

Detecting Post-Traumatic Stress Risk via ML Analysis of Dissociative Tendencies and Arousal Dysregulation

Hadassah N. Griffin^{1*}, Spyridon. Derdemezis¹, Guillermo. Umpiérrez-Failache², Charlotte. Wray³

¹ Department of Psychology, Georgia State University, Atlanta, GA, USA

² Department of Psychiatry and Human Behavior, Brown University, Providence, RI, USA



³ Department of Psychiatry and Behavioral Neurosciences, Wayne State University, Detroit, MI, USA

* Corresponding author email address: hadasgriffin93@gmail.com

Editor

Valiollah Farzad
Associate Professor, Department of
Psychology and Counseling,
KMAN Research Institute,
Richmond Hill, Ontario, Canada
v.farzad@kmanresce.ca

Reviewers

Reviewer 1: Alicia L. Nugent
Department of Psychology, Towson University, Towson, Maryland, USA.
Email: alicinugent@towson.edu
Reviewer 2: Sarah Turner
Faculty of Health Sciences, Simon Fraser University, Vancouver, BC, Canada.
Email: sarahturner@wayne.edu

1. Round 1

1.1. Reviewer 1

Reviewer:

The manuscript addresses a compelling intersection between clinical psychology and machine learning; however, the narrative sometimes overemphasizes descriptive psychopathology at the expense of articulating a clear mechanistic rationale for using computational models. A sharper focus on how dissociative processes and arousal dysregulation translate into quantifiable features suitable for algorithmic modeling would significantly strengthen the conceptual coherence of the study.

Although the introduction presents a wide array of trauma-related phenomena, it would benefit from a more disciplined synthesis that funnels these diverse elements into a concise justification for the study design. Currently, the broad scope risks diluting the central argument, and prioritizing only the most theoretically and empirically relevant constructs would enhance the manuscript's analytical depth.

Given the presence of symptom overlap between PTSD and other internalizing disorders, it would be useful for the authors to discuss how diagnostic heterogeneity may affect the robustness of machine learning models. Addressing potential confounding or multicollinearity issues, and describing any remedies undertaken, would enhance the manuscript's methodological rigor.

While the discussion highlights the implications of trauma and PTSD broadly, it does not yet clearly articulate the translational significance of the machine learning findings. Expanding on potential use-cases—clinical screening, prevention programs, digital mental health tools—would help clarify how the model could meaningfully contribute to real-world practice.

Authors revised and uploaded the document.

1.2. Reviewer 2

Reviewer:

The literature review cites a number of recent or forthcoming studies, but it would be helpful to anchor these observations in a broader historical context. Integrating classical and widely recognized PTSD frameworks (e.g., DSM-based conceptualizations, foundational dissociation theories) would situate the research within a more established scholarly lineage and increase the credibility of the argumentation.

The manuscript would benefit from a clearer operational definition of dissociation and arousal dysregulation, particularly because these constructs are multifaceted and sometimes inconsistently measured across studies. Explicitly distinguishing between trait-level and state-level manifestations, and explaining which aspects were modeled, would allow readers to better understand the theoretical precision of the study.

The description of the study population remains vague, making it difficult to evaluate the external validity of the findings. Providing demographic characteristics, trauma typology, recruitment procedures, and potential socio-cultural influences would help readers assess sample representativeness and interpret the applicability of the machine learning outcomes.

A more explicit exposition of the study's hypotheses—both statistical and theoretical—is needed. While the manuscript implies an expectation that dissociation and arousal dysregulation contribute to PTSD risk prediction, articulating these hypotheses explicitly would provide a stronger structural backbone and guide the interpretation of results.

The manuscript would be strengthened by expanding its methodological transparency, particularly regarding preprocessing steps such as missing data handling, feature scaling, dimensionality reduction, and balancing of outcome classes. Providing a succinct summary of these choices and their justifications is essential for reproducibility and critical evaluation.

Authors revised and uploaded the document.

2. Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.