




# Predicting Romantic Relationship Instability in Emerging Adults Through LightGBM Models of Attachment Anxiety, Jealousy Cognitions, Social Media Surveillance, Emotional Dependency, and Impulsivity

Marko. Vuković<sup>1</sup>, Sophie. Langlois<sup>2\*</sup>, Elin. Sjöberg<sup>3</sup>

<sup>1</sup> Department of Clinical Psychology, University of Zagreb, Zagreb, Croatia

<sup>2</sup> Department of Developmental Psychology, Université de Montréal, Montreal, Canada



<sup>3</sup> Department of Developmental Psychology, Lund University, Lund, Sweden

\* Corresponding author email address: [sophie.langlois@umontreal.ca](mailto:sophie.langlois@umontreal.ca)

## Editor

Ahmad Amani  
Associate Professor, Counseling  
Department, University of  
Kurdistan, Sanandaj, Iran  
[a.amani@uok.ac.ir](mailto:a.amani@uok.ac.ir)

## Reviewers

**Reviewer 1:** Mohammad Salehi  
Associate Professor, Department of Educational Management, Sari Branch, Islamic  
Azad University, Sari, Iran. Email: [drsalehi@iausari.ac.ir](mailto:drsalehi@iausari.ac.ir)  
**Reviewer 2:** Kamdin Parsakia  
Department of Psychology and Counseling, KMAN Research Institute, Richmond  
Hill, Ontario, Canada. Email: [kamdinarsakia@kmanresce.ca](mailto:kamdinarsakia@kmanresce.ca)

## 1. Round 1

### 1.1. Reviewer 1

Reviewer:

The paragraph reporting “Participants with severe self-reported psychiatric disorders that could interfere with accurate self-reporting” requires methodological clarification. The authors do not explain how psychiatric disorders were screened, operationalized, or verified. Reliance on vague self-report exclusion criteria may compromise internal validity. The manuscript should specify whether participants were asked about diagnosed conditions, current treatment status, medication use, or symptom severity thresholds.

In the Measures section, the sentence “Romantic relationship instability was assessed using the Relationship Stability Scale developed by Booth, Johnson, and Edwards (1983)” requires additional psychometric justification. The authors should explain why an instrument developed several decades ago remains appropriate for digitally mediated romantic relationships in 2025–2026. Given the study’s emphasis on social media dynamics and electronic surveillance, a discussion of whether the scale adequately captures contemporary forms of relational instability is necessary.

The paragraph interpreting Table 1 states that “Emotional dependency showed the strongest correlation with relationship instability.” However, the authors do not sufficiently discuss potential conceptual circularity between emotional dependency and relational instability constructs. Several emotional dependency items may implicitly assess instability-related behaviors such as fear of breakup or excessive reassurance seeking. The manuscript should address this overlap and consider whether shared variance may partially reflect measurement contamination.

In Table 2, the reported performance metrics are impressive, yet the manuscript omits critical information regarding baseline comparison models. The authors should compare LightGBM performance against simpler approaches such as logistic regression, support vector machines, or Random Forest models. Without benchmark comparisons, it remains unclear whether the observed predictive gains are truly attributable to LightGBM or merely reflect strong predictor-outcome correlations.

Authors uploaded the revised manuscript.

## 1.2. Reviewer 2

Reviewer:

The paragraph introducing the Social Media Surveillance Scale lacks sufficient methodological transparency. The authors state that the measure was “adapted from Tokunaga (2011) and subsequent digital relationship monitoring studies,” yet no detailed information is provided regarding the adaptation procedure. The manuscript should clarify whether items were modified, added, removed, or culturally adapted for Canadian emerging adults. Furthermore, exploratory or confirmatory factor analyses should be reported to establish the structural validity of the adapted instrument.

In the sentence “Continuous variables were standardized prior to machine learning implementation to improve model stability and interpretability,” the authors should clarify whether standardization was conducted separately within training and testing datasets. Performing standardization prior to data splitting could result in data leakage and artificially inflated predictive performance. This issue is especially important in machine learning studies where reproducibility and proper preprocessing pipelines are critical.

The paragraph beginning with “The dataset was randomly divided into training and testing subsets using an 80/20 split procedure” lacks important information regarding class balance and outcome operationalization. The manuscript does not explain whether relationship instability was modeled as a continuous variable or transformed into categorical classes for classification purposes. Because metrics such as accuracy, precision, recall, and AUC imply classification modeling, the authors should clearly describe the thresholding procedure and class distribution.

The statement “Hyperparameter optimization was conducted through grid search and five-fold cross-validation” is insufficiently detailed for replication purposes. The manuscript should include the exact parameter grid explored, the selected optimal hyperparameters, and the computational criteria used for model selection. Without this information, the study cannot be adequately reproduced or critically evaluated by other researchers.

In Table 1, the very high correlation between attachment anxiety and emotional dependency ( $r = 0.78$ ) raises conceptual and statistical concerns regarding construct overlap. Although the authors report acceptable multicollinearity diagnostics, they should provide a more theoretically grounded explanation distinguishing these constructs. The manuscript currently risks redundancy between predictor variables, potentially inflating predictive performance through overlapping psychological content.

Authors uploaded the revised manuscript.

## 2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.