




Predicting Adolescent Risk Behavior via Family Monitoring, Sensation Seeking, and Peer Deviance with Machine Learning Analysis

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1. Round 1

1.1. Reviewer 1

Reviewer:

In the Methods section, the phrase “multistage cluster random sampling” lacks sufficient procedural detail; the manuscript should specify the number of clusters, the criteria for cluster selection (e.g., schools, districts), and the intra-cluster correlation considerations, as these directly influence sampling bias and the effective sample size.

The sentence “model performance was evaluated using k-fold cross-validation” should include the exact value of k and whether stratified sampling was applied; without this information, the reproducibility and robustness of the validation process remain unclear.

In Table 2, while metrics such as accuracy, precision, recall, F1-score, and AUC are reported, the manuscript does not specify whether the dataset was balanced or imbalanced; if class imbalance exists, reliance on accuracy alone may be misleading, and additional metrics such as balanced accuracy or MCC should be reported.

The statement “the neural network demonstrated the highest performance” requires statistical validation; the authors should conduct significance testing (e.g., McNemar’s test or cross-validated paired t-tests) to confirm whether differences between models are statistically meaningful rather than descriptive.

In Table 3, the presentation of “Feature Importance Scores Across Machine Learning Models” lacks methodological transparency; the authors must clarify how feature importance was computed for each model (e.g., Gini importance for random forest, SHAP values for neural networks), as these metrics are not directly comparable across algorithms.

The sentence “nonlinear interactions among predictors significantly improved prediction accuracy compared to linear approaches” is not empirically demonstrated within the manuscript; the authors should include a baseline linear model (e.g., logistic regression) for direct comparison to substantiate this claim.

In the Introduction, the claim “risk behaviors... often emerge during adolescence as part of a broader developmental trajectory” would benefit from greater theoretical integration; the authors should explicitly connect this statement to a formal developmental model (e.g., life-course theory or developmental cascade models) to strengthen conceptual grounding.

Response: Revised and uploaded the new document.

1.2. Reviewer 2

Reviewer:

The statement “Data were collected using standardized self-report instruments” requires further elaboration regarding measurement validity; specifically, the authors should report confirmatory factor analysis (CFA) indices or at minimum Cronbach’s alpha values for each instrument within the current sample, rather than relying on prior literature alone.

In the Measures section, the sentence “all of which demonstrated acceptable reliability and validity” is overly general; it is necessary to provide quantitative evidence (e.g., α coefficients, composite reliability, AVE) specific to the present dataset to substantiate this claim and ensure psychometric rigor.

The inclusion of the phrase “Sensation seeking was assessed באמצעות the Brief Sensation Seeking Scale” indicates a typographical or language inconsistency; the non-English term “באמצעות” should be corrected to maintain linguistic coherence and academic professionalism throughout the manuscript.

In the Data Analysis section, the description “handling of missing values” is insufficiently detailed; the authors should specify the imputation technique used (e.g., mean imputation, multiple imputation, k-NN imputation), as different methods can substantially influence machine learning model performance and bias.

Response: Revised and uploaded the new document.

2. Revised

Editor’s decision: Accepted.

Editor in Chief’s decision: Accepted.