Chromatic sensitivity affected by depressive symptoms

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Background research

Previous studies have suggested that depression is associated with impaired chromatic sensitivity using subjective self-report measures [1][2]. However, it has not been addressed whether impaired chromatic sensitivity is di-
rectly related to the perception of color. In the current study, we investigated whether depressive symptoms, inferred by Beck Depression Inventory II (BDI-II) score [3], modulated chromatic sensitivity and perception of color. We also attempted to examine whether the alteration of chromatic sensitivity was initiated at the level of retina.

Methods

- Participants
  - 14 males, 27 females in Expt 1
  - 6 males, 12 females in Expt 2

- Task
  - 2-AFC task indicating the more vivid and colorful one of the two photos.

- Stimuli
  - Gabor patches (3 deg visual angle in diameter) with cardinal chromatic contrast (L-M axis and S axis), which was systematically varied in cone contrast (7 levels in Expt 1, 11 levels in Expt 2).

- Procedure
  - Order counterbalanced between participants
  - Two-way Mixed ANOVA

- Group Division
  - Participants were divided into three groups depending on the BDI-II score, although the severity of depression symptoms was divided into "Normal" (0-13), "Moderate"(14-28), and "Severe" (29-63) depression.
  - BDI-II scores across the three groups were statistically equal (F(2.40)=1.773, p=.198).

Results

- Data were fitted to a Cumulative Gaussian function.
  - Non-significant deviation (skewness and kurtosis) indicated good fit [4].

- The mild tendency of enhanced L-M cone contrast sensitivity in group with relatively severe depressive symptoms was shown. Future studies would consider potential confounds with the presentation location in the visual field [5] and spatial frequency of stimuli.

Conclusion & Discussion

- S cone contrast sensitivity was not modulated by the severity of depressive symptoms. Future studies would compare a group of patients diagnosed with major depressive disorder (MDD) and control group, given that the alterations in the L-M cone contrast sensitivity is more likely to be related to congenital, long-term factors in MDD.

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