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Neural correlates of positive emotion regulation in people living with HIV and depression

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OBJECTIVES/GOALS: Depression is common among people living with HIV (PLWH). This study explored the link between reduced metacognitive awareness and depression in PLWH. It utilized a positive emotion regulation task to compare brain activation during viewing versus upregulating positive emotions. **METHODS/STUDY POPULATION:** Depressed PLWH (N = 24; mean age = 53; HAM-D mean = 19) participated in an emotion regulation task while blood oxygen-level-dependent (BOLD) responses were recorded. In the emotional regulation task, participants were shown the International Affective Picture System (IAPS) a series of positive, negative, and neutral images. Participants were asked to view these images and given instructions to either negatively reappraise

(RN) or positively reappraise (RP). In the RP condition, participants were no longer shown the image and asked to upregulate their positive emotional responses associated with it. Ten onset times were included for each trial. **RESULTS/ANTICIPATED RESULTS:** A one-sample t-test was conducted to analyze contrasts between reappraisal of positive images and viewing positive images (RP > VP). Results showed significantly greater activation in the posterior cingulate and angular gyrus during the RP condition (peak MNI: 18, -52, 34; $p < 0.001$, uncorrected, $k > 10$ voxels). In comparing the reappraisal of negative images to viewing negative images (RN > VN), there was increased activation in the right supramarginal gyrus (peak MNI: 50, -28, 22; $p < 0.001$, uncorrected, $k > 10$ voxels). When contrasting the reappraisal of positive to negative images (RP > RN), BOLD signals were higher in the left dorsolateral prefrontal cortex (peak MNI: 40, -38, 32; $p < 0.001$, uncorrected, $k > 10$ voxels). **DISCUSSION/SIGNIFICANCE OF IMPACT:** Findings underscore that depressed PLWH demonstrates BOLD responses in brain regions linked to appetitive motivation and meta-cognitive awareness during the RP condition which demands more executive resources among those with depression, highlighting the complexity of emotional regulation in this population.