

«Innovazione digitale e terapeutica per la salute mentale »

Roma, 17 maggio 2024

Dott.ssa Graziella Madeo

Direttrice Unità di Neuromodulazione e
Ricerca Clinica



BRAIN&CARE
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Il gruppo di lavoro



Produzione, sviluppo e commercializzazione di beni e servizi innovativi ad alto valore tecnologico a sostegno della diagnosi e cura a favore di soggetti con condizioni psichiatriche e disagio psicologico.



La salute mentale da un angolo
differente

Il gruppo di lavoro



BRAIN&CARE
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- ✓ Neurologo
- ✓ Psichiatra
- ✓ Internista



- ✓ Psicologo
- ✓ Psicoterapeuta

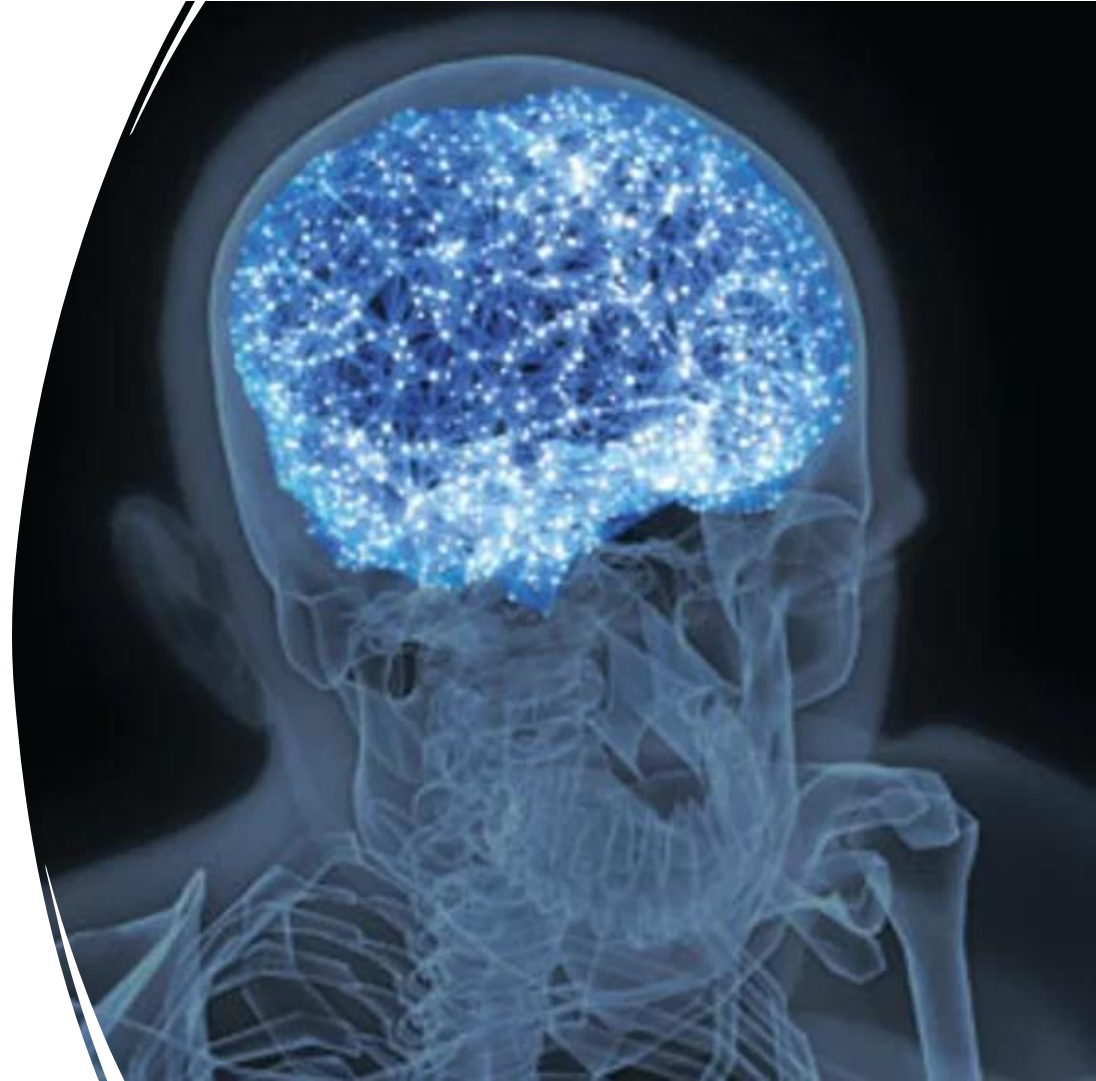


- ✓ Tecnico di Neurofisiopatologia
- ✓ Fisioterapista
- ✓ Tecnico della riabilitazione cognitiva e psichiatrica
- ✓ Nutrizionista



How is our brain organized?

100 trillion brain
connections
(synapses)





Electrical

Normal brain transmission: milliseconds

Brain plasticity: 30 minutes to a lifetime

Chemical

synapse

TMS

Transcranial Magnetic Stimulation

Non-invasive brain stimulation technique

Brought to the clinic in 1985

19,000 articles on TMS

**FDA approved for depression,
anxious depression,
OCD, smoking cessation**

**CE approval in 2021
for psychoactive substances use disorders**

Courtesy of National Geographic



Neurobiological effects of rTMS

CHEMICAL/METABOLIC

VASCULAR

PLASTICITY

ANTI-INFLAMMATORY

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Changing Cerebral Blood Flow, Glucose Metabolism, and Dopamine Binding Through Transcranial Magnetic Stimulation: A Systematic Review of Transcranial Magnetic Stimulation-Positron Emission Tomography Literature

Kathie R. Kinney and Colleen A. Harlan
Michael Potter, ASSOCIATE EDITOR
Pharmacological Reviews October 2022, 74 (6) 919-932; DOI: <https://doi.org/10.1101/2022.08.12.200579>

A Review of Transcranial Magnetic Stimulation in Vascular Dementia

Giovanni Pennisi^a, Raffaele Ferri^a, Mariagiovanna Cantone^a, Giuseppe Lanza^a,
Manuela Pennisi^a, Luisa Vinciguerra^a, Giulia Malagumera^a, Rita Bella^a

Departments of Pharmacology and Therapeutics, University of Calabria, Italy and Pharmacology of Neurobiology LP

ARTICLE

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[Link to this Preprint](#) OPEN

Repetitive magnetic stimulation induces plasticity of inhibitory synapses

Maximilian Lenz¹, Christos Galanis¹, Florian Müller-Dahlhaus², Alexander Optič^{3,4}, Corette J. Wierenga⁵,
Gábor Szabó⁶, Ulf Ziemann⁷, Thomas Deller⁸, Klaus Fritke⁹ & Andras Vlachos¹

See it at: [Journal of Neuroinflammation](#) (2024) 13:138
DOI: [10.1186/s12974-024-02616-8](https://doi.org/10.1186/s12974-024-02616-8) [Journal of Neuroinflammation](#)

SHORT REPORT [Open Access](#)

Repetitive transcranial magnetic stimulation reduces remote apoptotic cell death and inflammation after focal brain injury

Valeria Seno¹, Elia Bischia¹, Laura Latini¹, Veronica Ghiglieri^{1,2}, Fabrizio Cacace¹, Valeria Corda¹,
Marco Molteni^{1,3} and Maria Teresa Vicini^{1,4}

Add-on rTMS for the acute treatment of depressive symptoms is probably more effective in adolescents than in adults: Evidence from real-world clinical practice

Journal of Neurology (2022) 269:5283–5301
https://doi.org/10.1007/s00415-022-11236-2

REVIEW



Transcranial magnetic stimulation treatment in Alzheimer's disease: a meta-analysis of its efficacy as a function of protocol characteristics and degree of personalization

Arianna Menardi^{1,2} · Lisa Dotti³ · Ettore Ambrosini^{1,2,3} · Antonino Vallesi^{1,2}

Received: 29 March 2022 / Revised: 14 June 2022 / Accepted: 14 June 2022 / Published online: 4 July 2022
© The Author(s) 2022

Received: September 30, 2020 / Revised: January 15, 2021 / Accepted: February 1, 2021

(onlinelibrary.wiley.com) DOI: 10.1111/ner.13376

Multimodal Elements of Suicidality Reduction After Transcranial Magnetic Stimulation

Jennifer Barredo, PhD^{1,2,3}; Yosef Berlow, MD, PhD^{1,2}; Hannah R. Swearingen, BA²; Benjamin D. Greenberg, MD, PhD^{1,2,3}; Linda L. Carpenter, MD^{1,3}; Noah S. Philip, MD^{1,2,3}

Received: 28 February 2019 | Accepted: 15 March 2019

DOI: 10.1002/brb3.1284

ORIGINAL RESEARCH

Transcranial magnetic stimulation in anxiety and trauma-related disorders: A systematic review and meta-analysis

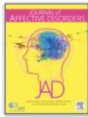
Patricia Cirillo^{1,2,3} | Alexandra K. Gold^{4,5} | Antonio E. Nardi³ | Ana C. Ornelas³ | Andrew A. Nierenberg^{1,5,6} | Joan Camprodon^{1,2,5} | Gustavo Kinrys^{1,5,6}

¹Department of Psychiatry, Massachusetts General Hospital, Boston, Massachusetts

Abstract



Journal of Affective Disorders
Volume 276, 1 November 2020, Pages 305-311



Research paper

Comparative efficacy of add-on rTMS in treating the somatic and psychic anxiety symptoms of depression comorbid with anxiety in adolescents, adults, and elderly patients—A real-world clinical application

Ling Zhang^{a,1}, Junjuan Zhu^{b,1}, Tianhong Zhang^{b,2}, Qiufang Jia^a, Li Hui^a, Hongliang Zhu^a, Yingying Tang^b, Jijun Wang^b

Obiettivi e destinatari del lavoro

L'obiettivo principale è di aumentare l'emersione e la consapevolezza della/e malattia/e psichica/he attraverso le seguenti attività:

- ✓ favorire lo **screening** per l'identificazione dei soggetti portatori del/i disturbo/i con questionari validati attraverso prodotti digitali (app, web, bot)
- ✓ facilitare il contatto con servizi idonei all'approfondimento diagnostico anche attraverso sistemi di **teleconsulto** (voip)
- ✓ facilitare l'accesso a **risorse tecnologiche e digitali** a supporto o in alternativa ai trattamenti tradizionali:
 - trattamenti psicoterapeutici erogati in remoto attraverso app/web con gamification
 - trattamenti di stimolazione cerebrale non invasiva (stimolazione magnetica transcranica – **TMS, stimolazione transcranica** a corrente diretta – tDCS)
 - trattamenti di neuromodulazione in ambienti arricchiti (virtual reality - VR).

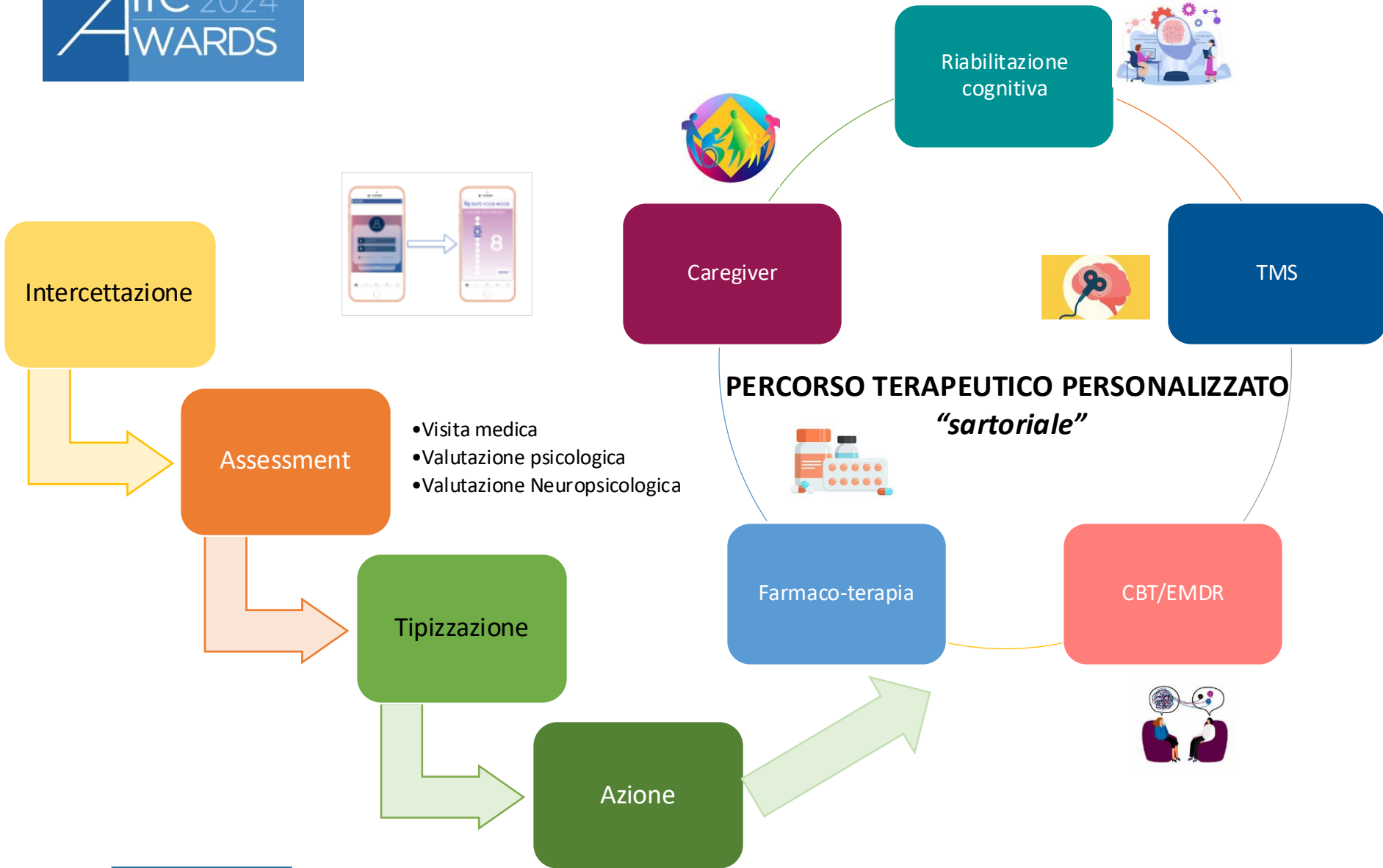
Obiettivi e destinatari del lavoro

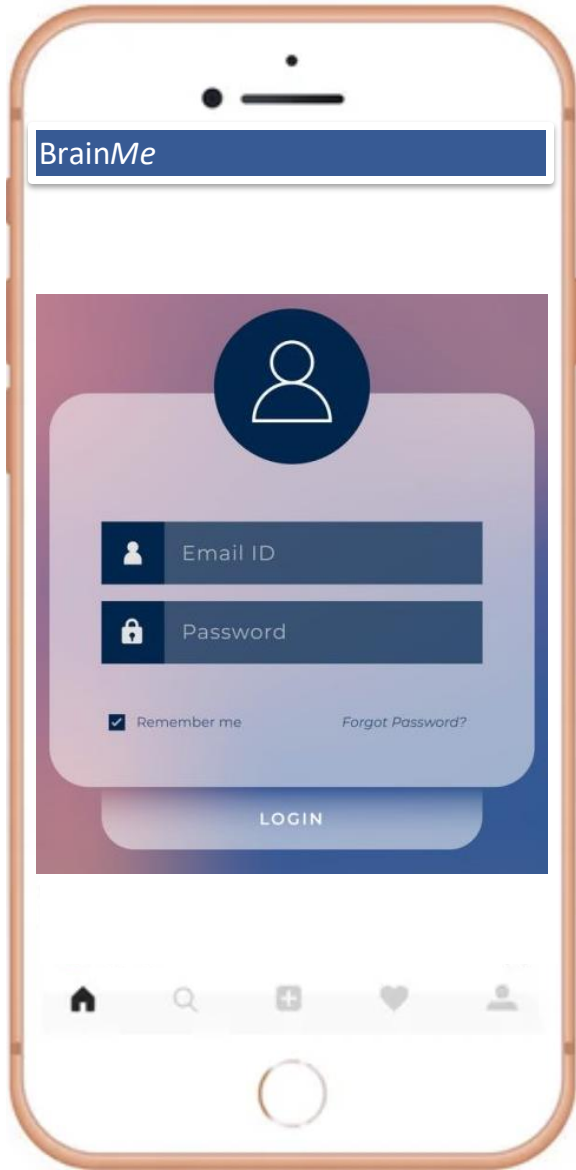
Persone con malattie psichiatriche o condizioni di disagio psicologico e/o I loro caregivers:

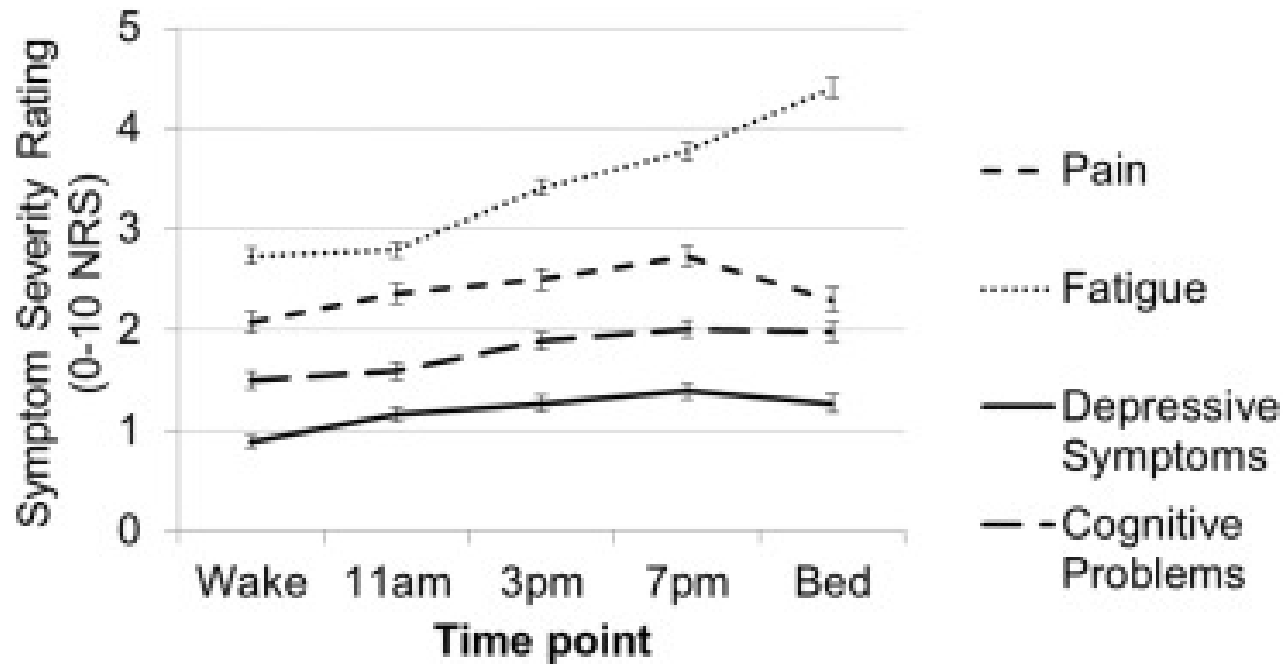
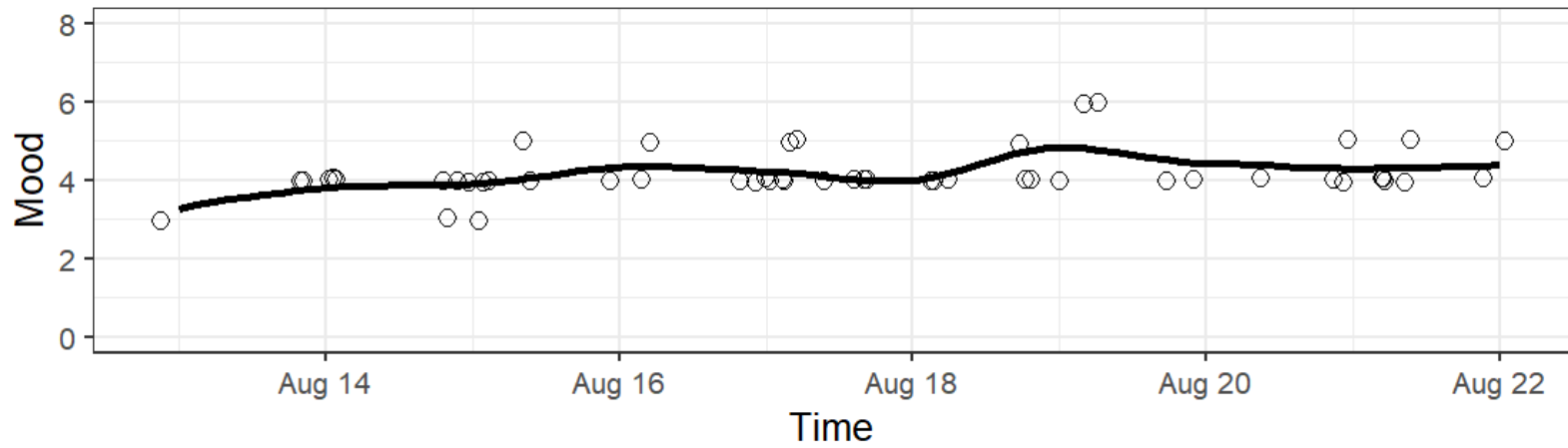
- ✓ Dipendenze da sostanze e comportamentali
- ✓ Depressione unipolare e bipolare
- ✓ Ansia
- ✓ Insonnia
- ✓ Disturbi della nutrizione e dell'alimentazione

Sommerso difficilmente contattabile con la tradizionale modalità di offerta.

Nella maggior parte dei casi l'esordio di questi disturbi, spesso associati tra loro, si colloca nell'età adolescenziale o in giovani adulti i quali hanno un approccio favorevole all'utilizzo di sistemi digitali e connessi.









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