KMAN PUBLISHING INSTITUTE
Journal Website

Article history:
Received 10 January 2026
Revised 22 March 2026
Accepted 28 March 2026
Published online 01 April 2026

Journal of Personality and Psychosomatic Research

Open Peer-Review Report

E-ISSN: 3041-8542

Predicting Somatic Symptom Disorder Using Facets of Neuroticism, Somatosensory Amplification, and Interoceptive Sensitivity: An Explainable Machine Learning Analysis

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1. Round 1

1.1. Reviewer 1

Reviewer:

The methodological description of the sample and procedures is generally adequate, yet there are critical reporting inconsistencies that must be corrected before publication: the total N is referred to with placeholders (“exactly participants”) in the text, while Table 1 indicates N = 845, and some performance metrics (accuracy, AUC) are also missing or omitted in the Discussion; these inconsistencies undermine transparency and reproducibility, so all placeholders should be replaced with exact values and cross-checked against tables, and the authors should explicitly report the final sample size, inclusion/exclusion flow, and any attrition or data cleaning steps.

The SHAP-based explainability component is a major strength, particularly in distinguishing the relative impact of somatosensory amplification, specific neuroticism facets, and interoceptive subdimensions; nonetheless, the interpretive narrative occasionally overstates causal claims—for example, describing somatosensory amplification as the “core mechanism” of SSD based entirely on SHAP importance can be misleading, as SHAP quantifies contribution to prediction, not etiological primacy; the authors should temper such language, clearly distinguish between predictive importance and causal mechanisms,

and consider adding sensitivity analyses (e.g., alternative model specifications, reduced feature sets) to demonstrate the robustness of feature rankings.

The discussion of clinical implications is rich and clinically intuitive—particularly the emphasis on targeting catastrophic interpretation of bodily sensations, employing interoceptive exposure, and using individual SHAP profiles for precision psychiatry—but at times it extrapolates beyond the empirical base of a cross-sectional, self-report study; the authors should explicitly acknowledge that treatment recommendations are speculative, perhaps reframing this section as "potential clinical implications" and grounding each recommendation more explicitly in either their data (e.g., specific patterns in SHAP profiles) or pre-existing intervention trials, thereby avoiding any impression that these interventions were tested in the current study.

Authors revised the manuscript and uploaded the document.

1.2. Reviewer 2

Reviewer:

The use of advanced ensemble algorithms (Random Forest, Gradient Boosting, XGBoost) with cross-validated grid search is appropriate; however, the analytical strategy would benefit from greater detail and rigor regarding overfitting control and model validation—specifically, the authors should clarify the exact train–test split proportions, whether nested cross-validation or repeated cross-validation was used, how hyperparameters were chosen and fixed before final testing, and whether any form of external or temporal validation was considered, given that the reported AUC of 0.91 may otherwise reflect optimistic performance within a single sample.

The operationalization of the outcome as "Somatic Symptom Disorder" appears to rely primarily on PHQ-15 somatic symptom severity and a cut-off (PHQ-15 ≥ 15) for "high" severity; this raises nosological concerns, as PHQ-15 is a screening measure rather than a full DSM-5 SSD diagnostic tool (which requires assessment of cognitive–emotional criteria), so the authors should either (a) reframe the outcome more precisely as "high somatic symptom burden" or "probable SSD risk," or (b) provide justification and references for using PHQ-15 alone as a proxy for SSD diagnosis and discuss the limitations of this approach more explicitly.

The measurement section is largely comprehensive, but the description of the interoceptive constructs (MAIA subscales such as Not-Worrying and Body Trusting) and their psychometric properties in this specific cultural context is somewhat underdeveloped; given that interoception and body-related beliefs can be culturally shaped, it would strengthen the paper to report internal consistencies for each subscale in the current sample, briefly summarize prior validation work in Malaysian or similar populations (if available), and discuss any cultural adaptation or translation issues that may affect construct validity.

Authors revised the manuscript and uploaded the document.

2. Revised

Editor's decision: Accepted.
Editor in Chief's decision: Accepted.

JPPR
E-ISSN: 3041-8542