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Three-dimensional face reconstruction for emotional dynamics: a novel approach to distinguishing bipolar disorder from major depressive disorder

Key words: Major depressive disorder; Bipolar disorder; 3D facial reconstruction; Emotion dynamics; Valence and arousal

Research Summary

This study proposes AsmV2L, a vision-language-guided 3D facial reconstruction framework for capturing affective dynamics from clinical facial videos. Using a BD–MDD dataset, the method identifies distinct valence-arousal patterns and achieves strong differential classification performance, suggesting a non-invasive objective approach for auxiliary psychiatric assessment.

Highlights

- AsmV2L enables fine-grained 3D facial reconstruction guided by vision-language semantics.
- Reconstructed affective dynamics reveal distinct valence-arousal patterns in BD and MDD.
- The proposed framework achieves accurate auxiliary differentiation between BD and MDD.

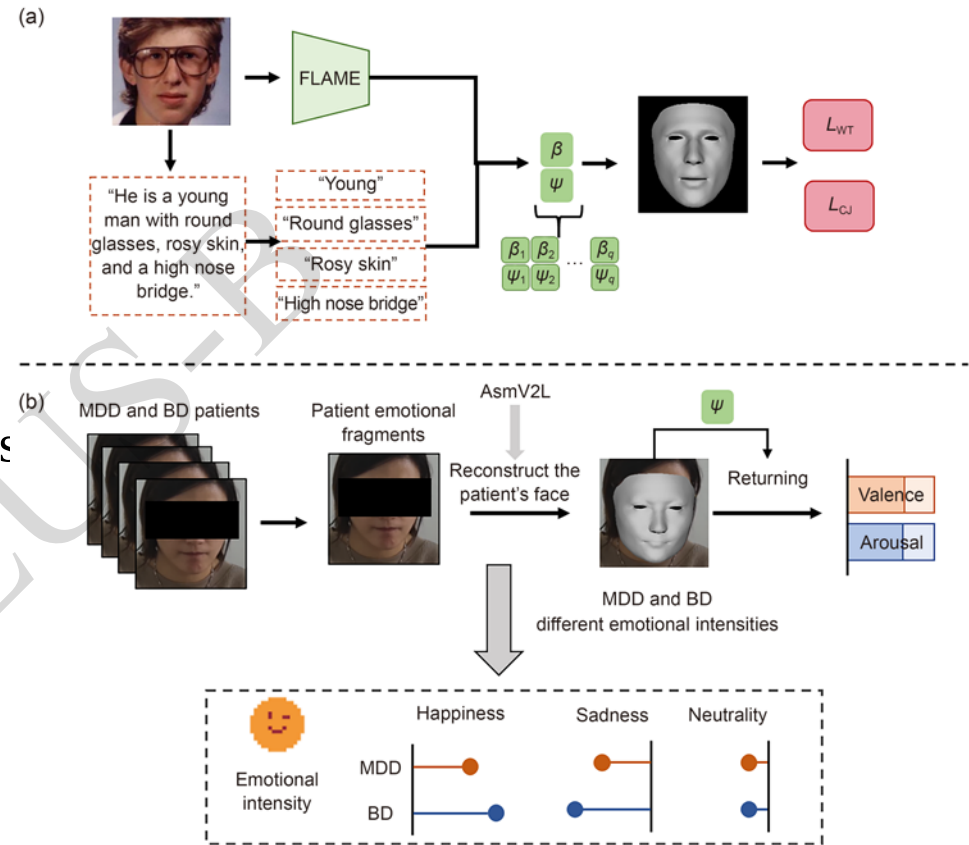


Fig. 1 Overview of the proposed AsmV2L framework (a) and emotional dynamics analysis conducted on the constructed MDD and BD patient dataset (b).