

Chromatic sensitivity affected by depressive symptoms

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Previous studies have suggested that depression is associated with impaired chromatic sensitivity using subjective self-report measures (Barrick et al., 2002; Goodwin & Jamison, 1990). However, it has not been addressed whether impaired chromatic sensitivity is directly related to perception of color. In the current study, we investigated whether depressive symptoms, inferred by Beck Depression Inventory-II (BDI-II) score (Beck et al., 1996), modulated chromatic sensitivity and perception of color. The stimuli were Gabor patches (3-deg visual angle) with cardinal chromatic contrast (L-M axis and S axis), which was systematically varied in cone contrast (7 levels low to high). In each trial, a standard patch (middle contrast level) was presented with a comparison patch (one of 7 contrast levels) left and right side of the central fixation. Two Gabor patches were tilted 45° and -45° from vertical orientation. After 500ms of the stimulus presentation, Mondrian-like masks consisting of randomly arranged, multicolored squares were presented for 200ms to prevent color afterimage. Participants (N=41) were engaged in a two-alternative forced choice task, in which they reported the orientation of more colorful stimulus (left or right) by pressing designated keys on a computer keyboard. Participants were divided into three groups; low (0~13), middle (14~19), and high severity (20~63) of depressive symptoms depending on the BDI-II score. Our results showed that vividness discrimination function for L-M cone-contrast tended to be steeper in the high depressive symptom group compared to the low depressive symptom group. These results suggest that depressive symptoms may affect chromatic contrast sensitivity and color perception.

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