

# Explainable Deep Learning Models of Adolescent Eating Disorders Based on Appearance Comparison, Influencer Exposure, Emotion Dysregulation, Self-Criticism, and Weight Stigma

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## 1. Round 1

### 1.1. Reviewer 1

Reviewer:

In the Introduction section, the statement “eating disorders among adolescents have emerged as one of the most concerning public health and psychological challenges of the contemporary digital era” is conceptually broad and insufficiently operationalized. The authors should specify whether the study focuses on clinically diagnosed eating disorders, subclinical disordered eating symptoms, or general eating pathology. Because the manuscript later relies exclusively on self-report symptom measures rather than diagnostic interviews, the terminology throughout the article should be carefully standardized to avoid overpathologizing nonclinical behaviors.

The final paragraph of the Introduction claims that “relatively limited research has simultaneously investigated appearance comparison, influencer exposure, emotion dysregulation, self-criticism, and weight stigma within explainable deep learning frameworks among adolescent populations.” This statement requires stronger empirical substantiation. The authors should more explicitly identify the precise gap in the literature and clarify whether the novelty lies in the predictor combination, the explainable AI methodology, the adolescent population, or the integration of SHAP/LIME analyses.

In the “Study Design and Participants” section, the manuscript states that “twelve secondary schools were randomly selected from official educational district lists,” but no information is provided regarding school participation rates, refusal rates, or district-level socioeconomic variation. Without these details, it is difficult to evaluate sampling bias and representativeness. The authors should report how many schools declined participation and whether participating schools differed systematically from nonparticipating institutions.

Authors uploaded the revised manuscript.

## 1.2. Reviewer 2

Reviewer:

The paragraph beginning with “The expansion of social media platforms has transformed the psychological ecology of adolescence” appropriately discusses digital environments, but the theoretical framework remains underdeveloped. The authors repeatedly reference “appearance comparison” and “algorithmic amplification” without anchoring these constructs within established theories such as Social Comparison Theory, Objectification Theory, Sociocultural Theory of Eating Disorders, or the Tripartite Influence Model. Integrating a stronger theoretical structure would considerably improve conceptual coherence and justify the selection of predictors.

The sentence “Influencers function as highly visible and socially influential agents who frequently promote idealized lifestyles” requires conceptual precision because “influencer exposure” and “influencer engagement” appear to be treated interchangeably throughout the manuscript. Exposure is a passive phenomenon, whereas engagement implies active emotional or behavioral involvement. The authors should explicitly distinguish these constructs and explain which dimension is most theoretically relevant to eating disorder symptomatology.

The literature review section discussing emotion dysregulation appropriately cites transdiagnostic perspectives; however, the manuscript does not explain why emotion dysregulation was modeled as a direct predictor rather than a mediator between social media exposure and eating pathology. Given the strong theoretical basis for mediation pathways, the authors should justify the analytical structure chosen or acknowledge this omission as a conceptual limitation.

The paragraph beginning with “Self-criticism constitutes another important vulnerability factor” would benefit from differentiation between maladaptive self-criticism and adaptive self-correction. The current narrative risks conceptual overgeneralization because the FSCRS includes both pathological and self-reassuring dimensions. It is unclear whether only the maladaptive subscales were entered into the predictive model or whether the adaptive dimension was also included. This issue should be clarified in the Methods section.

The authors state that “weight stigma should be conceptualized as a significant psychological and social stressor contributing to eating disorder vulnerability,” yet the manuscript does not distinguish between experienced stigma, anticipated stigma, and internalized stigma. Since the WSSQ specifically assesses internalized weight stigma, the terminology throughout the manuscript should reflect this more precisely to avoid construct inflation.

Authors uploaded the revised manuscript.

## 2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.