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K-Nearest Neighbors Classification of High-Risk Internet Addiction Profiles among Adolescents Based on Impulsivity, Loneliness, Sleep Quality, and Parental Monitoring

Dilshod. Karimov[1], Emily. Cartwright[2*], Aigerim. Sadykova[3]

[1] Department of Psychology, National University of Uzbekistan, Tashkent, Uzbekistan
[2] Department of Clinical Psychology, University of Toronto, Toronto, Canada
[3] Department of Applied Psychology, Al-Farabi Kazakh National University, Almaty, Kazakhstan

*** Corresponding author email address**: emily.cartwright@utoronto.ca

Editor	Reviewers
John S. Carlson Distinguished Professor of the Department of Educational Psychology, Michigan State University, East Lansing, MI, United carlsoj@msu.edu	**Reviewer 1:** Fahime Bahonar Department of counseling, Universty of Isfahan, Isfahan, Iran. Email: Fahime.bahonar@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 paragraph beginning “Recent conceptualizations emphasize that internet addiction should be viewed as a multidimensional phenomenon…” (pp. 2, lines 120–138) presents theoretical arguments but lacks a clear integration of these theories into the machine-learning framework. The authors should explicitly explain how multidimensional risk models informed the selection of features and the decision to use K-Nearest Neighbors rather than alternative classification algorithms.

In the impulsivity section, the statement “Impulsivity represents a critical individual-level risk factor deserving particular attention in predictive models of internet addiction” (pp. 2–3, lines 152–173) is theoretically important but remains largely descriptive. The authors should discuss whether impulsivity dimensions (attentional, motor, and non-planning impulsivity) differ in predictive relevance and justify why only total scores rather than subscale scores were emphasized in the final model.

The final Introduction paragraph identifies three research gaps and concludes with the study aim (pp. 4, lines 301–320). However, no explicit hypotheses or expected outcomes are presented. Even in predictive modeling studies, the manuscript would benefit from clearly stated expectations regarding variable importance and classification performance.

In the Methods section, the sentence "Participants were recruited from public and private secondary schools located in the provinces of Ontario, British Columbia, Alberta, and Quebec using a multistage cluster sampling procedure" (pp. 4, lines 336–339) lacks methodological detail. The authors should provide the number of schools selected, sampling stages, cluster selection criteria, participation rates, and any weighting procedures used to ensure representativeness.

Authors uploaded the revised manuscript.

1.2. Reviewer 2

Reviewer:

The paragraph discussing loneliness as a predictor (pp. 3, lines 174–197) appropriately cites meta-analytic evidence; however, the manuscript does not address the potential bidirectional relationship between loneliness and internet addiction. The authors should clarify whether loneliness is conceptualized as a predictor, consequence, or reciprocal correlate and discuss the implications of using a cross-sectional design for causal interpretation.

In the paragraph beginning "Sleep quality constitutes another important factor…" (pp. 3, lines 198–217), the authors argue that poor sleep quality contributes to internet addiction risk. However, sleep quality is measured using the PSQI, which captures multiple dimensions. The manuscript should report whether specific PSQI components were examined separately and whether certain dimensions (e.g., sleep latency or daytime dysfunction) demonstrated greater predictive value than the global score.

The family-related predictor section states that "Parental monitoring represents one of the most influential protective mechanisms" (pp. 3, lines 218–237). Given the multicultural composition of Canada, the authors should discuss potential cultural, ethnic, and socioeconomic differences in parental monitoring practices and whether these contextual factors may influence model performance or generalizability.

The paragraph beginning "Research has also highlighted substantial heterogeneity among adolescents experiencing problematic internet use" (pp. 3–4, lines 256–280) correctly emphasizes subgroup differences. However, because the manuscript repeatedly uses the term "profiles," readers may expect latent profile analysis or clustering procedures. The authors should clarify the operational meaning of "high-risk profiles" and explain how classification categories differ from empirically derived latent profiles.

In the paragraph introducing machine learning (pp. 4, lines 282–300), the authors argue that machine-learning methods may provide more accurate predictions than traditional approaches. This assertion should be supported empirically by comparing KNN performance with conventional statistical models such as logistic regression, or at least discussing why comparative benchmarking was not conducted.

Authors uploaded the revised manuscript.

2. Revised

Editor's decision after revisions: Accepted.

Editor in Chief's decision: Accepted.

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