

Author Response: Concerning Manuscript “Deficient Binocular Combination of Second- Order Stimuli in Amblyopia”

First, we really appreciate Li and Liu's¹ interest in our recent publication regarding the study of binocular combination of second-order stimuli in patients with amblyopia.²

They raised two points in their recent correspondence: First, subject A9, who had quite a small amount of anisometropia, should not be considered as an anisometric amblyope and as a result they don't know whether the results would be biased by omitting the data for subject A9. We accept their point; subject A9 more likely had a clinically undetected microtropia and should rightly be classified as a strabismic amblyope. However, this would not affect our conclusions in the slightest, as we showed in Figure 4 in our paper that the additional second-order binocular deficit occurred in the majority of the anisometropes (6/9) but none of the strabismics. Subject A9 did not exhibit a binocular deficit for second-order stimuli.

The second point they raised is whether the difference we find for second-order processing between strabismic and anisometropia amblyopia could be due to these different kinds of amblyopia having different contrast sensitivity. In other words, they are wondering whether the additional binocular imbalance we found using the contrast-modulated stimuli was a consequence of different modulation sensitivities for these two different kinds of amblyopia. As we pointed out at the end of the fourth paragraph in our Discussion session, we don't believe that this is the case: In particular, the additional deficit probably occurs either at the modulation depth binocular summation stage or at the early second-order envelope extracting stage, both well beyond the carrier detection stage;

besides, the amblyopic eye's modulation sensitivity at the low spatial frequency (0.29 cyc/deg) is not affected.³

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