

Exploring Ecological Momentary Assessment Data

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WARN-D

Goal: Develop a personalized early warning system for depression

How?

Follow 2,000 students over 2 years

Integrate EMA + Smartwatch

Aim of this project:

How can we explore our data to learn more about all the EMA items used in the study?



Sample

Data Collection

Recruitment

- Four Cohorts
- 500 students each

Population

- Students of higher education in The Netherlands > 18 years

This Paper

- Cohort 1 + 2
- $N = 599$ (left for CV)

Measurement¹

Baseline

3 Months EMA-Phase

- 4x /day (18-21 items)
- Additional sunday survey (46 items)
- Many items: 1-7 Likert
- Smartwatch

Multiple Follow-Ups

Theoretical Relevance



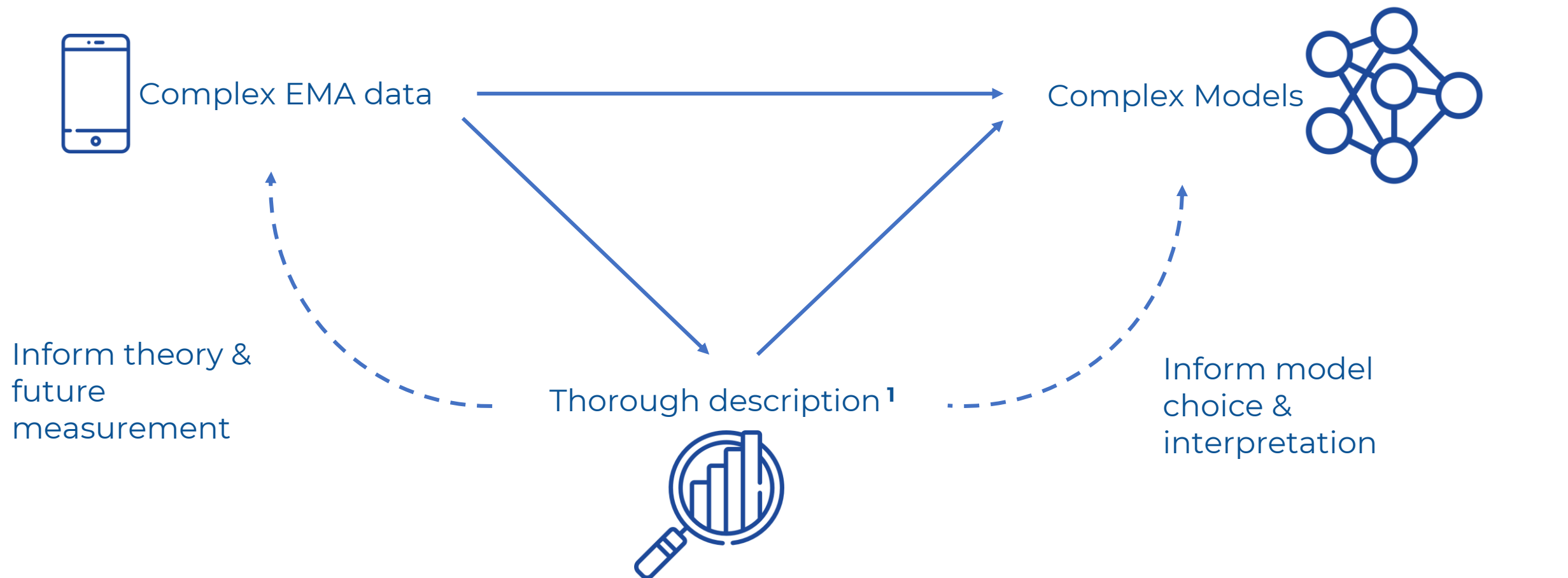
Complex EMA data



Complex Models



Theoretical Relevance



¹ | e.g. Anscombe (1973), Tukey (1977), Haig (2013)

Tutorial Paper

Visualization & Description

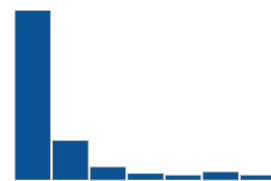
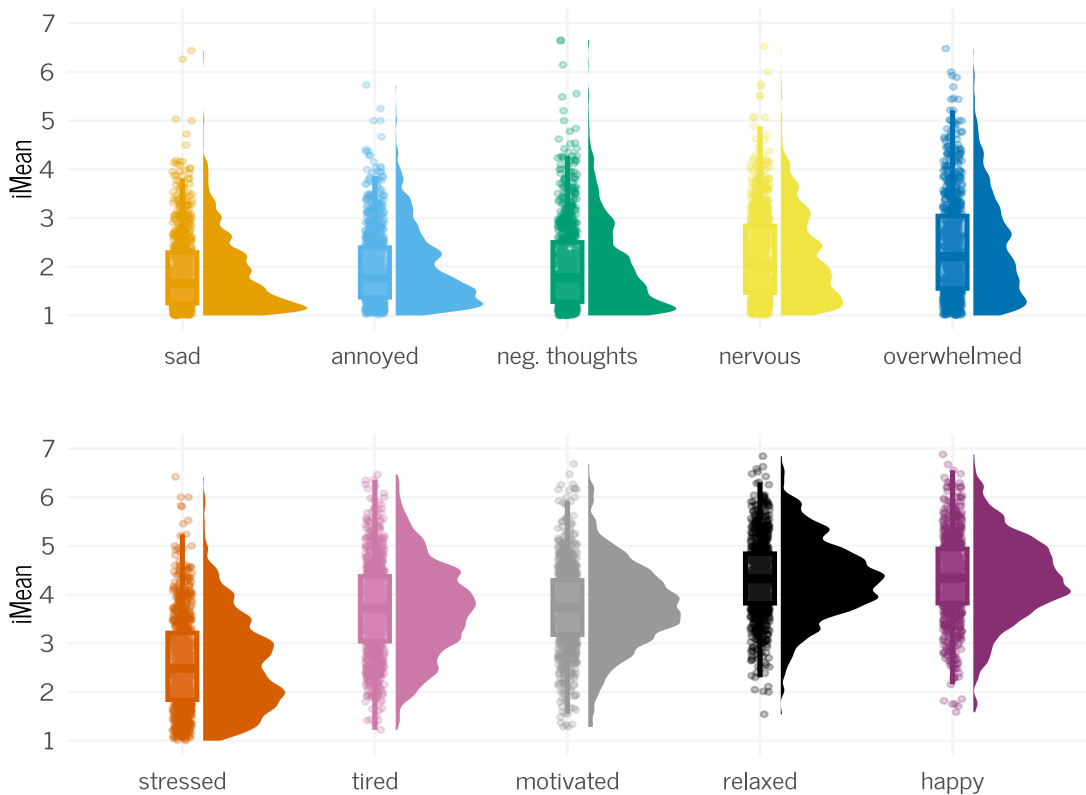
1. Distributions
2. Context
3. Time
4. Sources of Variability
5. Associations with static measures

Structure of each Section

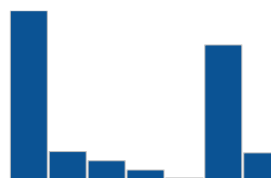
1. What is this about?
2. Example analysis/visualization
3. Further analyses
4. Where to go next

Distributions

Heterogeneity

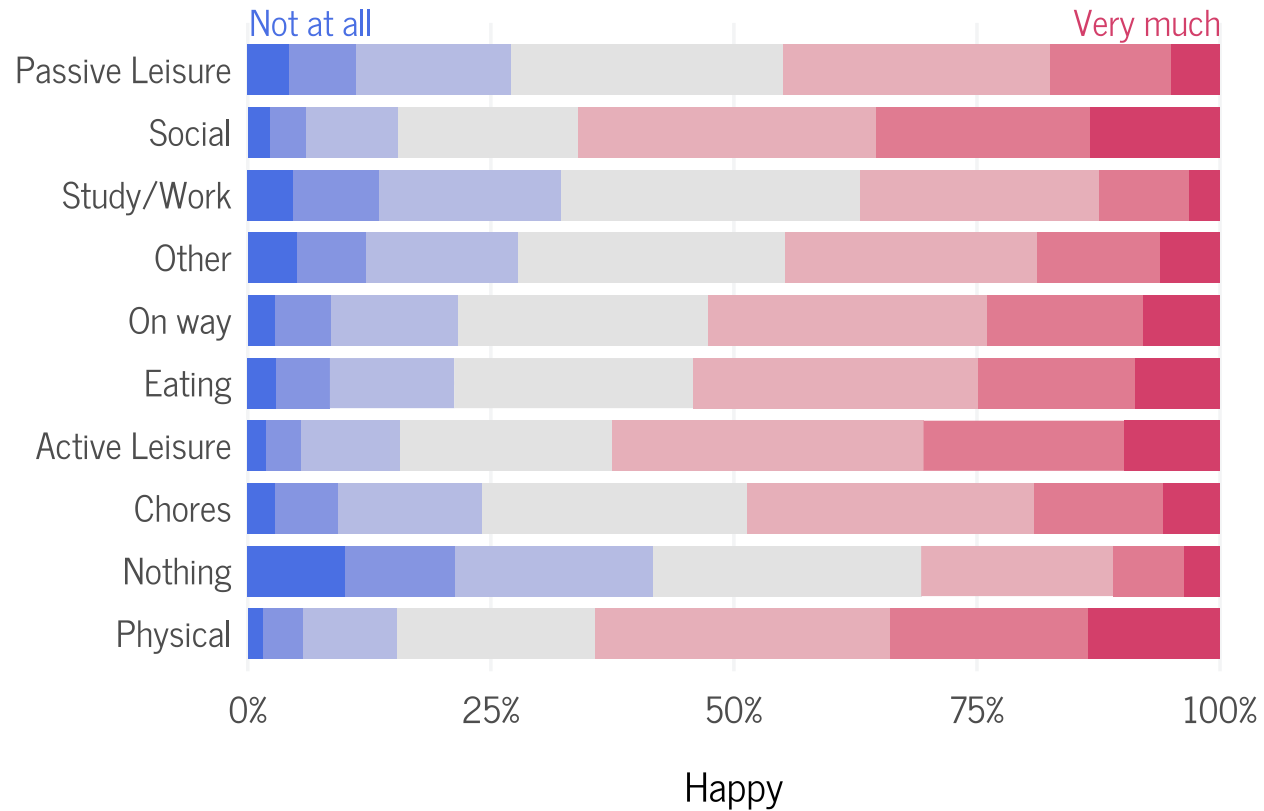
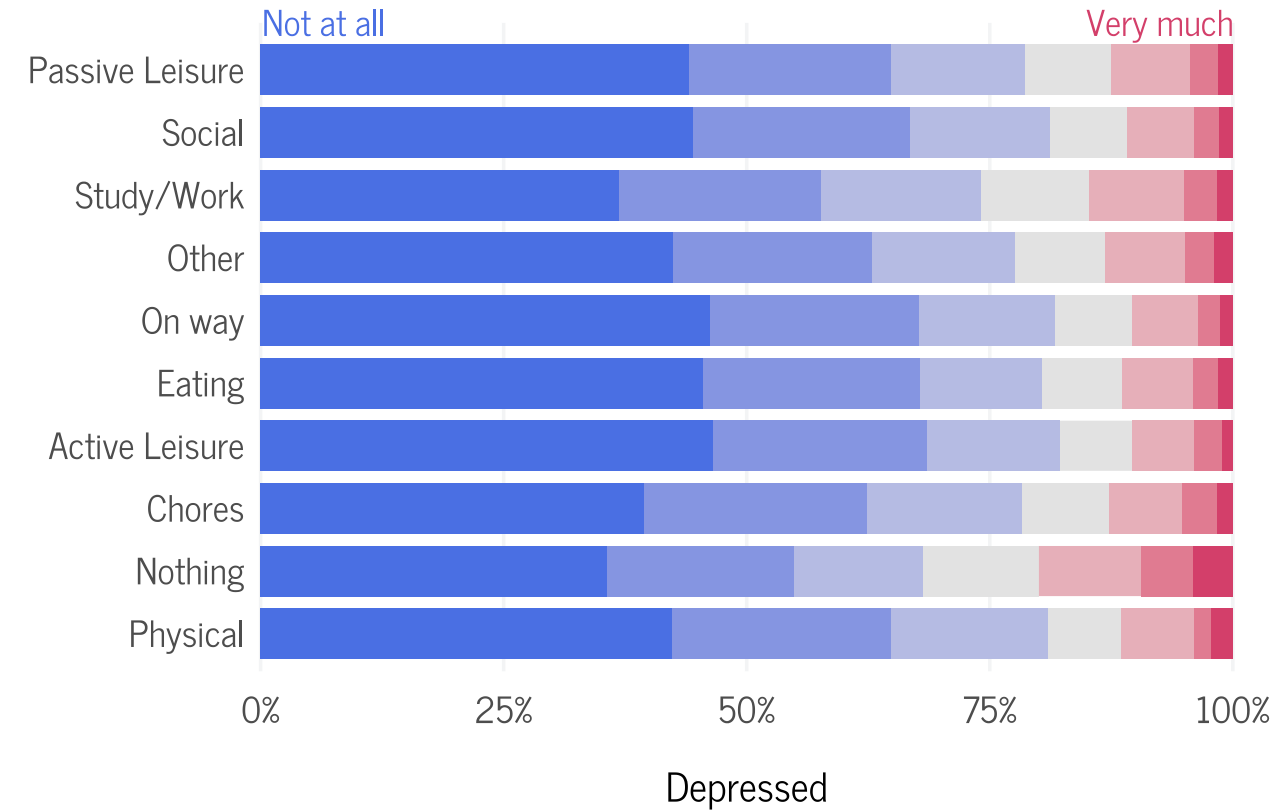


Floor Effects:
multiple items with ~30% of individuals answering 1 (*"not at all"*) >80% of the time

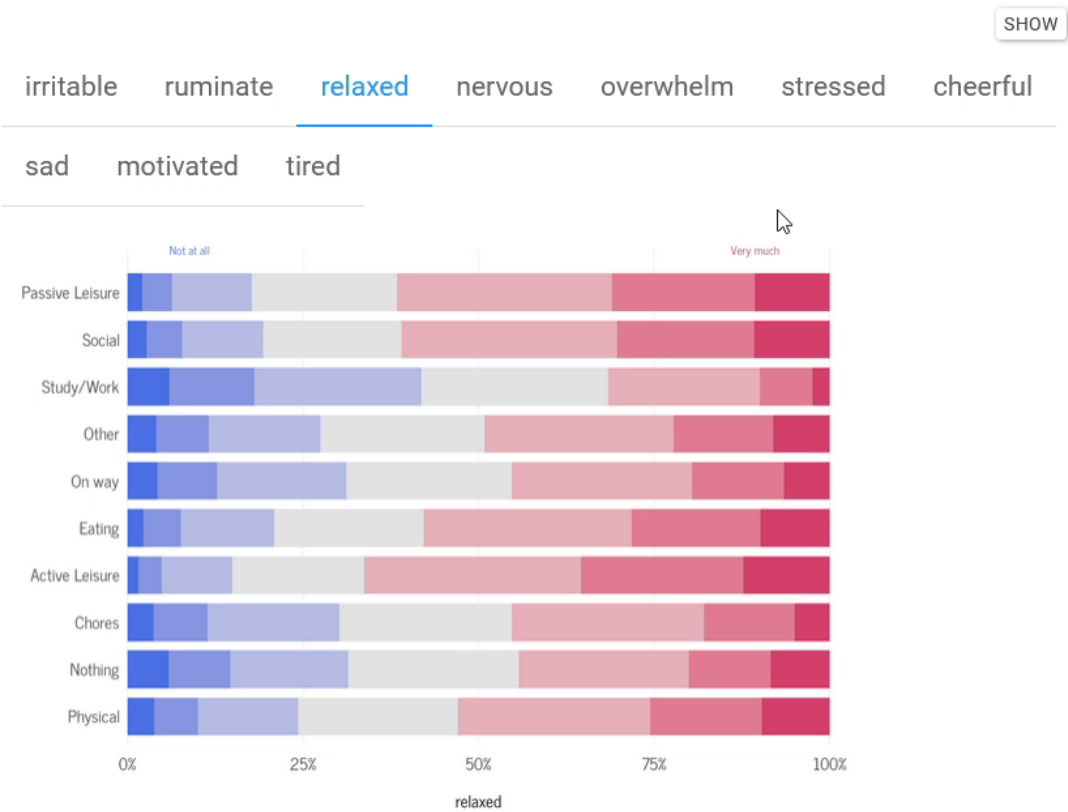


Multimodality:
multiple negative affect items with ~20% of individuals showing multimodality

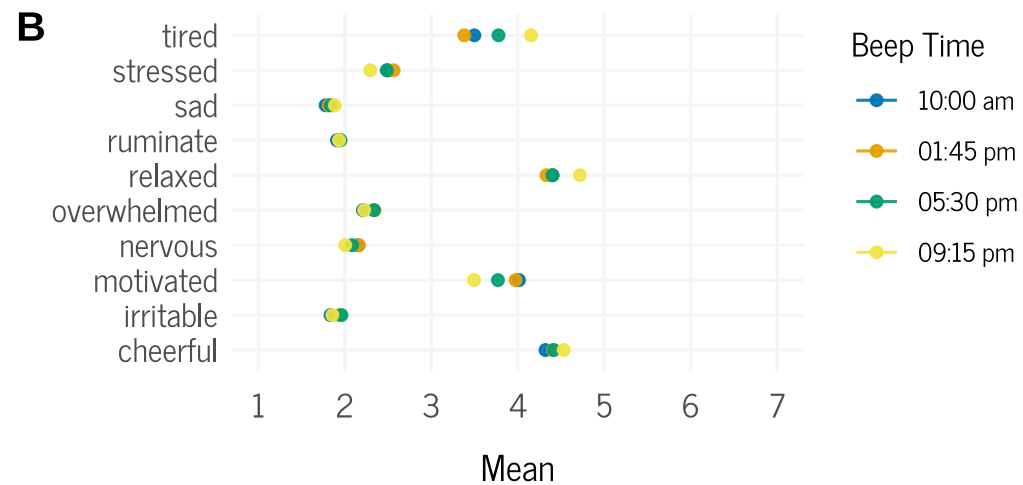
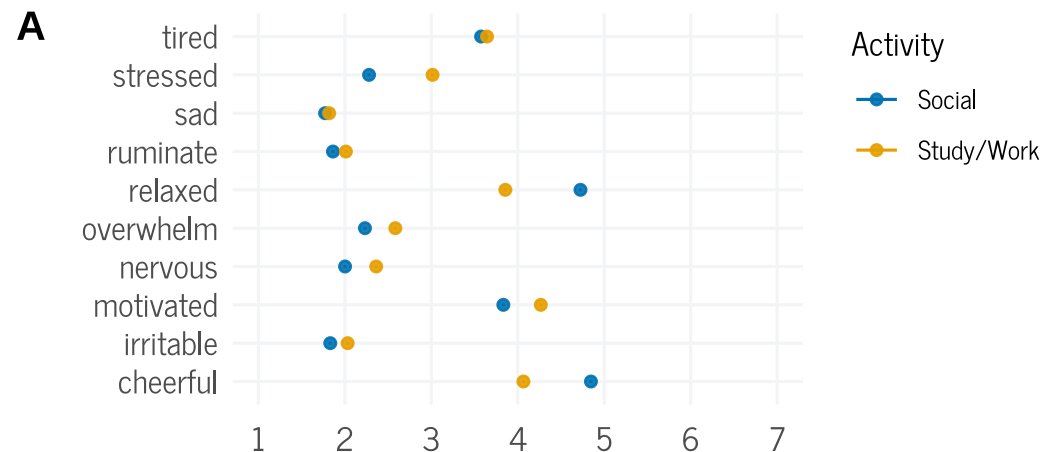
Context



Context

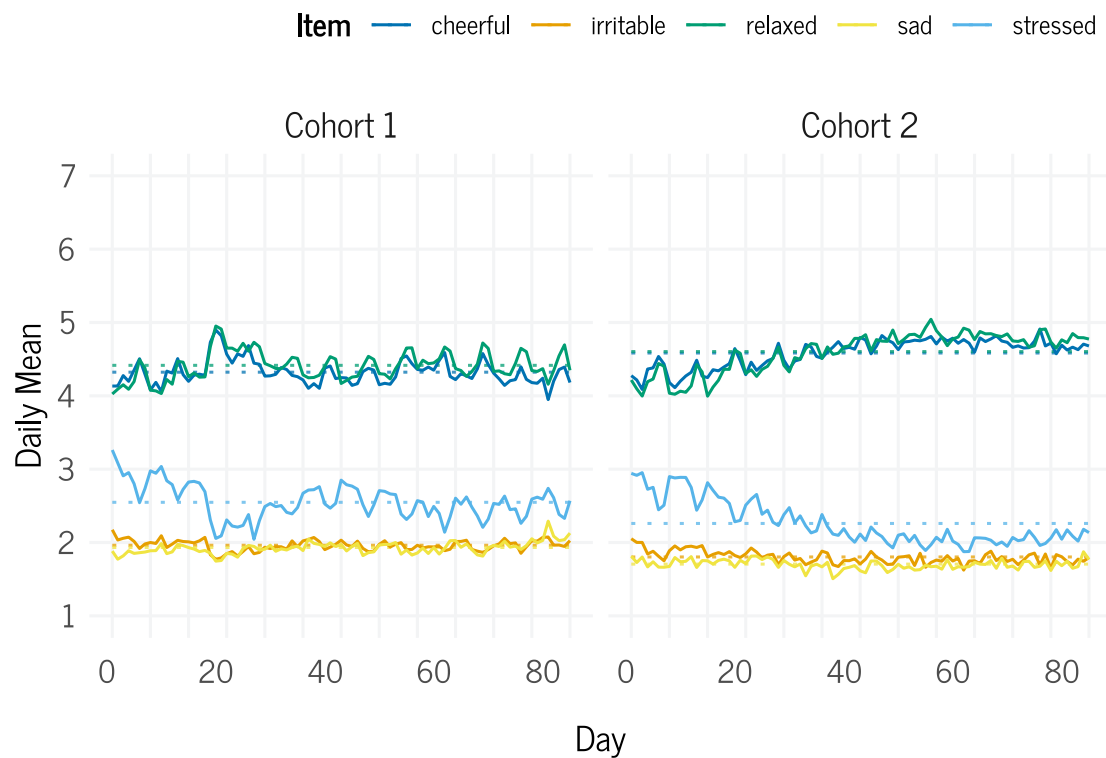


Context



Time

Aggregate change



Static Measures

		Baseline				
		PHQ-9	GAD-7	PSS-10	SCOFF	ASRM
EMA	anhedonia	0.52	0.4	0.48	0.16	0.05
	irritable	0.38	0.33	0.46	0.14	0.08
	depressed	0.46	0.43	0.49	0.19	0.07
	emo_reg	0.44	0.45	0.48	0.2	0.09
	ruminate	0.4	0.39	0.42	0.2	0.04
	nervous	0.45	0.48	0.5	0.24	0.11
	overwhelmed	0.39	0.4	0.47	0.18	0.12
	sad	0.4	0.38	0.46	0.16	0.07
	stressed	0.38	0.41	0.47	0.17	0.04
	tired	0.37	0.37	0.35	0.17	-0.07
	concentrate	-0.45	-0.33	-0.47	-0.14	0.04
	connected	-0.38	-0.19	-0.33	-0.18	0.04
	coping	-0.43	-0.31	-0.49	-0.15	0.05
	useful	-0.4	-0.23	-0.39	-0.13	0.08
	cheerful	-0.4	-0.25	-0.37	-0.17	0.12
	motivated	-0.31	-0.21	-0.3	-0.11	0.1
	outlook	-0.43	-0.29	-0.39	-0.18	0.13
	relaxed	-0.38	-0.32	-0.41	-0.17	0.09

Summary

Implications for WARN-D

- Improved understanding of items and their characteristics
- Structured workflow
- Extensive supplement and tutorial codefile

General

- Importance of descriptive work
- More quantitative and qualitative work on item responses, response processes

Thank you



The WARN-D
team



ERC Starting Grant
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Leiden University,
the Netherlands

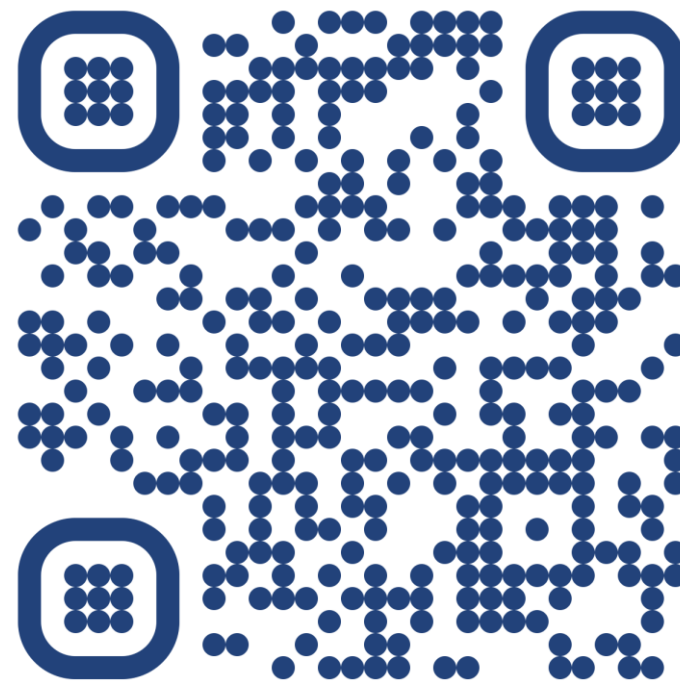


Keeping up



Slides & My Homepage

<https://bsiepe.github.io>



WARN-D

<https://warn-d.eiko-fried.com/>

Image Sources

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