

The use of digitally assessed phenotyping parameters to model change in psychological therapy

- Development of an EMA feedback tool

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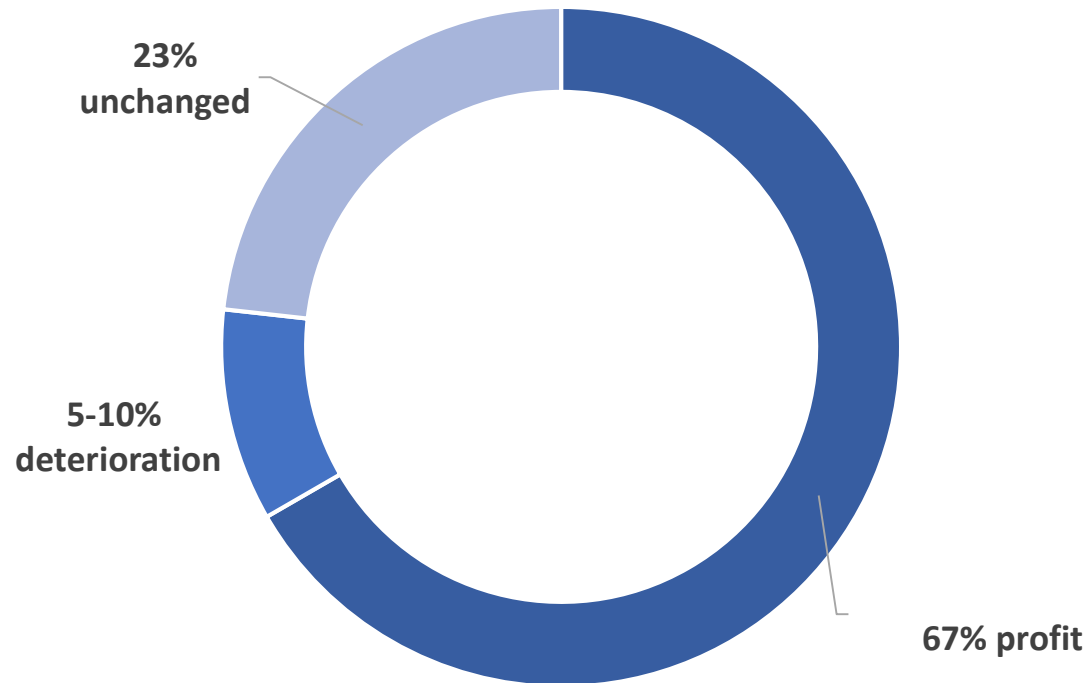
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Introduction

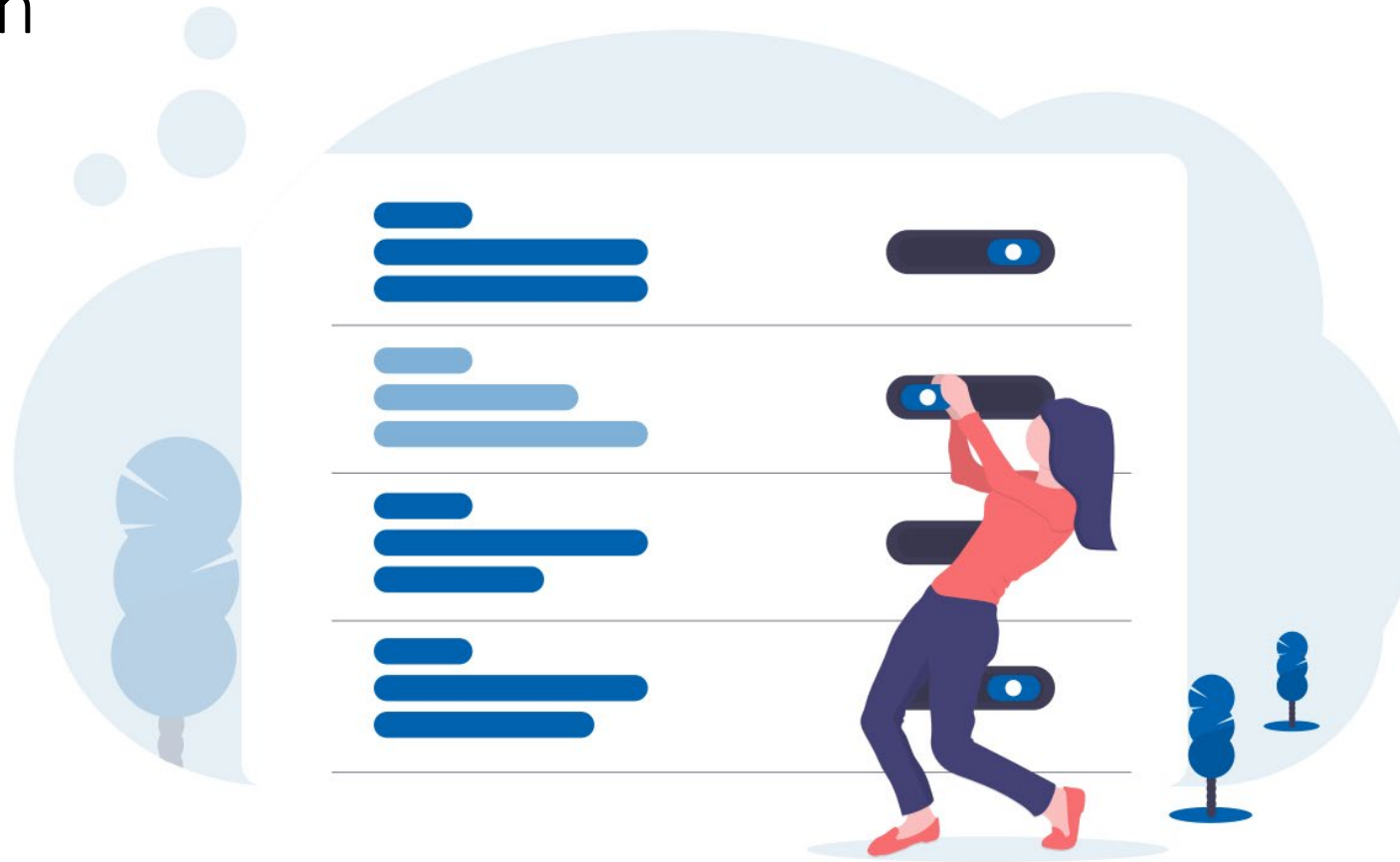


Improvement of psychological treatment



Theoretical background

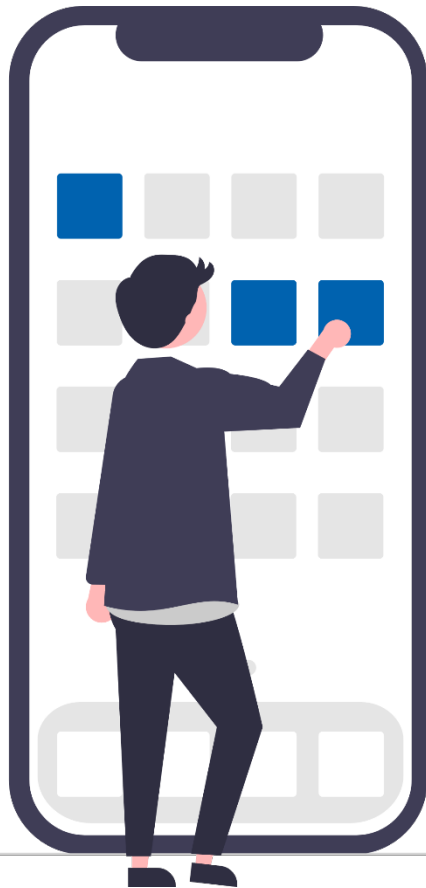
Personalization



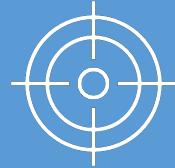
Trier Treatment Navigator
Psychotherapy portal
University of Trier



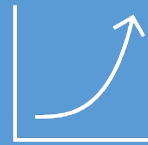
Ecological Momentary Assessment



No retrospective bias



Increased accuracy

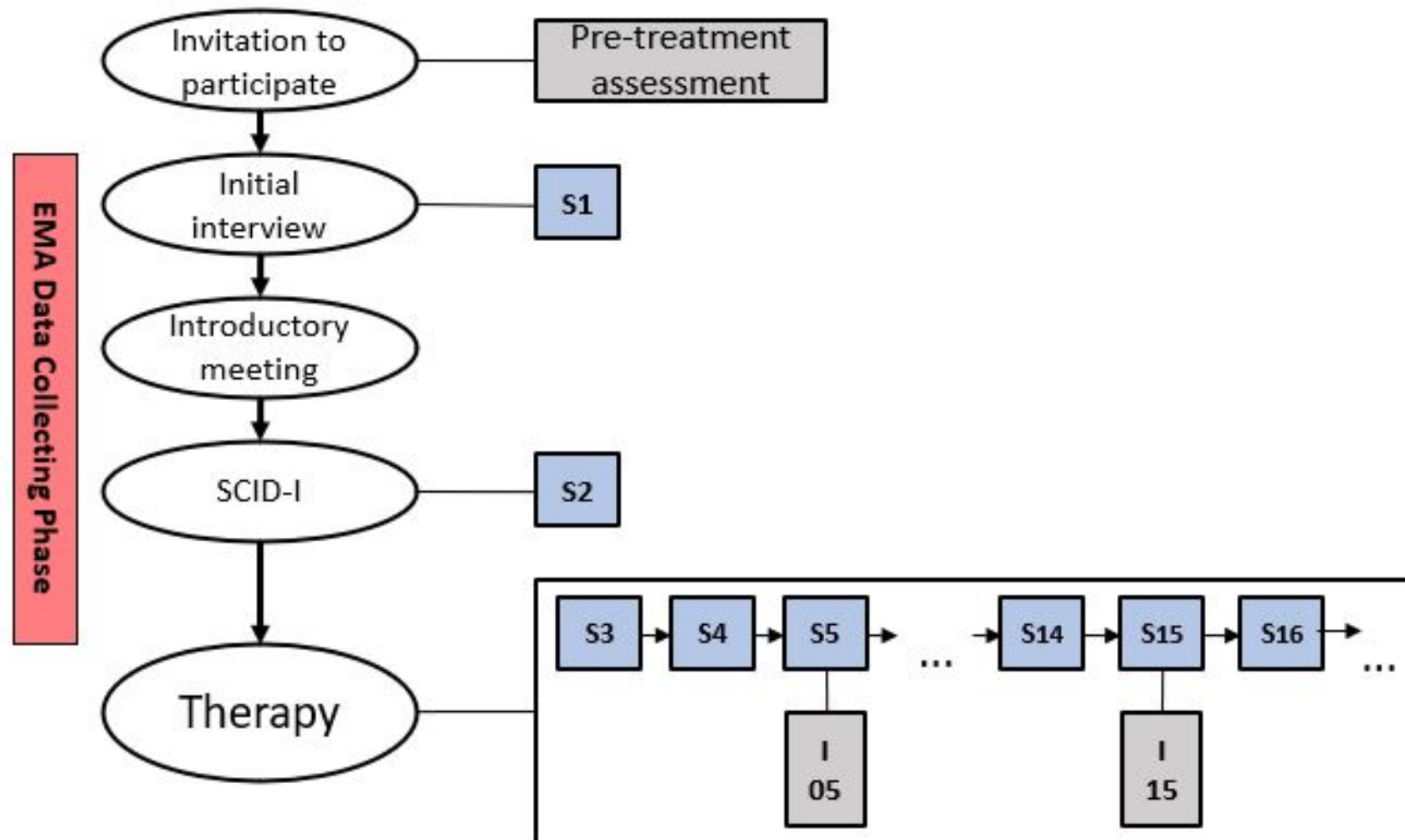


Dynamics can be captured
and mapped



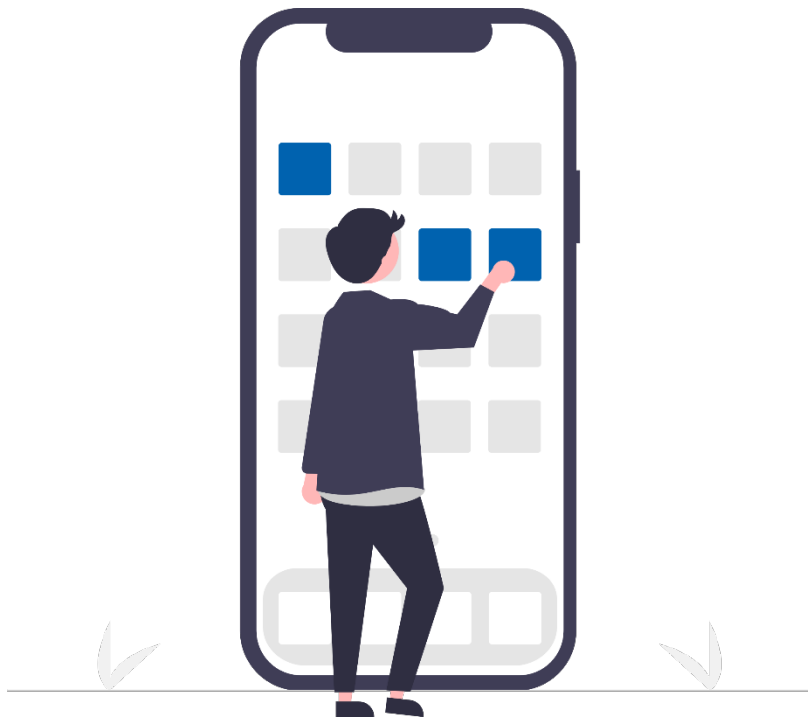
Very high
ecological validity

Study design




Study design

movisens 



 4 x per day

 26 items


NA

PA

Rumination

Avoidance

Life events

Ressources

Study design



Activity Tracker: Garmin Vivosmart 4



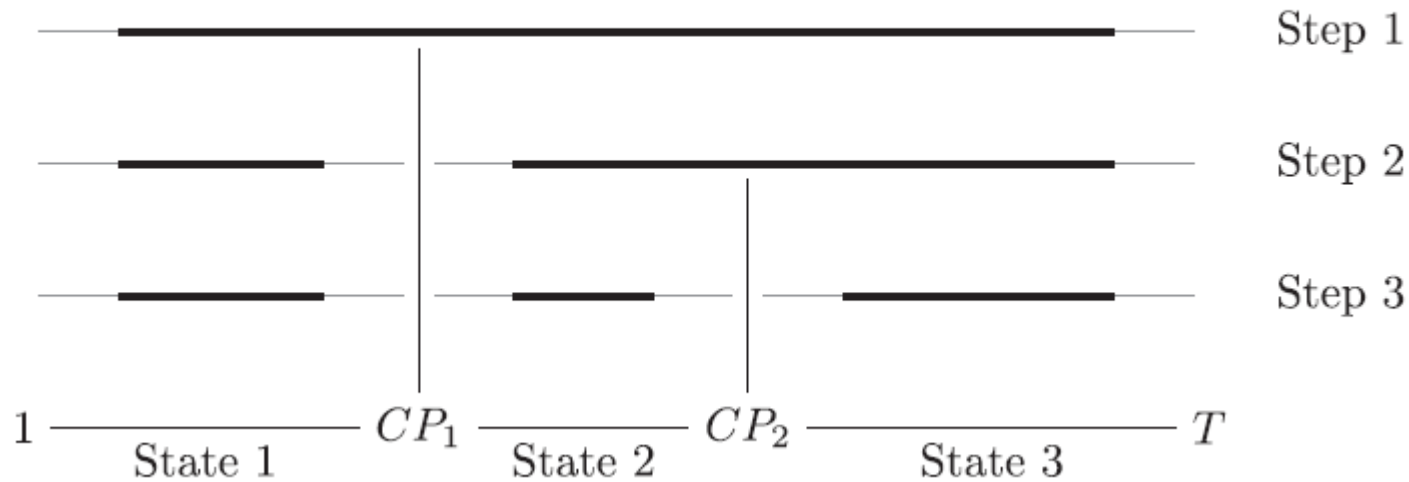
Time-varying change point autoregressive models

- Progression often not linear
- Symptom reduction or increase
- Gradual & abrupt changes

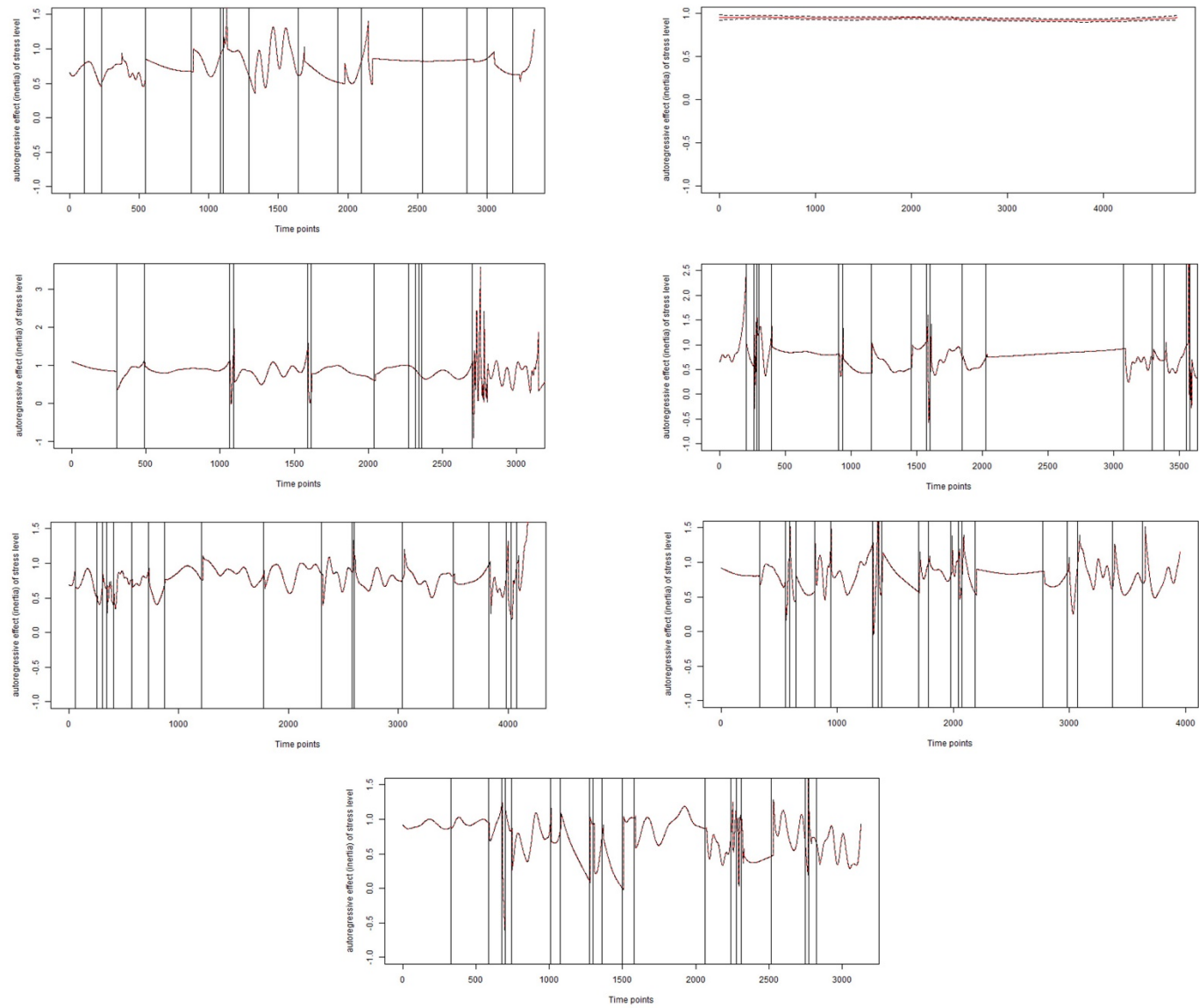


- **TVCP-AR (Albers & Bringmann, 2020)**
- inertia
 - Resistance to stress-induced change
- Number of abrupt changes?
- Gradual changes?

Time-varying change point autoregressive models



TVCP-AR



Correlational Analyses (N = 27)

Table 1 Product moment and partial correlations of the number of change points, stress level and outcome measures


Pre-treatment N=27				session 15 N=19				
outcome measure	M (SD)	number CPs	stress level	M (SD)	number CPs		stress	level
		r	r		r	r partial		r partial
HSCL-11	2.47 (0.65)	-0.35	0.58*	1.78 (0.31)	-0.25	0	0.24	-0.12
OQ-30	1.89 (0.4)	-0.31	0.43*	1.58 (0.5)	0.21	0.47	-0.29	-0.6
GAD-7	11.48 (3.95)	-0.33	0.39	13.41 (5.64)	0.16	0.31	-0.26	-0.51
PHQ-9	1.6 (0.46)	-0.34	0.27	1.95 (0.64)	0.15	0.33	-0.49*	-0.61

Developing an EMA Feedback Tool




EMA Feedback Tool


Trier Therapie Navigator
Psychotherapieportal
Universität Trier

 **Patientendetails für Code: 9998P99**

Meine Patientenübersicht / Patientenliste / Patientendetails

[GAS](#) [Übungen](#)

personalisierte Behandlungsempfehlung
 Behandlungsempfehlung [Zur Behandlungsempfehlung](#)

personalisierte Behandlungsanpassung
 Behandlungsanpassung [Zur Behandlungsanpassung](#)

Statusreport

Erhebung	Datum
Z05	2014-10-01
PR	2014-08-01
WZ	2014-06-01

Verlaufsreport

Letzte Erhebung	Z05 (oq30)
Datum	2014-10-01

[Verlauf](#)

Zuweisungs-Tool[Termin einstellen](#)

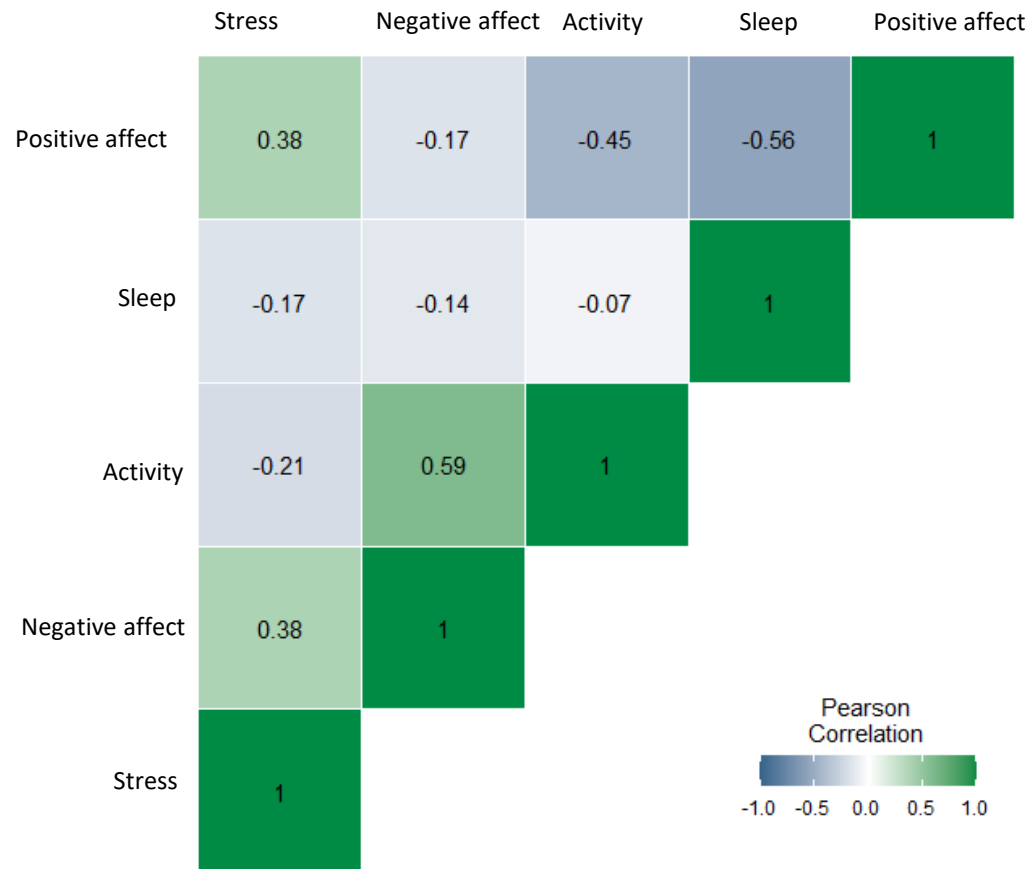
EMA Feedback Tool



The screenshot shows the 'Trier Therapie Navigator' interface. At the top, there is a header bar with the logo 'Trier Therapie Navigator' and 'Psychotherapieportal Universität Trier'. Below this, a navigation bar contains links: 'Meine Patientenübersicht', 'Patientenliste', 'Patientendetails', and 'Personalisierte Behandlungsempfehlung'. A blue button labeled 'PDF erstellen' is visible. The main content area is divided into several sections: 'Risk factors', 'Treatment recommendation', 'Symptomatic', and 'EMA Diagnostics' (which is highlighted). Below these are sections for 'Correlations and progress charts', 'Affect', 'Stress', 'Activity and sleep', and 'Items'.

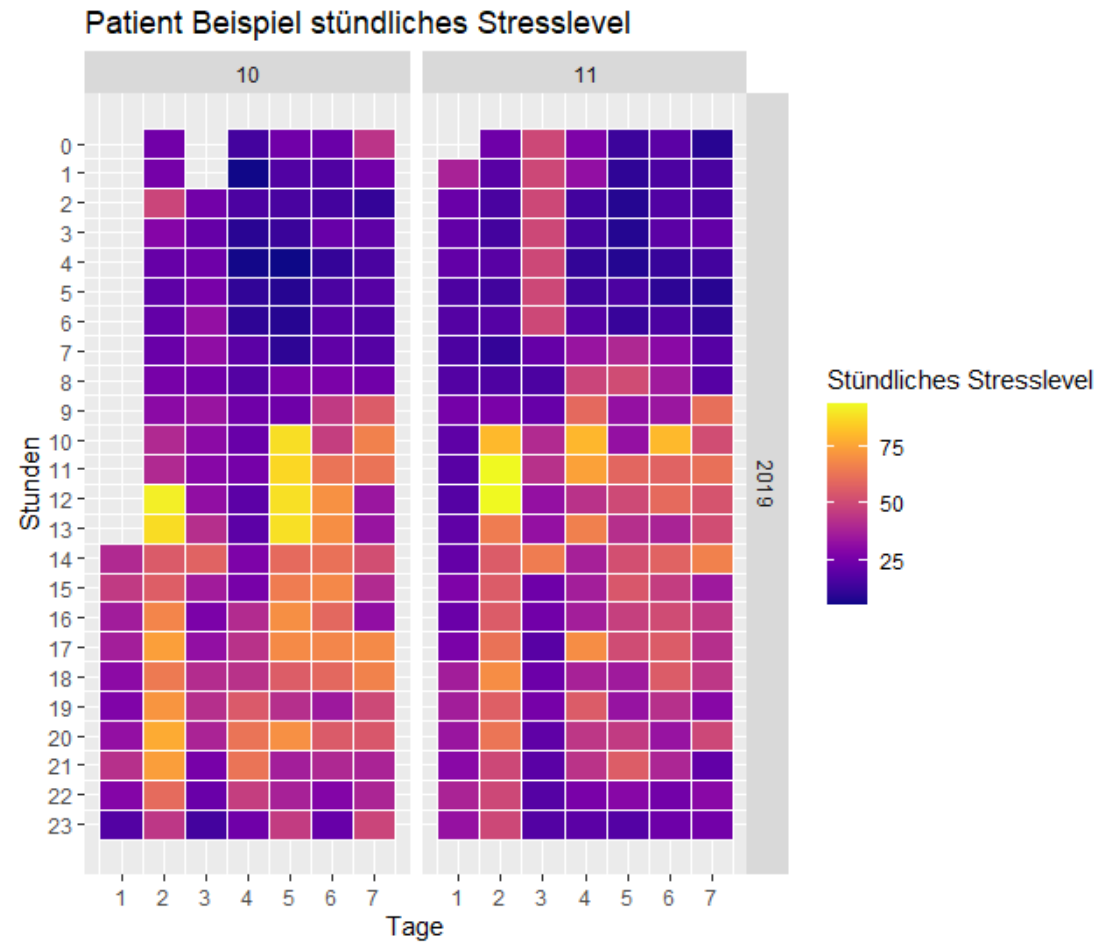
EMA Feedback Tool

Correlations and progress charts



EMA Feedback Tool

Stress





Albers, J. C., & Bringmann, L. F. (2020). Inspecting Gradual and Abrupt Changes in Emotion Dynamics With the Time-Varying Change Point Autoregressive Model. *European Journal of Psychological Assessment*, 36, 492–499. <https://doi.org/10.1027/1015-5759/a000589>

Hehlmann, M. I., Schwartz, B., Lutz, T., Gómez Penedo, J. M., Rubel, J. A., & Lutz, W. (2021). The use of digitally assessed stress levels to model change processes in CBT -A feasibility study on seven case examples. *Frontiers in Psychiatry*, 12, 258. <https://doi.org/10.3389/fpsyt.2021.613085>

Lambert, M. J. (2013). Outcome in psychotherapy: The past and important advances. *Psychotherapy (Chicago, Ill.)*, 50(1), 42–51. <https://doi.org/10.1037/a0030682>

Lutz, W., Schwartz, B., Hofmann, S. G., Fisher, A. J., Husen, K., & Rubel, J. A. (2018). Using network analysis for the prediction of treatment dropout in patients with mood and anxiety disorders. A methodological proof-of-concept study. *Scientific Reports*, 8(1). <https://doi.org/10.1038/s41598-018-25953-0>