

Towards Precision Psychotherapy for Non-Respondent Patients: **Recruitment Status and Descriptive Analysis of a Naturalistic Observational CBT Trial for Single-Case Prediction with Machine Learning**



Berlin

Freie Universität



Chantal Unterfeld^{1,*}, Till Langhammer¹, Felix Blankenburg^{2,3}, Susanne Erk⁴, Lydia Fehm¹, John-Dylan Haynes⁴, Stephan Heinzel⁵, Kevin Hilbert⁶, Frank Jacobi⁷, Norbert Kathmann¹, Christine Knaevelsrud⁸, Babette Renneberg⁹, Kerstin Ritter⁴, Nikola Stenzel⁷, Henrik Walter⁴, Ulrike Lueken^{1,10}

1 Department of Psychology, Humboldt-Universität zu Berlin, Berlin, 2 Neurocomputation and Neuroimaging Unit, Freie Universität Berlin, Berlin, 3 Berlin School of Mind and Brain, Berlin, 4 Charité -Universitätsmedizin Berlin, Berlin, 5 Department of Educational Sciences and Psychology, TU Dortmund University, Dortmund, 6 Department of Psychology, Health and Medical University Erfurt, Erfurt, 7 Psychologische Hochschule Berlin, Berlin, 8 Department for Clinical Psychological Intervention, Freie Universität Berlin, Berlin, 9 Department of Clinical Psychology and Psychotherapy, Freie Universität Berlin, Berlin, 10 German Center for Mental Health (DZPG), partner site Berlin/Potsdam

Background

Cognitive Behavioral Therapy (CBT) is effective but doesn't help all patients equally; less than 50% with internalizing disorders achieve meaningful improvement¹. The Research Unit RU 5187 investigates treatment non-response (TNR) in naturalistic CBT². We aim to identify bio-behavioral signatures of TNR and predict it at the individual level using machine learning. This poster presents the recruitment status and descriptive analysis of our ongoing trial toward precision psychotherapy for non-respondent patients.

Recruitment Status and Descriptive Analysis

Recruitment Status

We aim to recruit 585 patients from four academic outpatient clinics in Berlin to ensure our sample reflects typical outpatient populations. Minimal exclusion criteria will be applied to maximize ecological validity. Eligible participants will be adults diagnosed with internalizing disorders—including anxiety disorders, Obsessive-Compulsive Disorder (OCD), Post-Traumatic Stress Disorder (PTSD), and unipolar depression—who are scheduled to receive cognitive behavioral therapy (CBT) at the participating clinics. **Figure 2: Recruitment flowchart Figure 1: Recruitment process**



Descriptives







Therapy content

Figure 5: Usage of different therapy methods



Table 1: Descriptive data

Sample characteristics	All patients (n = 396)		HSA-HU (n = 119)		ZPHU (n = 57)		HSA-FU (n = 70)		HSA-PHB (n = 150)		χ²/F (df)	p
بع Female gender, n (%)	232	(58.58)	66	(55.46)	36	(61.40)	49	(70.00)	82	(54.67)	4.11(3)	0.25
de Age	34.12	(12.11)	37.43	(13.6)	35.02	(10.72)	31.44	(10.79)	32.34	(11.35)	5.39(3)	<.01 ¹
စို့ School (years)	16.92	(4.21)	17.05	(3.82)	15.78	(3.07)	18.1	(4.09)	16.71	(4.85)	3.43(3)	0.02 ²
Psychotropic drugs, n (%)	125	(31.57)	40	(33.61)	21	(36.84)	26	(37.14)	38	(25.33)	3.55(3)	0.314
CGI	4.67	(0.89)	4.92	(0.8)	4.62	(0.71)	4.8	(1.01)	4.4	(0.89)	6.81(3)	<.001 ³
BSI – GS	68.62	(30.19)	63.74	(32.04)	62.77	(26.40)	75.19	(31.08)	72.72	(28.99)	3.29(3)	<.05 ⁴
BDI-II	22.95	(9.48)	22.74	(10.22)	22.95	(9.39)	22.71	(9.25)	23.20	(9.07)	0.06(3)	0.981
ical												
HAM-A	20.72	(7.73)	18.82	(8.04)	18.55	(7.39)	24.83	(6.46)	20.35	(7.52)	5.08 (3)	0.002 ⁵
MADRS	21.19	(7.47)	26.45	(6.41)	19.73	(8.23)	25.03	(8.23)	19.72	(7.12)	6.73 (3)	<.001 ⁶
Y-BOCS	26.52	(5.32)	28.00	(4.31)	20.10	(5.76)	/	/	22.16	(3.92)	16.38 (2)	<.001 ⁷
CAPS-5	31.67	(8.26)	37.00	(8.49)	25.00	/	32.25	(8.88)	28.00	(6.08)	0.67(3)	0.584

Note: Means, standard deviations (SD), group comparision was conducted with ANOVA + Post-Hoc-Tests (Tukey HSD); CGI (Clinical Global Impressions), BSI -GS (Brief Symptom Inventory – Global Score), BDI-II (Beck Depression Inventory), HAM-A (Hamilton Anxiety Rating Scale), MADRS (Montgomery-Åsberg Depression Rating Scale), Y-BOCS (Yale-Brown Obsessive Compulsive Scale), CAPS-5 (Clinician-Administered PTSD) Scale for DSM-5)

¹FU/PHB<HU; ²ZPHU<FU; ³PHB<ZPHU/HU/FU; ⁴n.s on group-level; ⁵HU/ZPHU/PHB < FU; ⁶ZPHU/PHB < HU/FU; ⁷ZPHU/PHB < HU

References

Therapy Completion Overview:

On average, patients who have completed therapy so far have had 27.6 sessions over 311 days. (Note: Some therapies continue beyond the post-assessment, as our observation period is limited to only one year.)

Manual Adherence:

Manual adherence is generally rated as moderate to high

Manual Usage:

Approximately two-thirds of therapists use manuals during therapy.

Manual Orientation:

58.6% of therapy sessions are guided by the manual.

[1] Cuijpers, P., Miguel, C., Ciharova, M., Harrer, M., ... Karyotaki, E. (2024). Absolute and relative outcomes of psychotherapies for eight mental disorders: A systematic review and meta-analysis. World Psychiatry: Official Journal of the World Psychiatric Association (WPA), 23(2), 267–275. [2] Hahn, T., Nierenberg, A. A., & Whitfield-Gabrieli, S. (2017). Predictive analytics in mental health: Applications, guidelines, challenges and perspectives. *Molecular Psychiatry*, 22(1), Article 1.

> Presented at "Symposium PRECISION PSYCHOTHERAPY SIGNATURES, PREDICTIONS, & CLINICAL UTILITY", october 10, 2024 Berlin (Germany) Contact: chantal.unterfeld@hu-berlin.de

> > -no conflict of interests-