

A Gradient-Boosting Model of Adolescent Social Anxiety Incorporating Rejection Sensitivity, Intolerance of Uncertainty, Emotional Reactivity, and Peer Network Centrality

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1. Round 1

1.1. Reviewer 1

Reviewer:

The conceptual background is comprehensive and well-synthesized, drawing on family systems, attachment theory, socio-cognitive factors, and digital-era stressors; however, the narrative sometimes becomes densely packed, and clearer sub-sections that explicitly separate “established findings” from “specific hypotheses or modeling expectations” would help the reader see how each construct (rejection sensitivity, IU, emotional reactivity, centrality) is expected to behave in the gradient-boosting model.

The justification for using Extreme Gradient Boosting and SHAP is persuasive in highlighting non-linear and interactive processes, yet the paper should be more concrete about the specific types of non-linearities the authors expect (e.g., hypothesized thresholds, diminishing returns, or synergistic interactions) and how these expectations translate into testable model diagnostics or interpretive criteria beyond general performance metrics.

The presentation of descriptive statistics and correlations is appropriate and appears to align with theoretical expectations (positive associations between social anxiety and rejection sensitivity, IU, emotional reactivity; negative with centrality), but

the manuscript would profit from a more critical interpretation of these correlations—for example, considering potential common-method variance, the implications of moderate intercorrelations among predictors for redundancy, and whether any non-linear or heteroscedastic patterns were inspected prior to applying the machine-learning model.

Authors uploaded the revised manuscript.

1.2. Reviewer 2

Reviewer:

The sampling strategy (multistage cluster sampling across schools in Yerevan and adjacent provinces) is appropriate and well described, but several critical demographic details appear to be missing or unclear in the accessible text (exact age range, mean and SD, and gender distribution), and these should be reported precisely and consistently, as they are essential for assessing both sample representativeness and external validity.

The measurement section is generally strong, using established instruments and an eigenvector-centrality sociometric approach, yet the manuscript should provide more psychometric information at the scale level for the current sample (e.g., Cronbach's alphas, factor structure if tested, handling of response biases) and a more detailed description of the translation/back-translation procedures (including any cultural adaptation steps) to justify construct validity in Armenian adolescents.

The analytic pipeline is sophisticated, with multiple imputation (MICE), train–test splits, and randomized hyperparameter search, but at present the description remains somewhat generic; the authors should report key tuning parameters (e.g., exact grid or ranges, k in cross-validation, imputation convergence criteria), justify the chosen train/test split ratio, and discuss how they guarded against overfitting (e.g., early stopping, nested cross-validation, or comparison with simpler baseline models such as regularized linear regression).

The reliance on a purely cross-sectional design is a major limitation for a study that emphasizes developmental processes and reciprocal dynamics (e.g., between social anxiety and victimization or network position), and although this is acknowledged implicitly, the discussion should more explicitly warn readers against causal interpretations of SHAP effects and stress that these results are best viewed as predictive/associational rather than explanatory in a temporal sense.

Authors uploaded the revised manuscript.

2. Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.