




Predicting Digital Burnout Using Machine Learning: The Role of Cognitive Flexibility, Emotional Regulation, Social Comparison, and Online Disinhibition

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1. Round 1

1.1. Reviewer 1

Reviewer:

In the second paragraph, the sentence “the integration of artificial intelligence and digital communication tools into everyday interactions has raised concerns about their unintended psychological consequences” is conceptually strong but lacks empirical grounding. The authors should strengthen this claim by specifying the mechanisms (e.g., algorithmic amplification, notification overload) through which AI contributes to burnout.

The paragraph beginning with “A critical dimension in understanding digital burnout lies in the cognitive mechanisms...” introduces cognitive flexibility effectively, but it does not sufficiently justify why this variable was prioritized over other executive functions such as attentional control or working memory. A stronger theoretical rationale or citation-based comparison is needed.

The inclusion criterion “minimum of 3 hours per day” of digital use appears arbitrary. The authors should justify this threshold with prior literature or empirical reasoning, as it directly influences the operationalization of digital engagement.

In the measures subsection, the authors report that “all instruments demonstrated acceptable internal consistency (Cronbach’s alpha coefficients above 0.70).” This statement is too general; exact alpha values for each scale should be reported to allow proper evaluation of measurement reliability.

The data analysis section states that “accuracy, RMSE, and R-squared values” were used, but accuracy is not appropriate for continuous outcomes such as burnout scores. The authors should clarify whether accuracy was actually used or remove it to avoid methodological inconsistency.

The description “encoding of categorical variables” lacks specificity. The authors should indicate whether one-hot encoding, label encoding, or another technique was used, as this affects model interpretability and performance.

Authors revised and uploaded the document.

1.2. Reviewer 2

Reviewer:

In the emotional regulation paragraph, the sentence “adaptive strategies such as cognitive reappraisal have been associated with lower levels of burnout” is well-supported; however, the authors should clarify whether emotional regulation is conceptualized as a trait or a state variable in this study, as this has implications for interpretation and intervention design.

The paragraph discussing social comparison states that “social comparison mediates the relationship between digital engagement and burnout.” This is a causal claim, yet the present study is cross-sectional. The authors should revise the language to avoid implying mediation without appropriate longitudinal or experimental evidence.

In the section on online disinhibition, the statement “this phenomenon can manifest in both benign and toxic forms” is accurate, but the study does not distinguish between these forms in measurement. The authors should clarify whether the scale used differentiates these dimensions and how each contributes to burnout.

The paragraph beginning “The interplay between these psychological variables becomes even more critical...” introduces contextual factors, yet these variables (e.g., loneliness, physical activity) are not included in the model. This creates a conceptual–methodological mismatch that should be addressed either by narrowing the scope or acknowledging omitted variables more explicitly.

The final paragraph of the introduction ends with the aim statement, which is appropriate; however, it largely repeats earlier content (“predict digital burnout using machine learning techniques...”) without emphasizing novelty. The authors should explicitly state what methodological or theoretical gap this study uniquely addresses.

In the methods section, the sentence “a stratified online sampling strategy to ensure diversity” is insufficiently detailed. The authors should specify the strata used (e.g., age groups, gender categories) and provide evidence that the final sample achieved representativeness across these strata.

Authors revised and uploaded the document.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.