

Beyond Statistical Models in Idiographic Psychological Research

Emorie D. Beck, Ph.D.

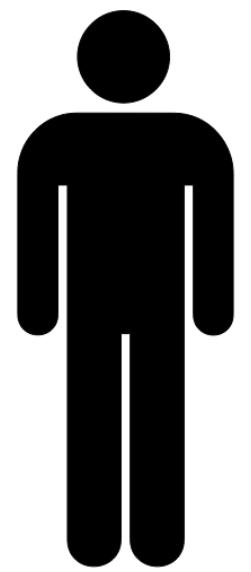
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Goals and Tools in Psychology

Goals

Describe

Predict

Explain

Scope

All people

Some people

One Person

Tools

Theories

Research Design

Assessment

Statistical Models

Goals and Tools in Psychology

Goals

Scope

Tools

Challenge: Research questions
have to be aligned to the goals,
scope, and tools

es

Design

ment

Models

Overview

1

Background and consequences of research mismatch

2

Idiographics and Personalization as a solution?

3

Ongoing work and future promises in idiographic research

Goals and Tools in Psychology

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(Misaligned)

Tools

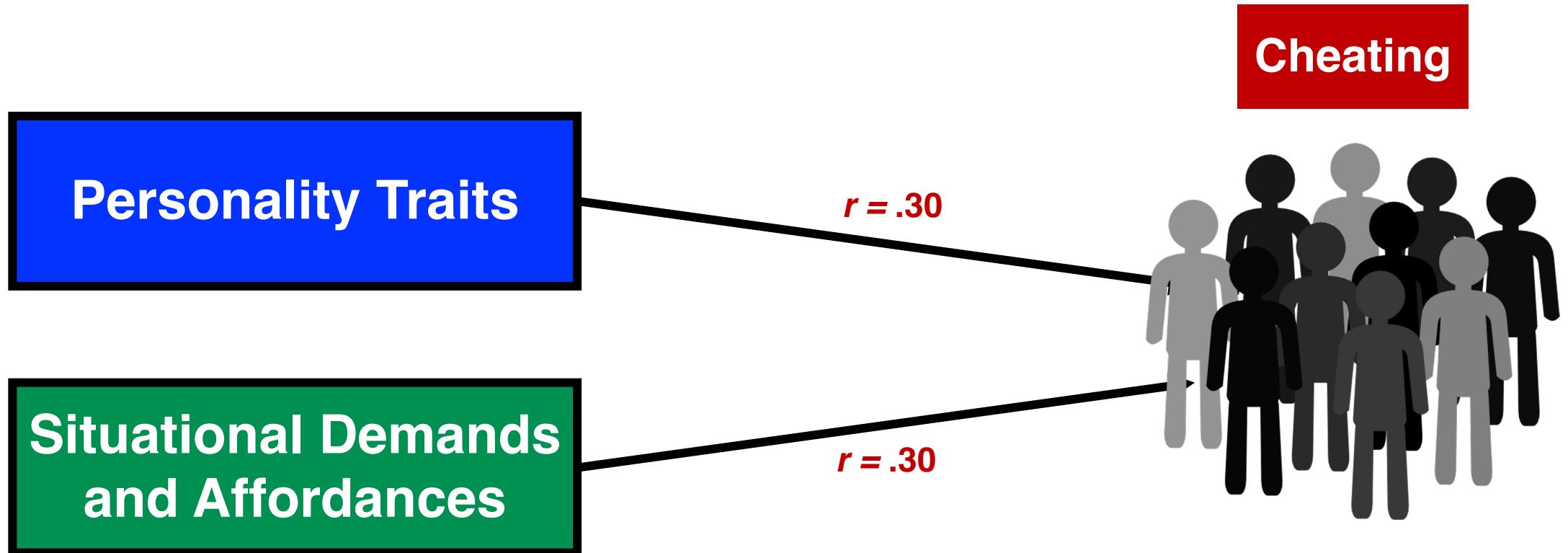
Theories

Research Design

Assessment

Statistical Models

Classic Example



Classic Example

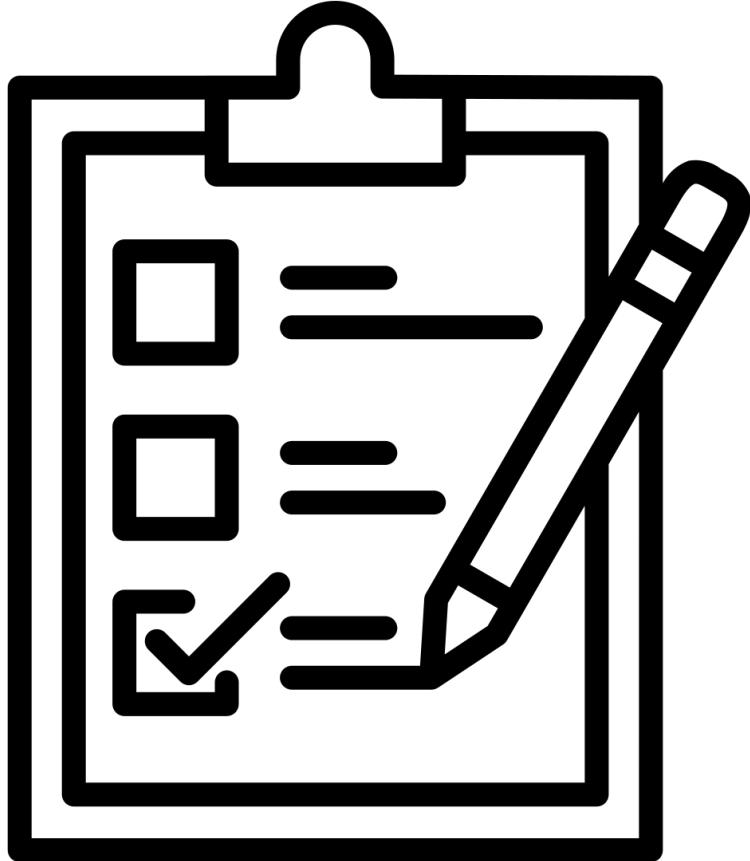
Person
Situational
Context

The Problem:

Between-person differences assumed to map onto psychological processes within a person.

**Misalignment between scope, designs, assessments, and statistical models
(e.g., that experiments mean a causal effect is the same for everyone)**

Pragmatic Constraints on $N=1$ Research



Large-scale surveys



In lab experiments

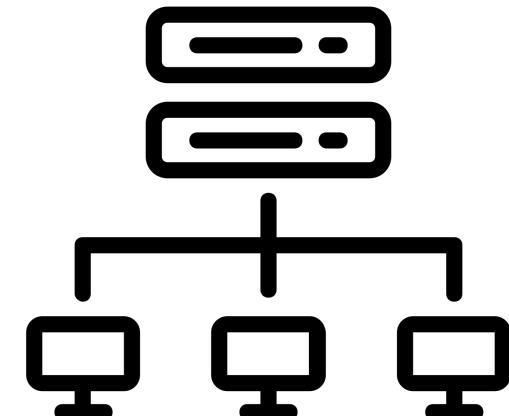
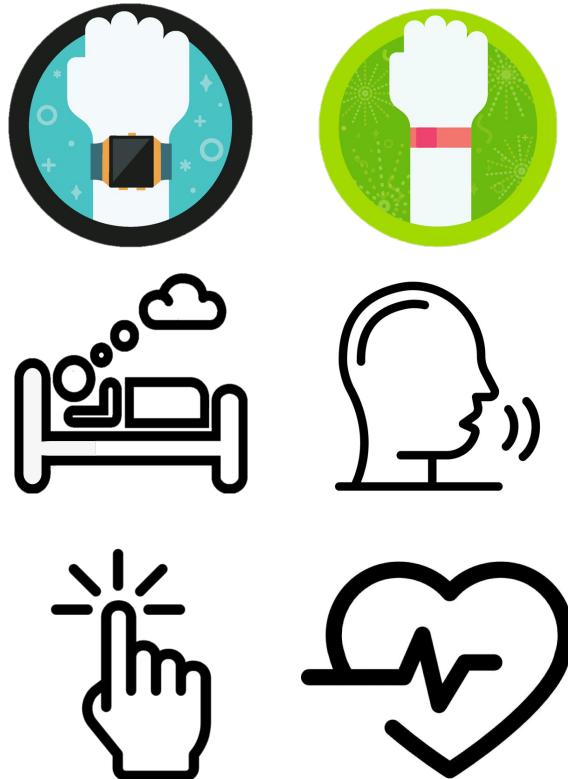
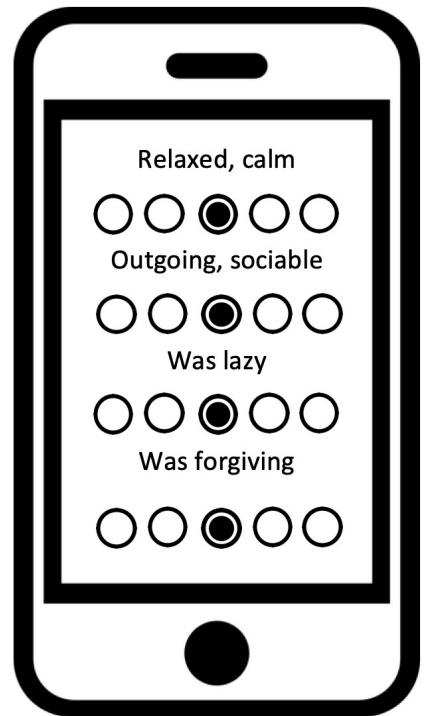
Modern Opportunities for $N = 1$ Research

ESM / EMA

Mobile Sensing

Open-Ended
Responses

Computing
Power



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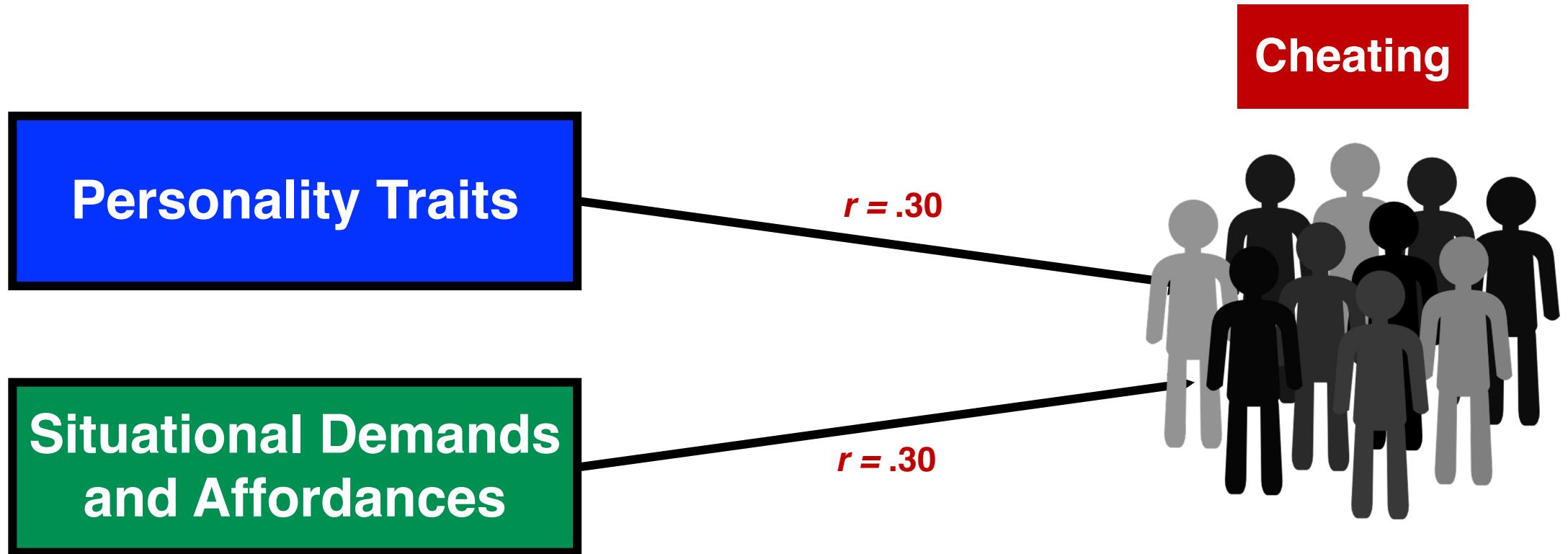
Theories

Research Design

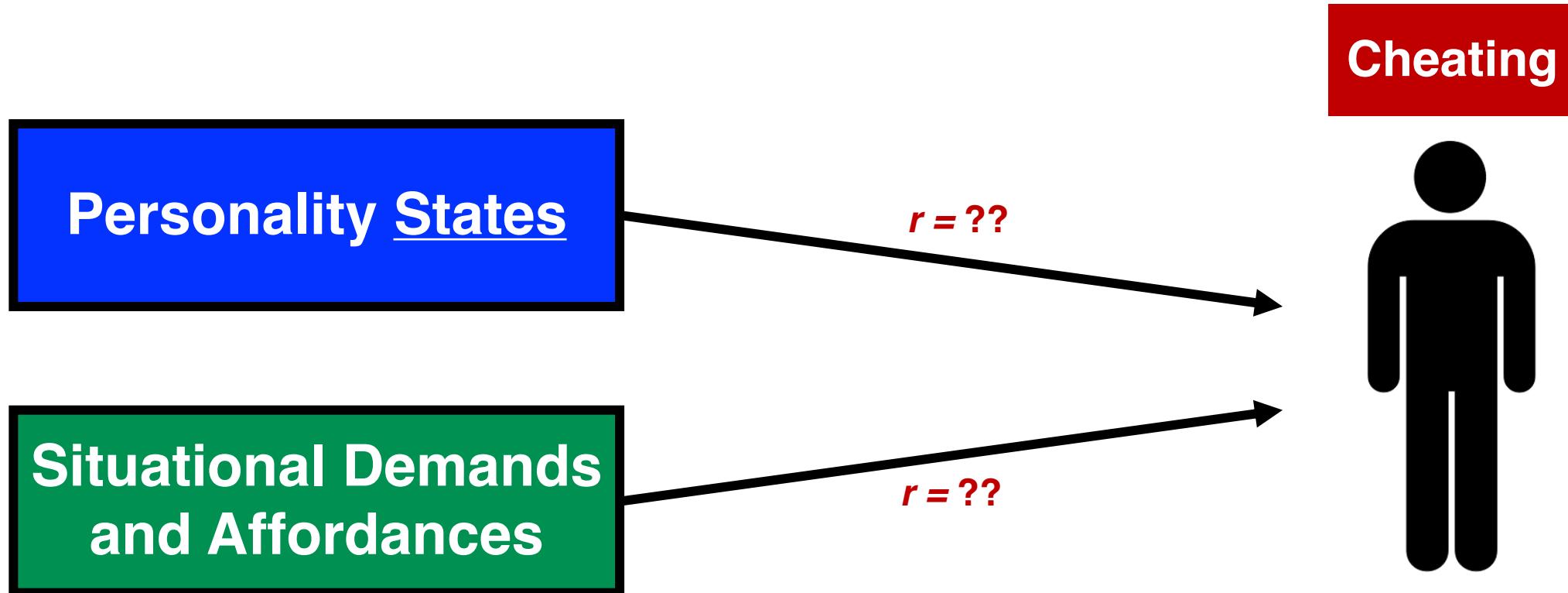
Assessment

Statistical Models

Classic Example



PROMISE: An $N=1$ Take on a Classic Example



Goals and Tools in Psychology

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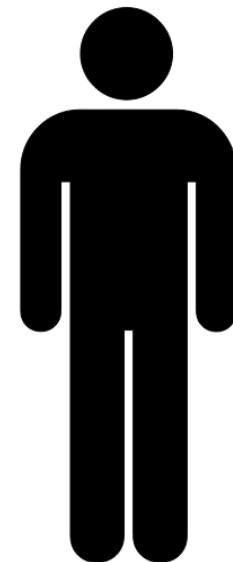
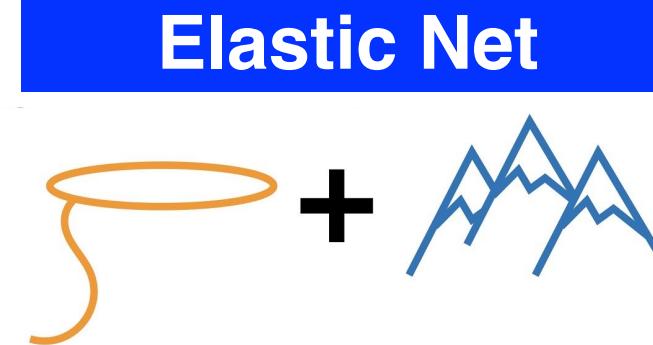
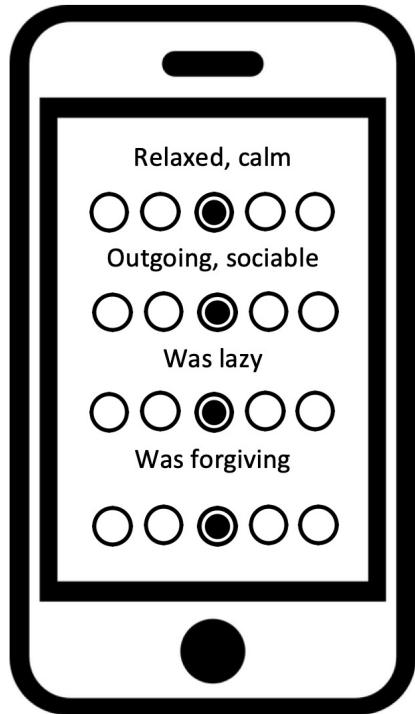
Statistical Models

PROMISE: An $N=1$ Take on a Classic Example

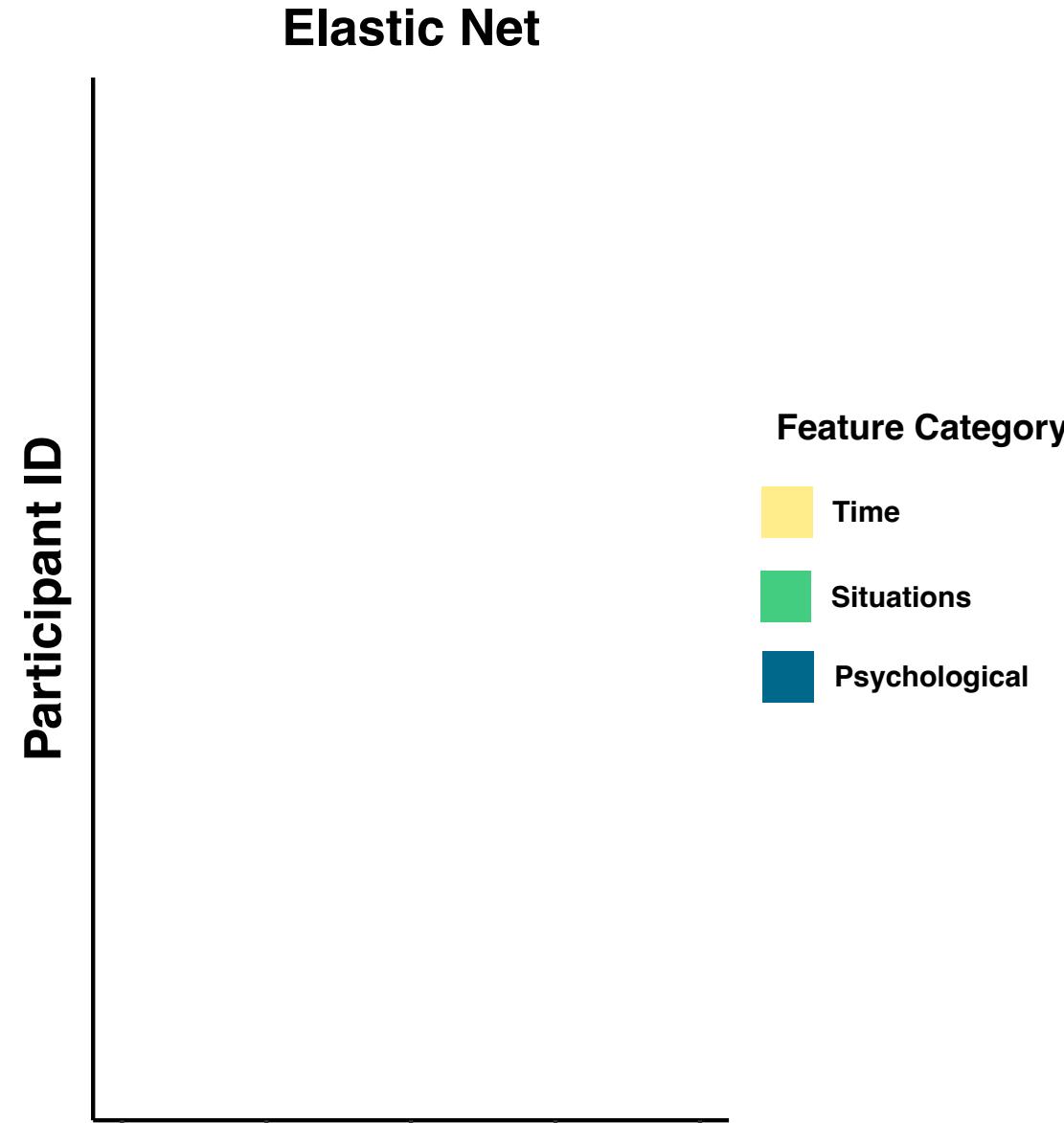
ESM / EMA

Machine
Learning

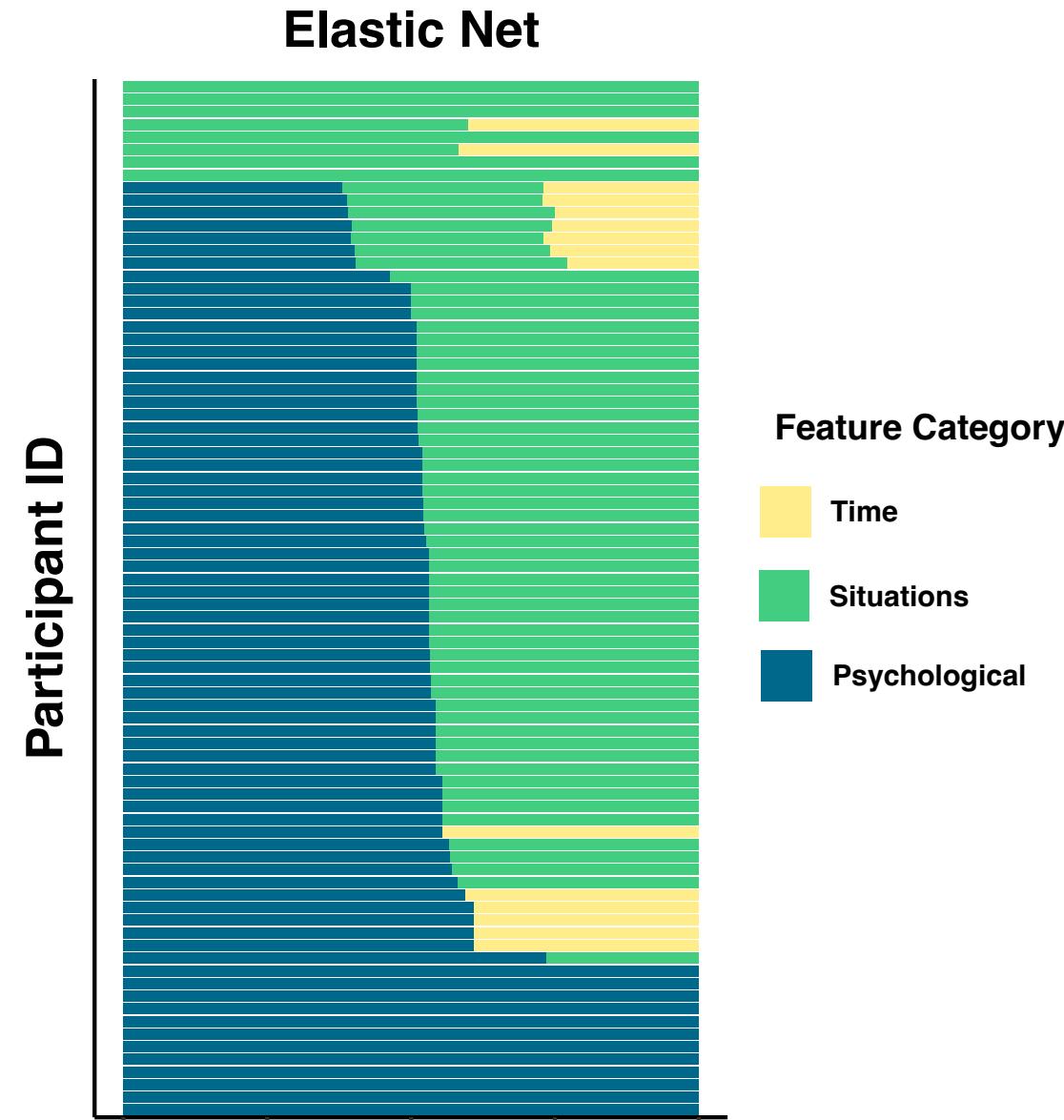
$N=1$ models



PROMISE: An $N=1$ Take on a Classic Example



PROMISE: An $N=1$ Take on a Classic Example



PROMISE: An $N=1$ Take on a Classic Example

Elastic Net

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

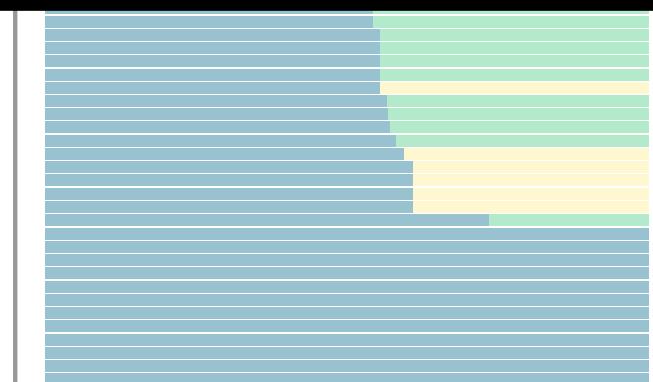
(As do the specific features within categories)

But this study misses a key opportunity:
Were the assessments truly attuned to the underlying question?

CHALLENGE: An $N = 1$ Take on a Classic Example

Elastic Net

**What are we missing when we
use the same measures for
everyone?
(i.e. assessment gap)**



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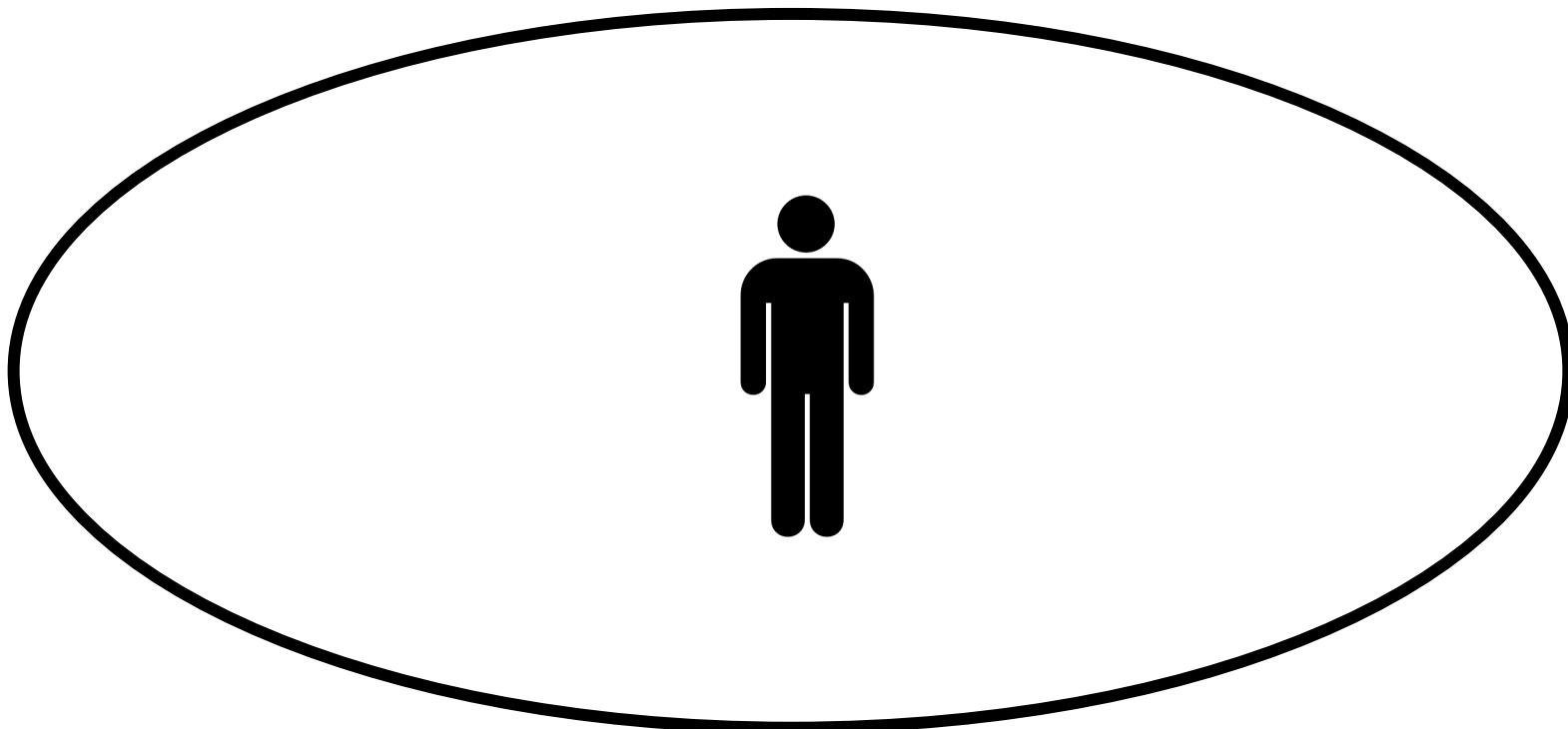
Theories

Research Design

Assessment

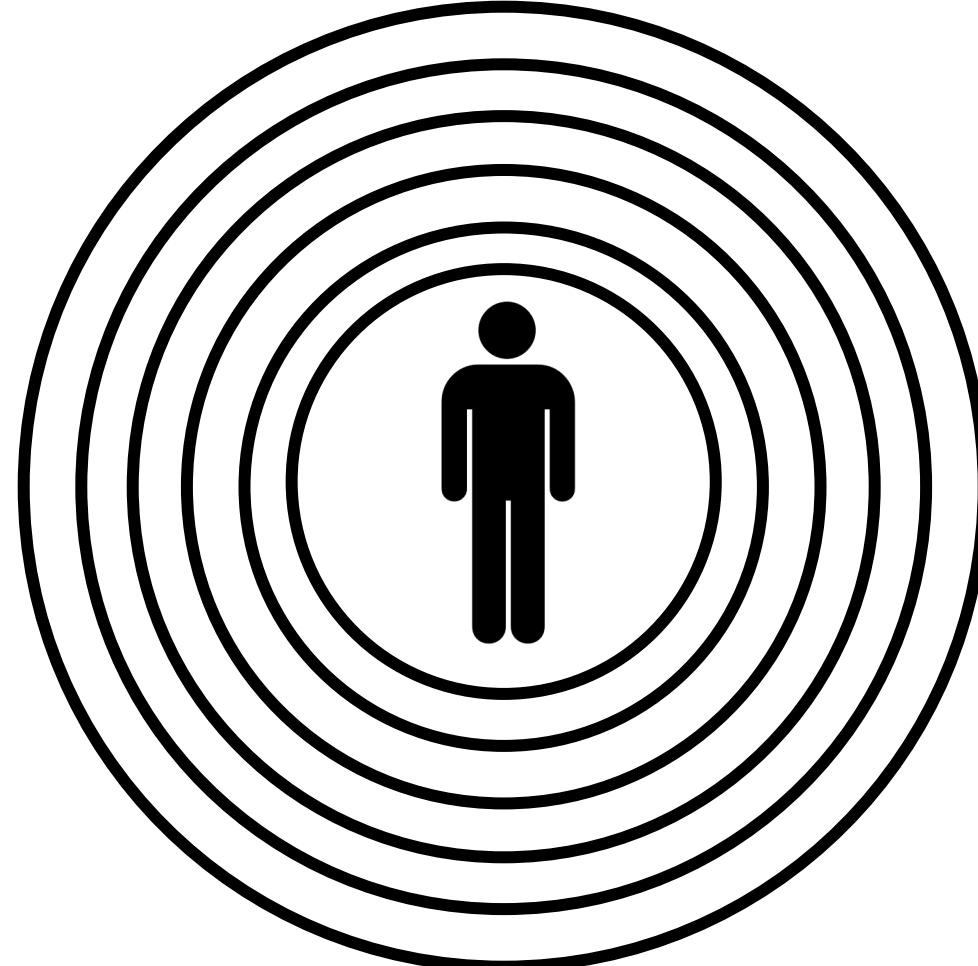
Statistical Models

Persons in Context



e.g., Lewin, 1936

Persons in Context



e.g., Bronfenbrenner, 1979

Bottom-Up Psychological Science

Instead of growing impatient with the single case and hastening on to generalization, why should we not grow impatient with our generalizations and hasten to the internal pattern?" (Allport, 1961, p. 84)

Tools

Theories

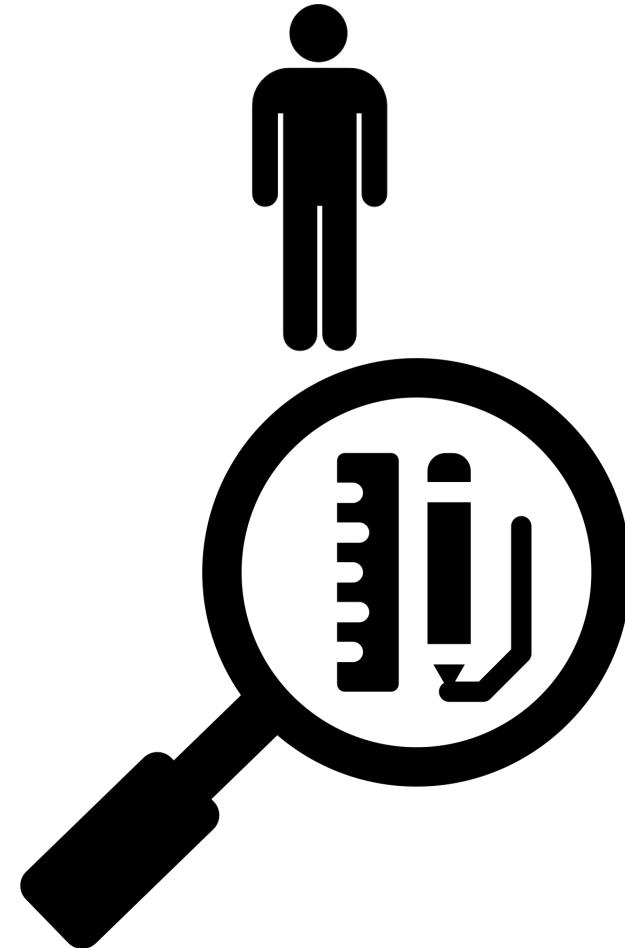
Research Design

Assessment

Statistical Models

Bottom-Up Psychological Theories

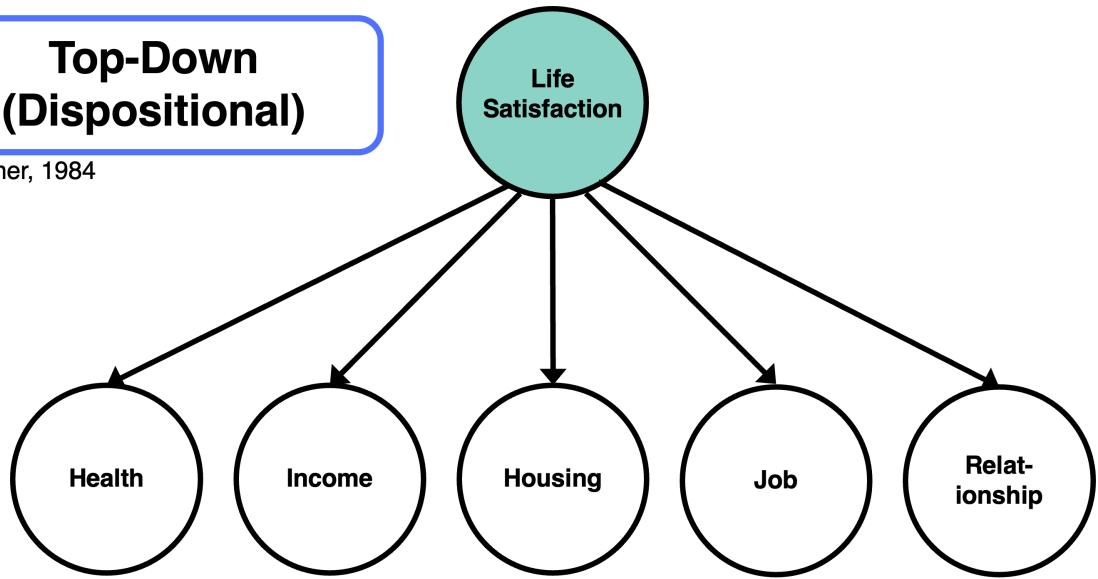
For whom do different theories apply?



Top-Down (Dispositional)

Diener, 1984

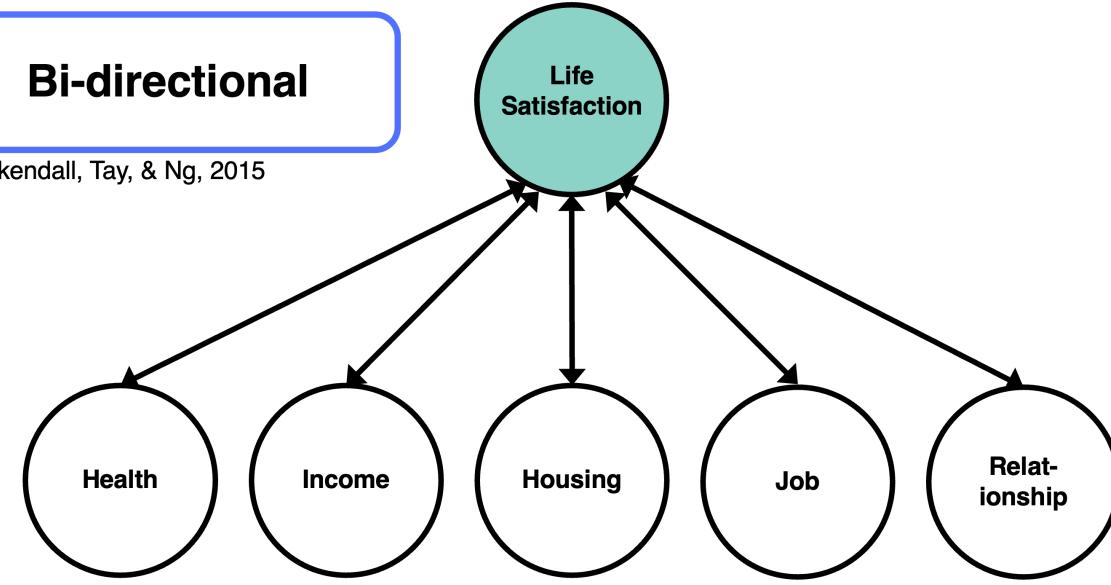
Domain Satisfaction



Bi-directional

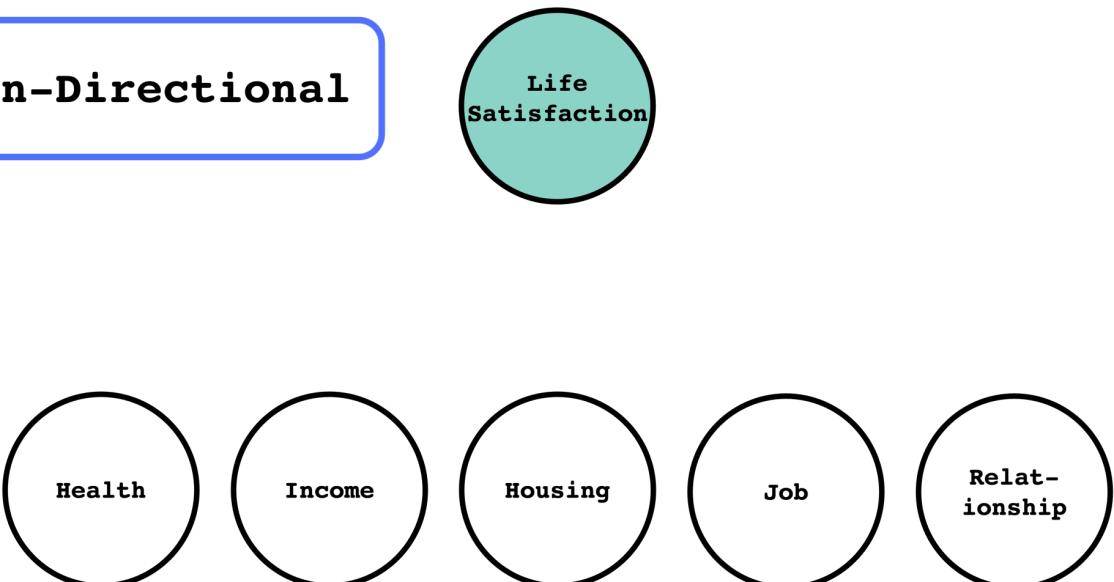
Kuykendall, Tay, & Ng, 2015

Domain Satisfaction



Non-Directional

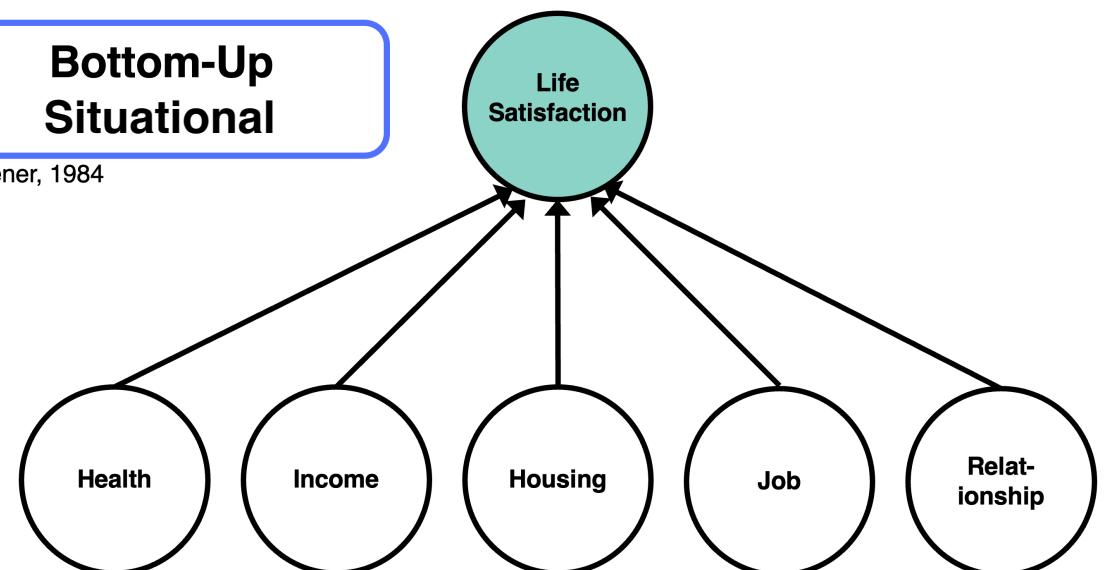
Domain Satisfaction



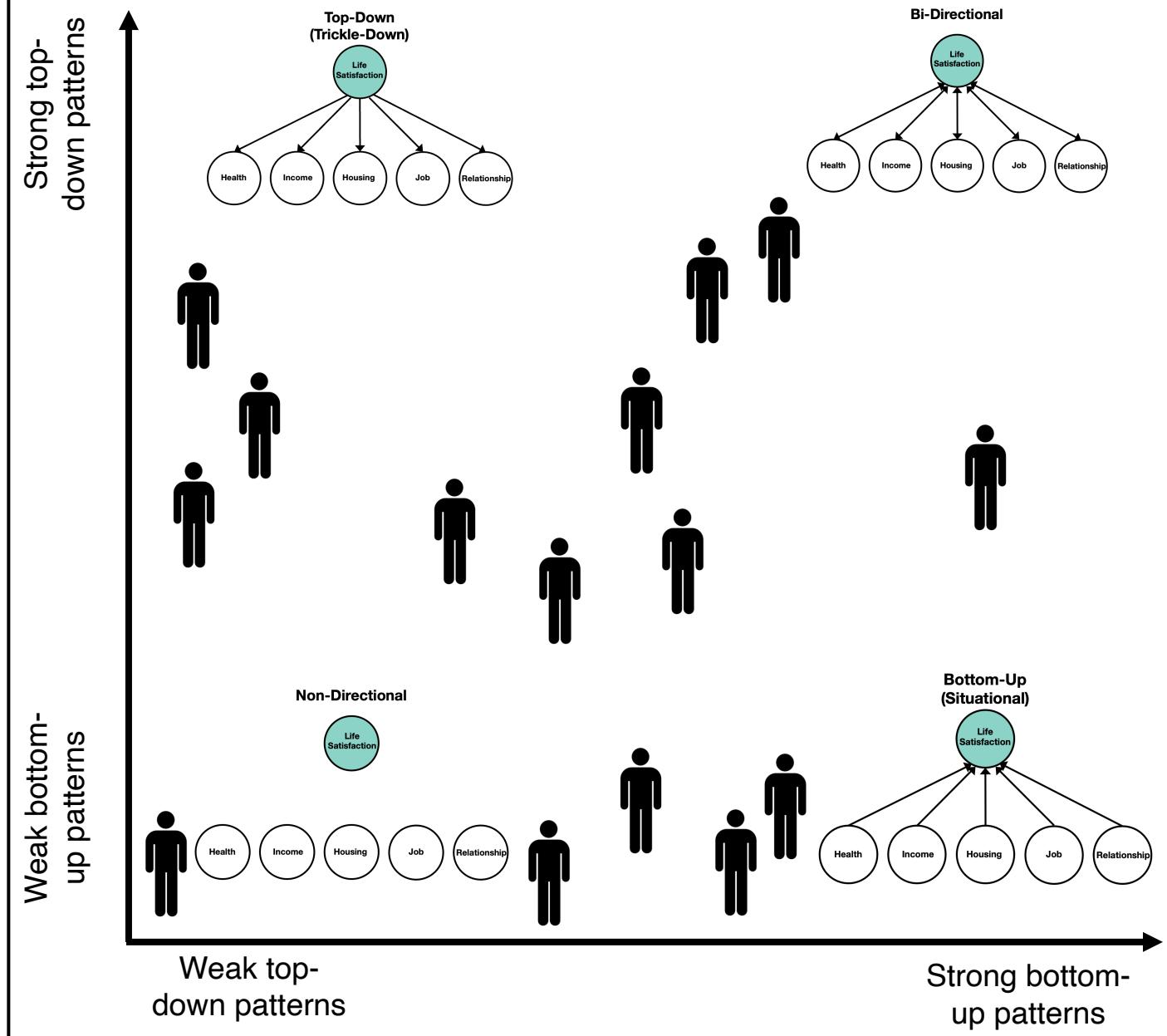
Bottom-Up Situational

Diener, 1984

Domain Satisfaction



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



Bottom-Up Psychological Theories

***For whom* do different theories apply?**

Novel theory generation by starting with the single case (repeated many times)

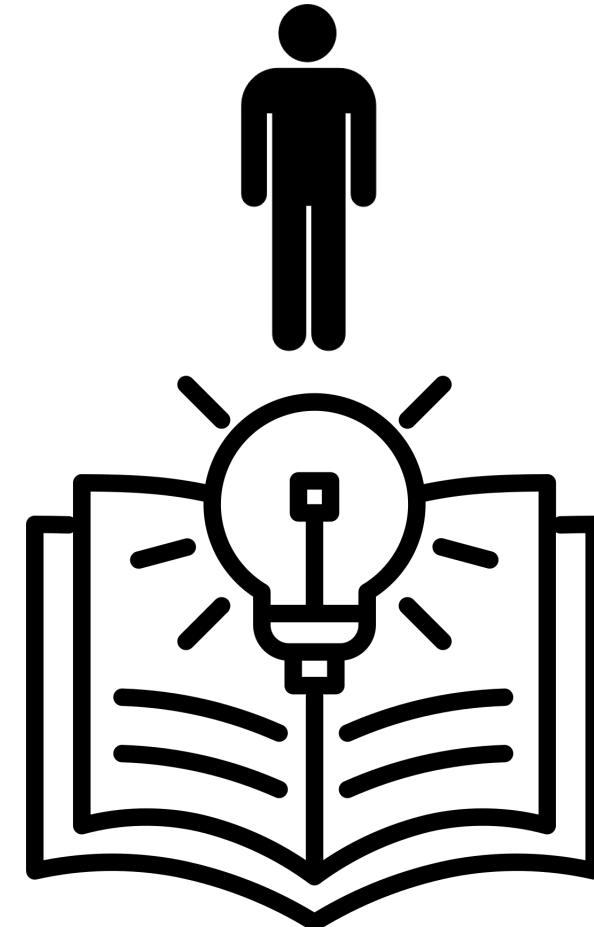


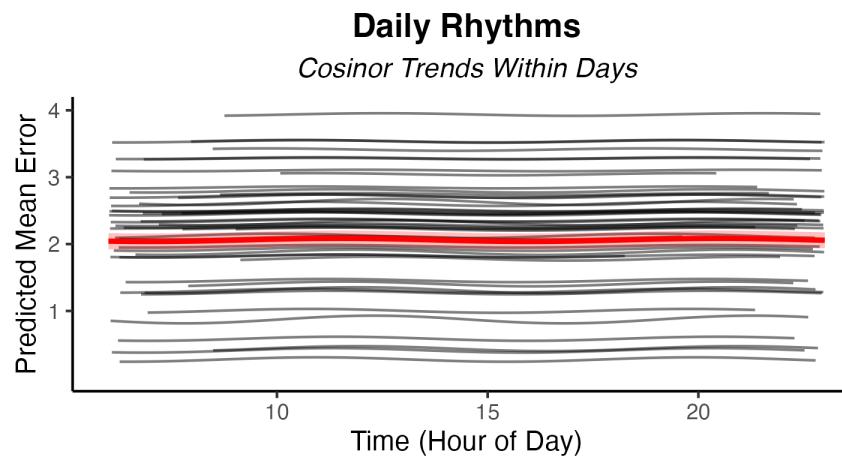
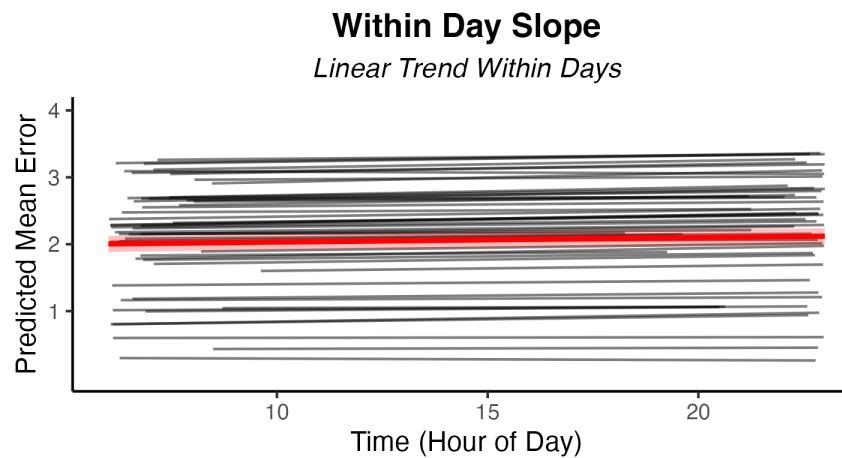
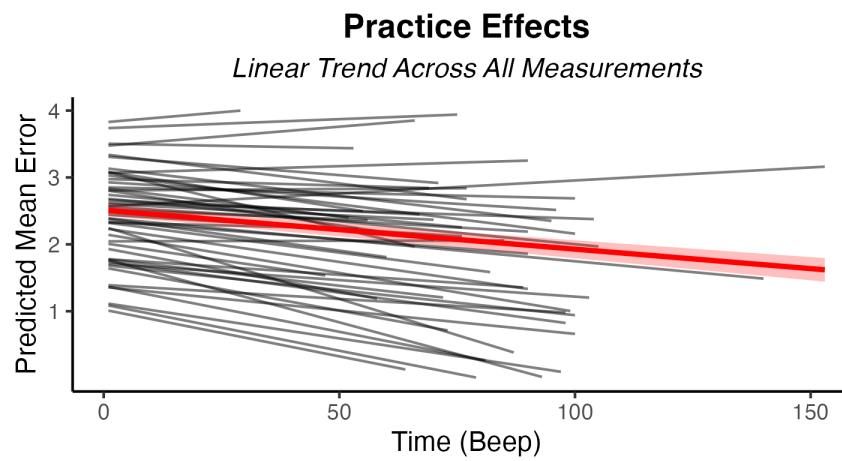
Adam Nissen

Bottom-Up Psychological Research Designs

$N = 1$ clinical trials and experiments

**Leveraging multiple timescales
(e.g., measurement burst designs, mini bursts, random intervals)**

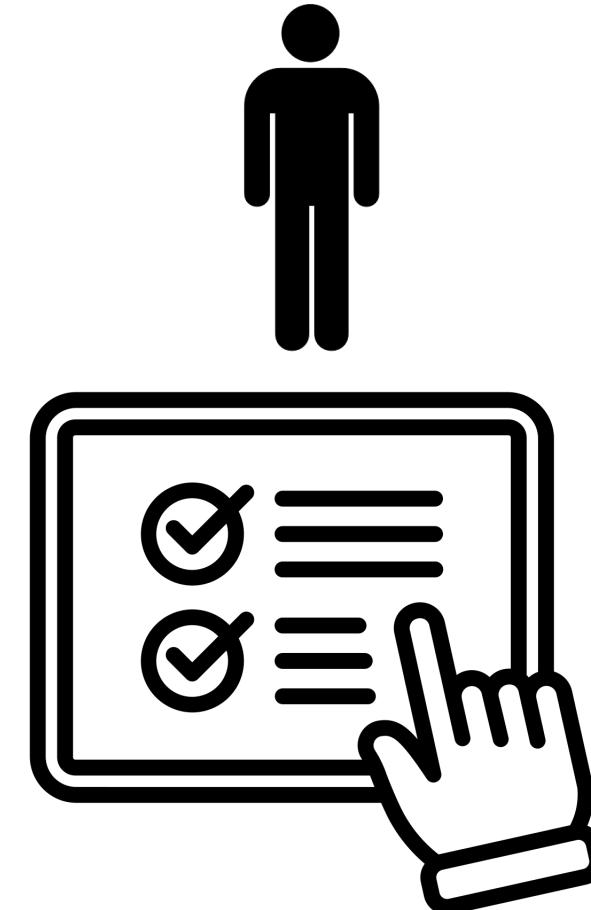




Bottom-Up Psychological Assessment

Personalized assessment

**Utilizing mixed methods
approaches**



The Personalizing Personality Pilot Study

Study Design

UCDAVIS

● N = 200



Baseline Surveys

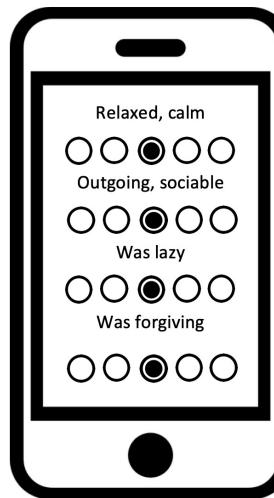
- Big Five Personality
- Cardinal Traits
- Demographics
- **Unique Item Generation**
- ...
- etc.



Winkie Ma



Colin Lee



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

The Personalizing Personality Pilot Study

UCDAVIS



Preliminary results suggest that unique, cardinal states capture unique content, have less restricted range, and are frequently top predictors of momentary outcomes

- Binary Behavior Index
- Passive Sensing

= 105)



Anabel Büchner

Idiographic Applications of NLP and LLM

CASE REPORTS

LETTERS FROM JENNY

ANONYMOUS

EDITOR'S INTRODUCTION

Methodological Note

INTIMATE letters, especially if written over a considerable period of time, disclose the guiding themes and interests of an individual life and, what is more important, they reveal the pattern into which these themes and interests are woven. Yet psychologists seldom explore the rich material of correspondence.

Reasons for this neglect are not hard to find. For one thing modern psychologists are generally reluctant to employ any but strictly controlled methods of analysis applied to materials gathered under strictly controlled conditions. Personal documents by their very nature are uncontrolled and the

personality—his own brand of verbal role-playing.

There is an additional handicap. It takes two people to sustain a correspondence, and seldom are both sets of letters available. Even when available, the exchange may reflect primarily the development of an inter-personal relationship, thus telling more about the dyadic situation than about the personality pattern of either writer. While the special relationship between the two members of a dyad unfolds it may reveal merely a one-sided view of either life.

It is further argued that in his letters a writer tells only what he consciously knows. His unconscious motives are hidden from him and therefore from the reader. Only projective techniques,

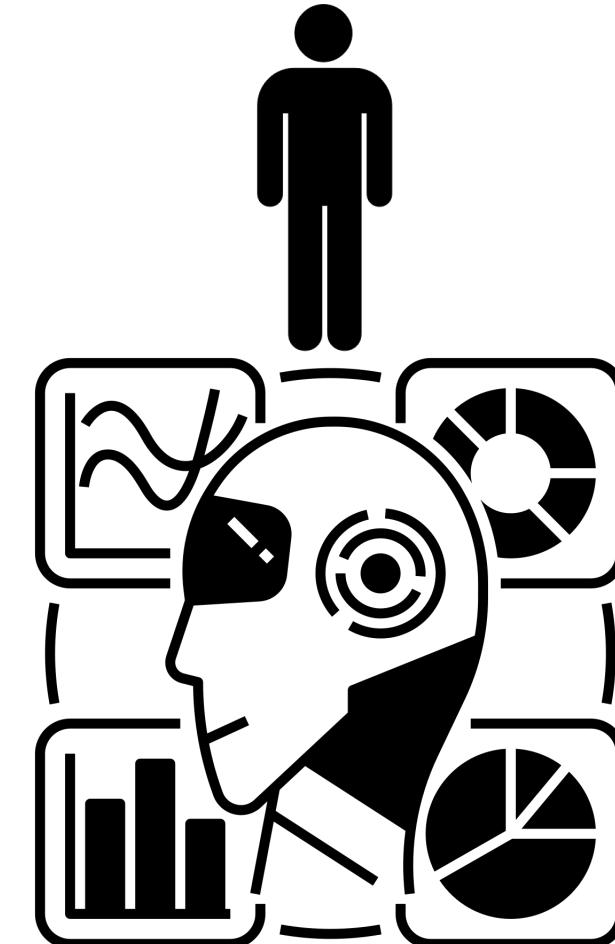


Evan Warfel

Bottom-Up Psychological Statistical Models

Information sharing

Formal Modeling



Conclusions

Changing the scope of analysis doesn't magically realign research questions with theories and methods

Utilizing novel tools provides new opportunities to bring alignment

Bottom-up approaches that put a person in context offers a framework for capturing heterogeneity and generalizability

Thank you!

References

- [Idiographic Prediction: Beck & Jackson, 2023](#)
- [Idiographic Well-Being: Beck et al., revision submitted](#)
- [Personalizing Personality Study](#)
- [Contextualizing Personal Experiences Study](#)

“Promises and Challenges in Measuring and Modeling Multimodal Cognitive, Affective, and Personality Dynamics”

Sunday, 10:30 AM Golden Gate 2



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The Beck Lab



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