

Predicting Emotional Dysregulation Using Artificial Neural Networks Based on Childhood Trauma, Attachment Insecurity, Alexithymia, and Mindfulness

Susanna. Harutyunyan^{1*}, Narek. Hovhannisyan², Gevorg. Galechyan³

¹ Department of Personality Psychology, Yerevan State University, Yerevan 0025, Armenia

² Department of Psychology, Armenian State Pedagogical University after Khachatur Abovian, Yerevan, Armenia

³ Department of Psychology, Faculty of Education, UCSI University, Kuala Lumpur, Malaysia

* Corresponding author email address: su_harutyunyan@ysu.am

Editor

Saeid Motevalli^{id}
Associate Professor of Educational
Psychology, Faculty of Social
Sciences & Liberal Arts, UCSI
University, Kuala Lumpur,
Malaysia
Saeed@ucsiuniversity.edu.my

Reviewers

Reviewer 1: Yoko Wong^{id}
Faculty of Humanities, Department of Psychology, Nanyang Technological
University, Nanyang, Singapore. Email: yokowong@ntu.edu.sg
Reviewer 2: Orsolya Demetrovics^{id}
Institute of Psychology, ELTE Eötvös Loránd University, Budapest, Hungary.
Email: orso.demetrovics@ehok.elte.hu

1. Round 1

1.1. Reviewer 1

Reviewer:

In the Introduction, paragraph 2, the discussion of childhood trauma is conceptually relevant, but it would be useful to distinguish between cumulative trauma exposure and specific trauma subtypes. The manuscript currently treats childhood trauma as a broad construct, yet the Childhood Trauma Questionnaire includes emotional abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect. The authors should clarify whether the neural network used total childhood trauma score only or whether trauma subscales were examined in preliminary analyses, because this has important implications for interpretation.

In the Introduction, paragraph 3, the statement that “the relationship between childhood trauma and later emotional dysregulation is rarely direct or isolated” is theoretically persuasive, but the manuscript should develop this point more explicitly into the rationale for using artificial neural networks. The authors should explain why nonlinear modeling is

particularly appropriate for trauma-related emotional functioning, such as possible threshold effects, interaction effects between trauma and attachment insecurity, or protective buffering by mindfulness.

In the Introduction, paragraph 4, the section on attachment insecurity describes attachment anxiety and avoidance, but the methods and findings later present attachment insecurity as one aggregated predictor. The authors should clarify whether attachment anxiety and attachment avoidance were combined into a total attachment insecurity score or entered separately into the ANN model. If they were combined, the authors need to justify this decision because anxious and avoidant attachment strategies may show different associations with emotional dysregulation.

In the Methods and Materials, paragraph “Study Design and Participants,” the sentence “A total of 842 participants were recruited using a multistage convenience sampling strategy” needs clarification. The term “multistage convenience sampling” is ambiguous because multistage sampling usually implies a structured sampling process, while convenience sampling implies nonprobability recruitment. The authors should describe the exact stages of recruitment and explain whether institutions, cities, or participant groups were selected first before individual convenience recruitment occurred.

In the Methods and Materials, paragraph “Study Design and Participants,” the manuscript states that participants were recruited “from universities, community organizations, healthcare centers, and online psychological research platforms throughout Armenia.” The authors should report the approximate distribution of participants recruited from each source. This information is important because university-based and healthcare-based samples may differ substantially in age, education, mental health status, trauma exposure, and emotional dysregulation.

Authors revised and uploaded the document.

1.2. Reviewer 2

Reviewer:

In the Introduction, paragraph 6, the manuscript discusses smartphone addiction, nomophobia, and compensatory behaviors. Although this literature is relevant to insecure attachment and maladaptive affect regulation, its connection to the current study should be tightened. The paragraph risks moving away from the central variables of emotional dysregulation, childhood trauma, alexithymia, and mindfulness. The authors should add a bridging sentence explaining how technology-related compensatory behaviors illustrate broader patterns of external emotion regulation among individuals with insecure attachment.

In the Introduction, paragraph 7, the description of alexithymia is one of the strongest theoretical sections, especially the sentence that “effective regulation requires at least some capacity to notice, label, interpret, and communicate internal affective experiences.” However, the authors should more clearly distinguish alexithymia from emotional dysregulation to avoid conceptual overlap. Since both constructs involve emotional difficulty, the introduction should clarify that alexithymia refers primarily to emotional awareness and verbalization deficits, whereas emotional dysregulation refers to broader difficulties managing emotional intensity, behavior, and regulation strategies.

In the Introduction, paragraph 10, the manuscript presents mindfulness as a protective factor, but the theoretical mechanism could be more specific. The authors should explain whether mindfulness is expected to predict lower emotional dysregulation through emotional awareness, nonjudgmental acceptance, attentional control, interoceptive clarity, or reduced experiential avoidance. This would create a stronger conceptual foundation for interpreting the negative correlation between mindfulness and emotional dysregulation reported in the findings.

In the final Introduction paragraph, the manuscript states that “fewer studies have integrated these predictors into a single predictive framework capable of estimating their combined and potentially nonlinear contribution to emotional dysregulation.” This is a clear research gap, but it should be made more explicit by identifying exactly what is novel in the present study. The authors should specify whether the novelty lies in the Armenian context, the use of artificial neural networks, the simultaneous inclusion of trauma, attachment, alexithymia, and mindfulness, or the use of SHAP explainability.

Authors revised and uploaded the document.

2. Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.