Explainable AI Identification of Protective Family Factors Against Adolescent Substance Abuse

Rebecca. Collins[1] , Michael. Anderson[2]*

[1] Department of Behavioral Science, University of Toronto, Toronto, Canada
[2] Department of Clinical Psychology, Harvard University, Cambridge, USA

* Corresponding author email address: manderson@harvard.edu

Editor	Reviewers
Monika Szczygieł Department of Psychology, Jagiellonian University, Krakow, Poland monika.szczygiel@uj.edu.pl	**Reviewer 1:** Sara Nejatifar Department of Psychology and Education of People with Special Needs, Faculty of Educational Sciences and Psychology, University of Isfahan, Isfahan, Iran. Email: s.nejatifar@edu.ui.ac.ir **Reviewer 2:** Kamdin. Parsakia Department of Psychology and Counseling, KMAN Research Institute, Richmond Hill, Ontario, Canada. Email: kamdinarsakia@kmanresce.ca

1. Round 1

1.1. Reviewer 1

Reviewer:

The opening paragraph begins with "Adolescent substance abuse remains one of the most persistent and complex public health challenges worldwide". While well framed, this paragraph would be strengthened by including specific prevalence figures or regional statistics to anchor the argument more concretely.

The exclusion of adolescents with "severe psychiatric condition" is mentioned; please define how this was assessed (clinical interview, school records, parent report).

The paragraph beginning "Data were collected using a multi-informant…" reports strong reliability but does not report specific coefficients (e.g., Cronbach's alpha ranges) for key scales. These values should be explicitly stated.

Response: Revised and uploaded the manuscript.

1.2.   Reviewer 2

Reviewer:

The paragraph starting "Family-level protective factors encompass a wide array…" lists numerous constructs. Please clarify how these constructs are theoretically distinguished (e.g., emotional warmth vs. family cohesion) to avoid conceptual overlap.

In "While the empirical literature has made substantial progress…", the critique of linear models is persuasive, yet the authors should briefly explain why nonlinearity is particularly expected in adolescent substance use from a developmental perspective.

The final sentence states: "The aim of this study was to employ explainable artificial intelligence…". Consider specifying the primary outcome variable operationalization (e.g., substance use frequency, risk classification) within this sentence for precision.

The phrase "cross-sectional, predictive-analytic design" would benefit from a brief justification explaining why a cross-sectional approach is suitable for modeling protective mechanisms which are often developmental and longitudinal in nature.

The sentence "Participants were recruited from public middle schools, high schools, community youth centers, and outpatient family health clinics…" should clarify whether institutional clustering effects were assessed or controlled in analysis.

Response: Revised and uploaded the manuscript.

2.   Revised

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