Deep Learning Analysis of Family Communication Networks and Adolescent Risk Behavior Prediction

Mateja. Novak[1] , Allison. Freeman[2*] , Rafael. Costa[3]

[1] Department of Clinical Psychology, University of Ljubljana, Ljubljana, Slovenia
[2] Department of Clinical Psychology, Stanford University, Stanford, USA
[3] Department of Educational Psychology, Federal University of Rio de Janeiro, Rio de Janeiro, Brazil

* Corresponding author email address: allison.freeman@stanford.edu

E d i t o r	R e v i e w e r s
Habib Hadianfard	**Reviewer 1:** Parvaneh Mohammadkhani
Affiliation: Professor, Department of Psychology, Shiraz University, Iran	Professor, Department of Clinical Psychology, University of Rehabilitation Sciences and Social Health, Tehran, Iran. Email: Pa.mohammadkhani@uswr.ac.ir
hadianfd@shirazu.ac.ir	**Reviewer 2:** Abolghasem Khoshkanesh
	Assistant Professor, Counseling Department, Shahid Beheshti University, Tehran, Iran.
	Email: akhoshkonesh@sbu.ac.ir

1. Round 1

1.1. Reviewer 1

Reviewer:

The claim that "These patterns cannot be fully captured through traditional regression-based methods" is theoretically important but currently unsupported. The authors should briefly explain, with methodological specificity, which assumptions of regression models are violated by family network data (e.g., independence, linearity) and how the proposed model overcomes these limitations.

The manuscript states that the study followed a "mixed-methods design with a dominant quantitative approach," yet no qualitative procedures are described later. The authors must either specify the qualitative component (e.g., interviews, thematic coding) or revise the design description to reflect a purely quantitative predictive study.

The text claims that descriptive statistics establish "distributional properties," yet no assessment of normality or outliers is reported. Please indicate whether assumptions for subsequent analyses were examined.

Response: Revised and uploaded the manuscript.

1.2.   Reviewer 2

Reviewer:

The phrase "Socioeconomic, ethnic, and family structure diversity was reflected in the sample" is vague. Please report concrete descriptive statistics (e.g., ethnic composition, SES categories, household types) to substantiate this claim and support generalizability.

The "Family Interaction Mapping Protocol" is central to the entire modeling approach, yet no citation, validation information, or example item is provided. The authors must clarify whether this instrument was developed for the current study and report its psychometric evaluation.

While Cronbach's alpha values are reported, the manuscript does not specify which scales correspond to which reliability coefficients. Please provide reliability for each instrument individually.

The manuscript indicates that "family communication maps were converted into graph-structured datasets," but the transformation process is not described. The authors should include sufficient technical detail (node definitions, edge weighting procedure, normalization) to ensure reproducibility.

The statement "graph convolutional techniques were used" is too general. The specific GNN architecture (e.g., GCN, GAT, GraphSAGE), number of layers, activation functions, and optimization parameters should be reported.

The training–validation–test split is reported as 70/15/15, but no justification or cross-validation procedure is mentioned. The authors should clarify whether results are based on a single split or averaged across multiple runs.

Response: Revised and uploaded the manuscript.

2.   Revised

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