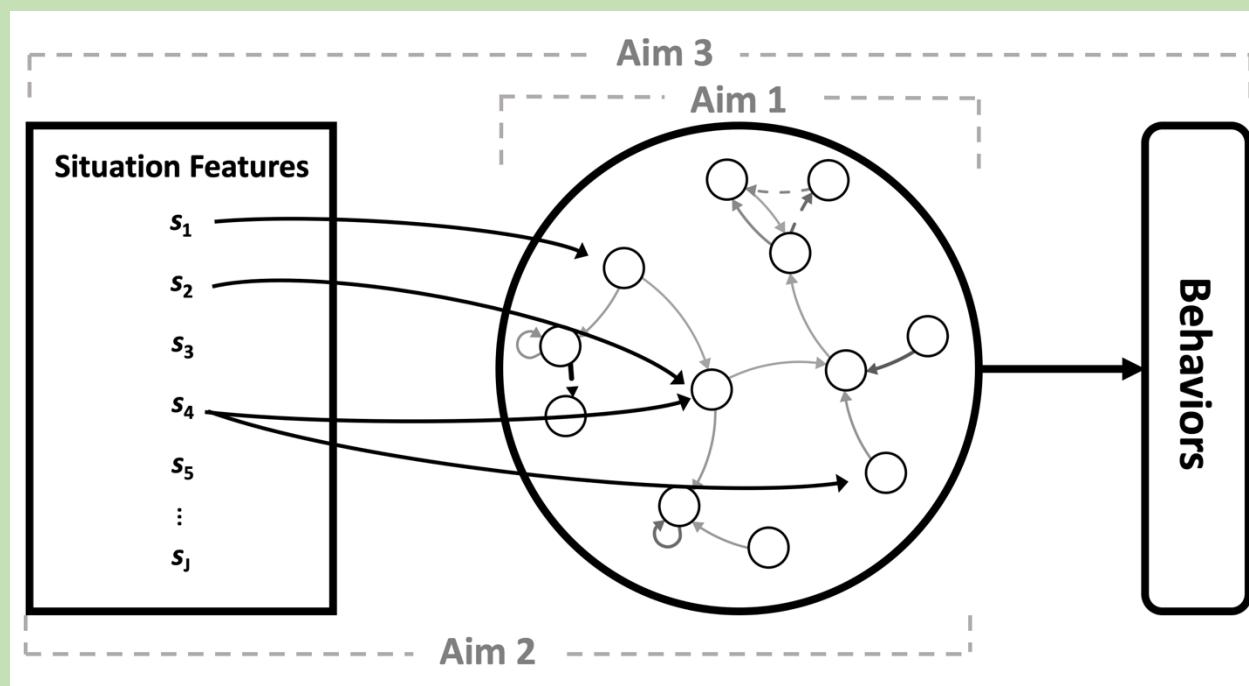
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Beck & Jackson  
(2023, *Psych Science*)

## Ongoing Directions



# Acknowledgements

## Collaborators

(on presented work)

Dr. Josh Jackson  
Adam Nissen  
Colin Lee  
Dr. Felix Cheung  
Dr. Stuti Thapa  
Dr. Zoë Hawks  
Dr. Dan Mroczek  
Dr. Eileen Graham



## The Beck Lab



## Contact



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SCAN ME



National Institute  
on Aging

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