

LSTM-Based Longitudinal Prediction of Psychological Resilience: The Role of Self-Compassion, Meaning in Life, Cognitive Reappraisal, and Social Support

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1. Round 1

1.1. Reviewer 1

Reviewer:

In the paragraph beginning “Among the psychological factors most consistently associated with resilience, self-compassion has received considerable attention,” the construct is well defined, but the manuscript does not sufficiently justify why self-compassion is expected to outperform other predictors; a stronger theoretical hierarchy or competing hypotheses would enhance rigor .

In the same section, the sentence “without a diagnosed severe psychiatric disorder” raises concerns regarding screening procedures; please clarify how this exclusion criterion was assessed (self-report vs. clinical evaluation) .

In the “Measures” section, although Cronbach’s alpha values are reported as “above 0.80,” exact coefficients for each scale and each wave should be presented to meet psychometric reporting standards .

In the data analysis section, the sentence “hyperparameters...were optimized using grid search” lacks sufficient detail; please report the search space, number of iterations, and selection criteria to allow replication.

In the same section, while “sequence padding techniques” are mentioned, there is no explanation of how varying sequence lengths were handled or whether masking was applied in the LSTM architecture; this omission affects methodological transparency.

Authors revised and uploaded the document.

1.2. Reviewer 2

Reviewer:

In the section discussing meaning in life, the claim “meaning in life may exert cumulative effects over time” is important, yet no explicit longitudinal hypothesis is formulated; I suggest adding directional hypotheses (e.g., increasing slope effects) to align theory with the modeling approach .

In the paragraph on cognitive reappraisal, the sentence “cognitive reappraisal has been identified as a key mechanism through which self-compassion exerts its beneficial effects” implies mediation, but the study does not test mediation; please clarify whether this is theoretical background or consider testing mediation within the model .

In the social support section, the phrase “its influence evolving over time” is central to your SHAP analysis, yet no explicit temporal hypothesis is articulated; specifying whether social support is expected to decline in importance would strengthen the coherence between theory and findings .

In the paragraph “Despite the growing body of literature...,” the critique of traditional methods is appropriate, but it would benefit from explicit examples (e.g., limitations of SEM in capturing nonlinearity), rather than general statements, to justify the methodological shift to LSTM .

In the paragraph introducing LSTM, the sentence “LSTM models are specifically designed to handle sequential data” is accurate but overly general; please provide technical details (e.g., gating mechanisms, memory cells) to demonstrate methodological depth expected in interdisciplinary research .

In the SHAP-related paragraph, the manuscript states “allows researchers to interpret model outputs,” but does not explain how SHAP values were aggregated across time steps; methodological transparency here is essential for reproducibility .

In the “Study Design and Participants” section, the phrase “stratified random sampling approach” is used, yet no strata definition is provided; please specify stratification variables and sampling frame to ensure methodological clarity .

Authors revised and uploaded the document.

2. Revised

Editor’s decision after revisions: Accepted.

Editor in Chief’s decision: Accepted.