



Marburg
University

Introducing openESM

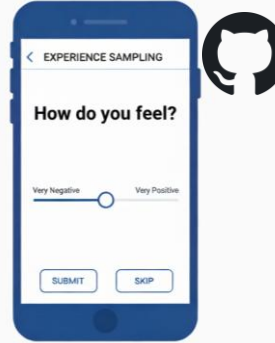
APS · May 2026

Björn Siepe Department of Psychology, Marburg University

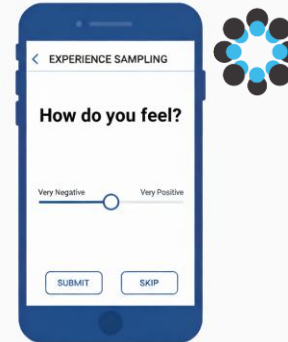




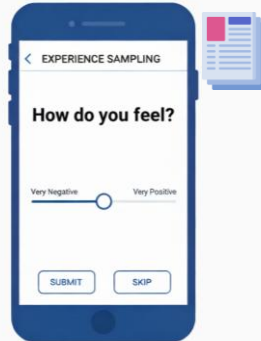
N = 150
Affect



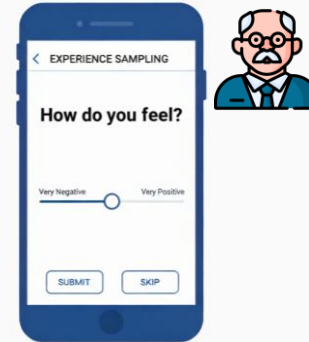
N = 79
Personality



N = 243
Depression



N = 104
Life Events



N = 150
Work Stress



N = 150
Affect



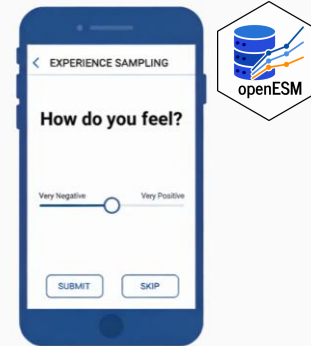
N = 79
Personality



N = 104
Life Events



N = 243
Depression



N = 150
Work Stress

Introducing openESM

60 datasets · >16,000 participants · >740,000 observations

Data: At least 20 individuals, 20 time points, 2 self-report items

 and  packages for easier access



Substantive Research

Test theories across
contexts



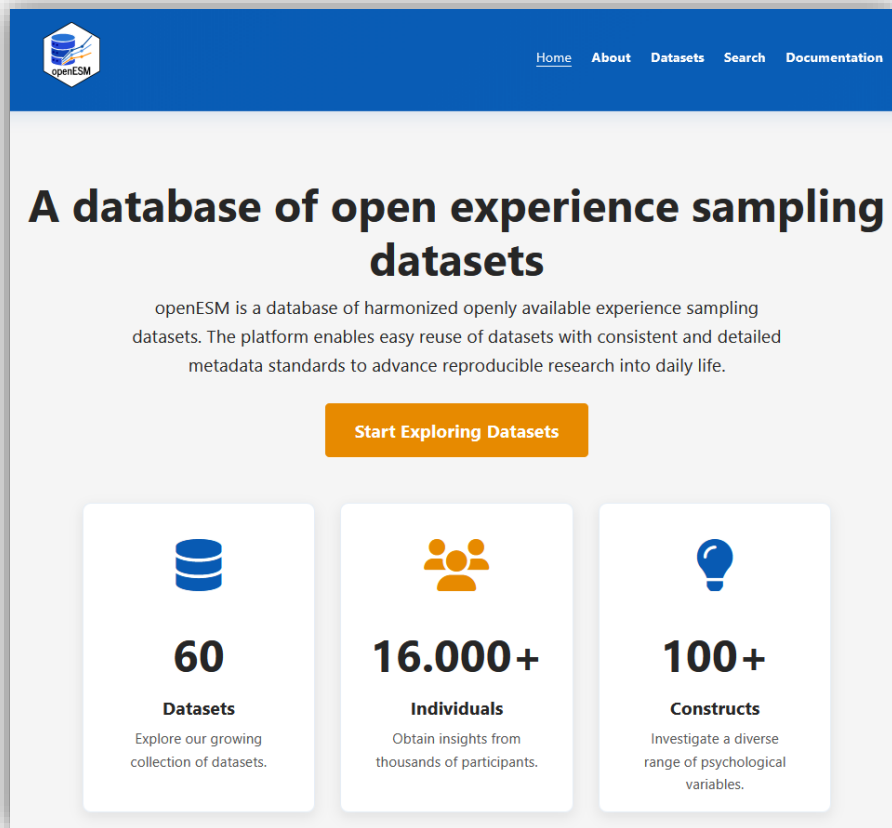
Design Research

Improve measurement
choices



Statistical Methods

Benchmark and develop
methods



The screenshot shows the homepage of the openESM website. At the top left is the openESM logo, and at the top right are navigation links for Home, About, Datasets, Search, and Documentation. The main heading is "A database of open experience sampling datasets". Below this is a descriptive paragraph about the platform's purpose. A prominent orange button labeled "Start Exploring Datasets" is centered. Below the button are three white cards, each with an icon, a large number, a category name, and a short description.




openESM

[Home](#) [About](#) [Datasets](#) [Search](#) [Documentation](#)

A database of open experience sampling datasets

openESM is a database of harmonized openly available experience sampling datasets. The platform enables easy reuse of datasets with consistent and detailed metadata standards to advance reproducible research into daily life.

[Start Exploring Datasets](#)

 60 Datasets Explore our growing collection of datasets.	 16.000+ Individuals Obtain insights from thousands of participants.	 100+ Constructs Investigate a diverse range of psychological variables.
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1. Cleaning

Harmonized NAs, removed
redundant columns

E.g., standardized ID, beep, day



2. Harmonization

Same variable names for
same questions

E.g., "depressed" across datasets

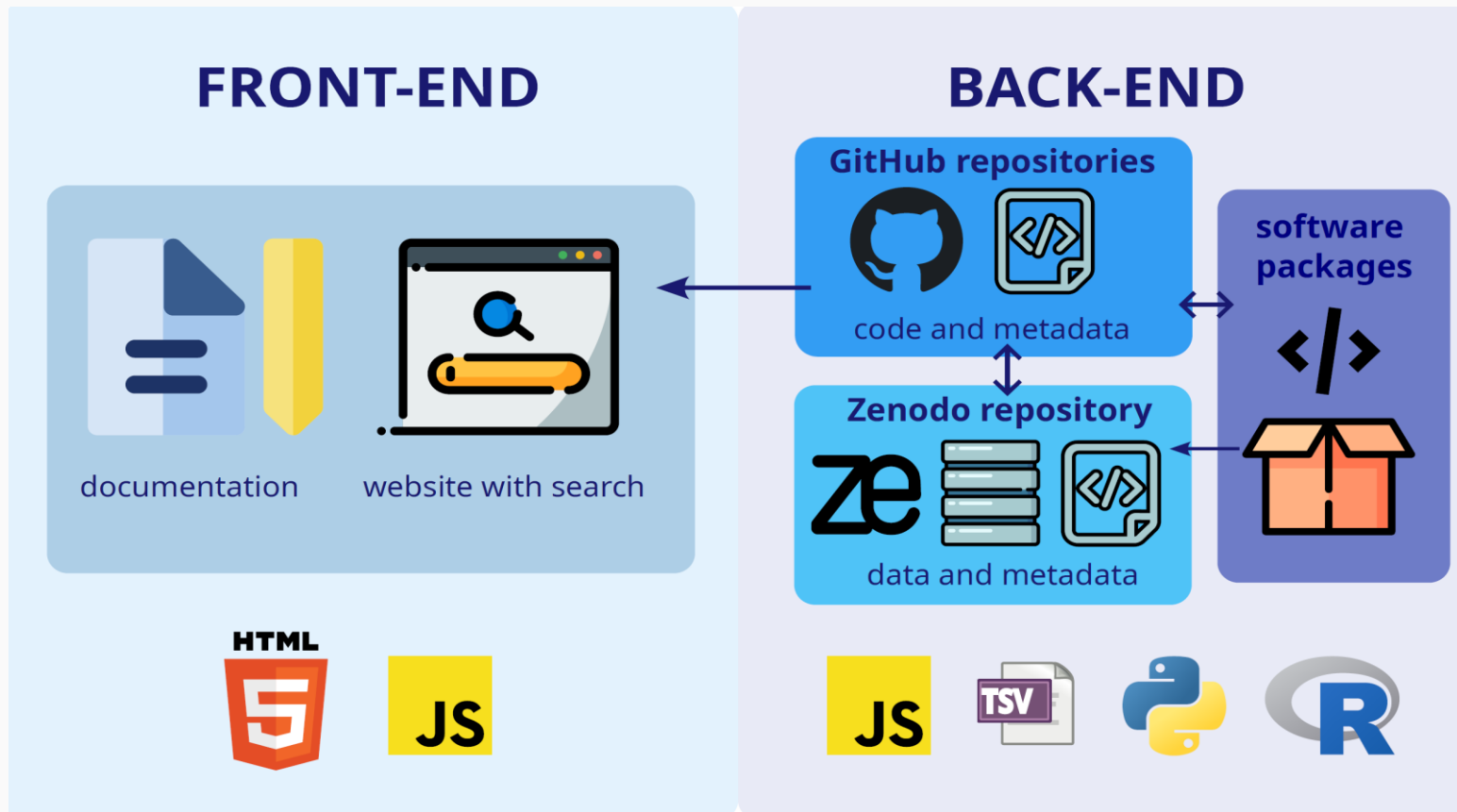


3. Annotation

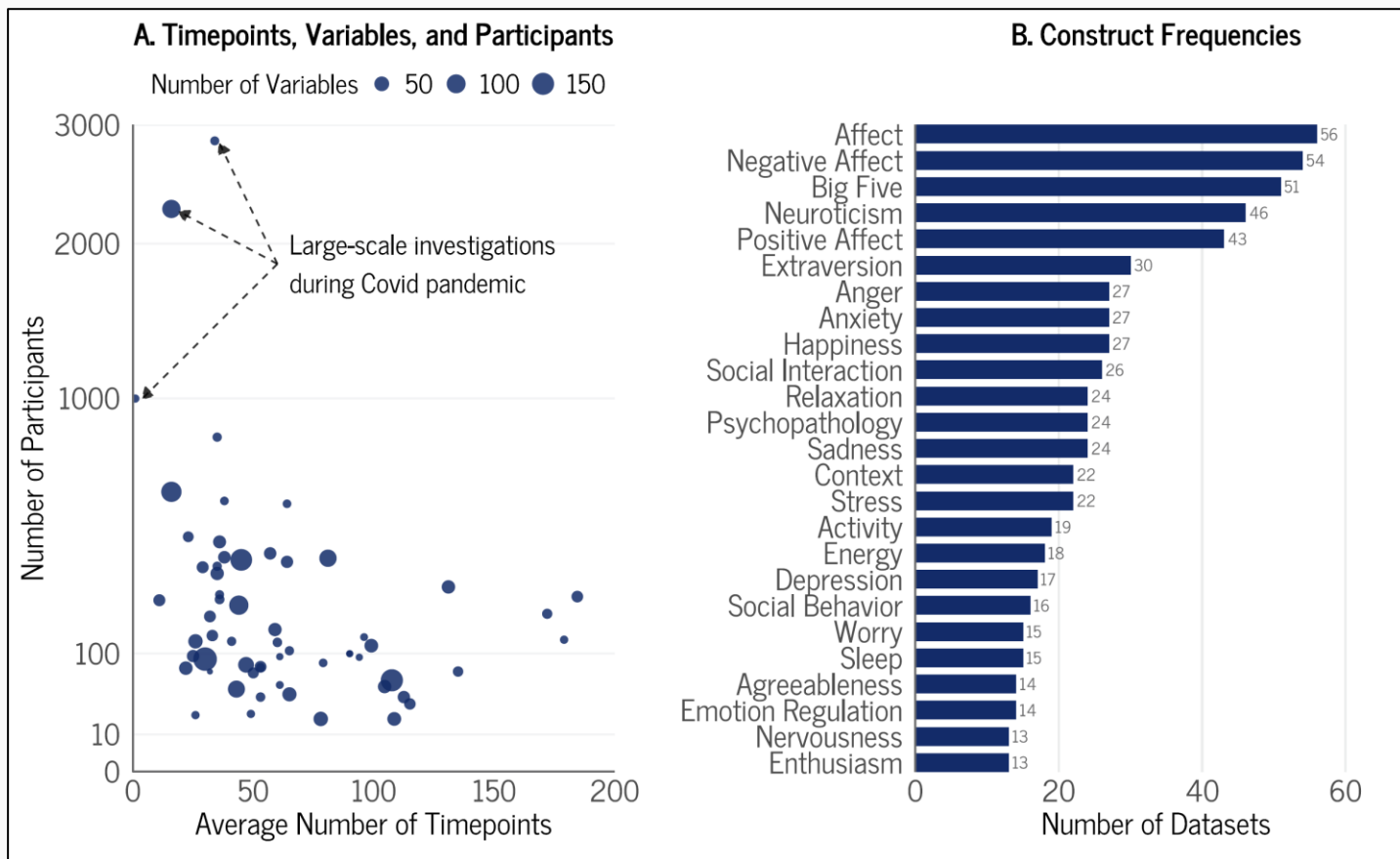
Hierarchical construct tags
for each item

*E.g., "angry" → anger, negative
affect, affect*

Architecture



What's inside



Example Analysis

Does high positive affect co-occur with low negative affect within persons?



DATA

39 datasets · 8,456 individuals · ~529K observations



HETEROGENEITY

How strongly do participants differ?
How much does the effect vary across samples?



ANALYSIS

Within-person momentary correlations: multi-level meta-analysis
Sensitivity analyses

Example Analysis

SUBSTANTIVE

Pooled $r = -0.49$ [95% CI: -0.54, -0.42]

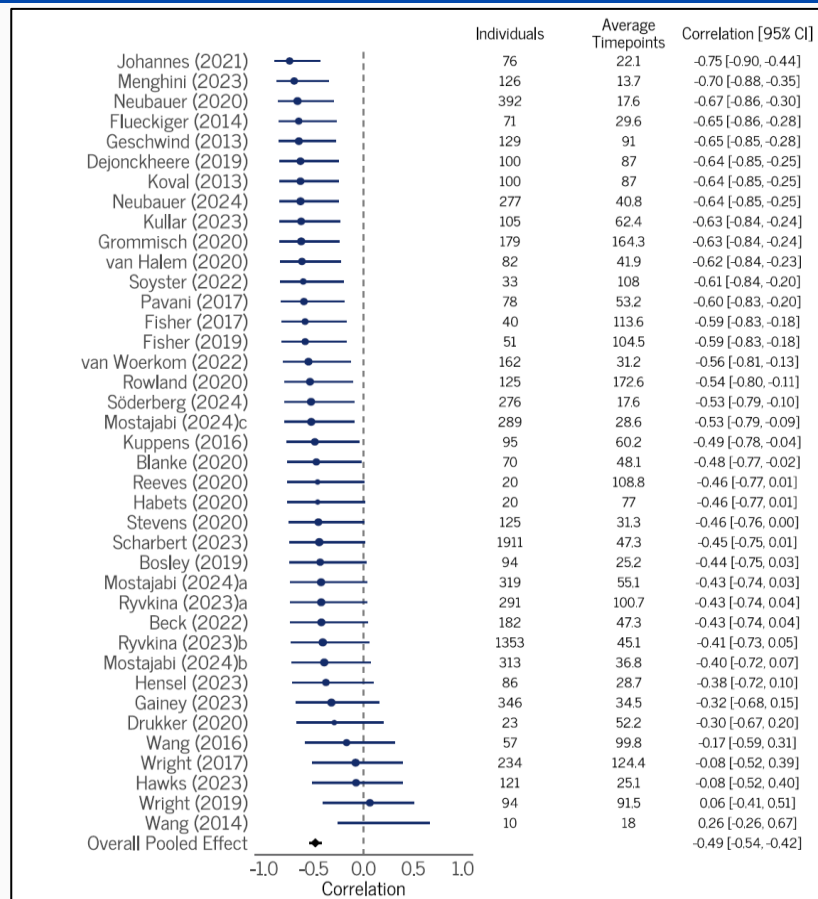
DESIGN

More prompts/day \rightarrow stronger negative correlation:

$\beta = -0.04$ (95% CI: [-0.07, -0.01])

STATISTICAL

Stable across 12 preprocessing and modeling choices

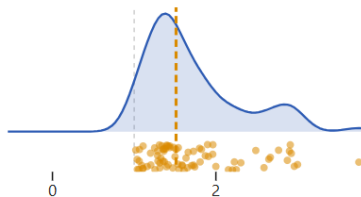


openESM for validation work

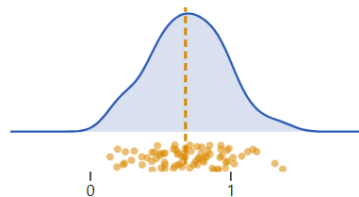
Descriptives > [Fried \(2021\)](#) > nervous

DATASET	ITEM	N INCLUDED	N EXCLUDED	ICC
Fried (2021)	nervous	79	0	0.373

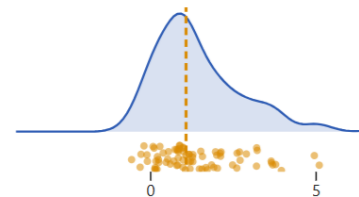
MEAN



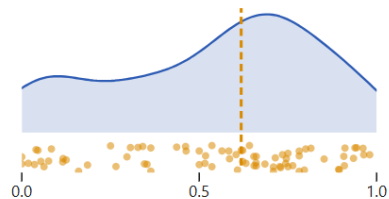
SD



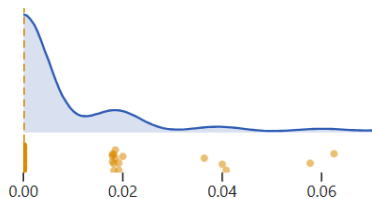
SKEWNESS



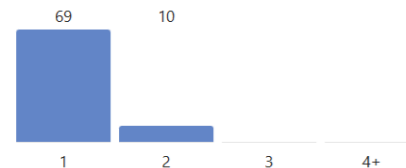
PROP. FLOOR



PROP. CEILING



N MODES



R REPLICATION
RESEARCH



Next Steps



Community

Involve researchers,
expand data diversity



Data & Metadata

Extend coverage and
documentation



Software

Add additional tools and
features

Goal:

Turn openESM into a continuously evolving community resource for cumulative ESM research

Collaborators



Anabel Büchner



Eiko Fried



Yong Zhang



Matthias Kloft



Daniel Heck



Jonas Haslbeck

Thank You!



<https://openesmdata.org>



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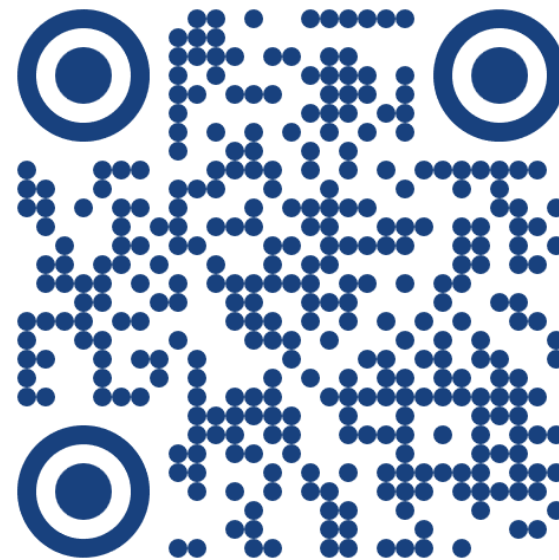


<https://bsiepe.github.io>



bsiepe.bsky.social

Slides & Preprint



Resources

- All icons either from PowerPoint or fontawesome
 - <https://fontawesome.com/icons/bluesky>
- Python Software Foundation. (n.d.). *The Python logo*. <https://www.python.org/community/logos/> (PSF Trademark Policy)
- R Foundation for Statistical Computing. (2016). *R logo*. <https://www.r-project.org/logo/> (CC-BY SA 4.0)