Amblyopic reading is crowded

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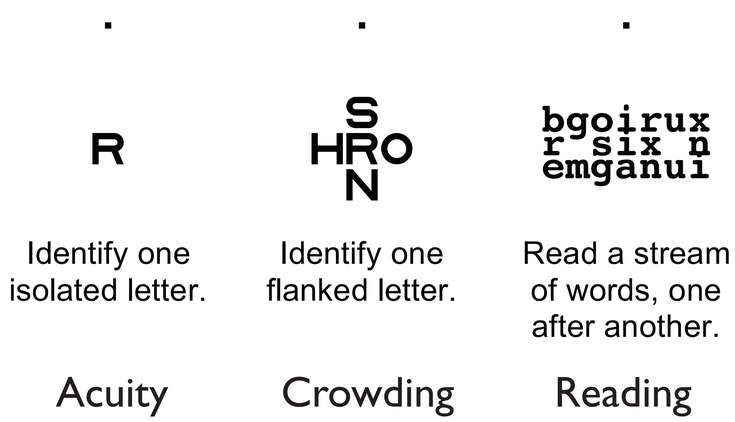
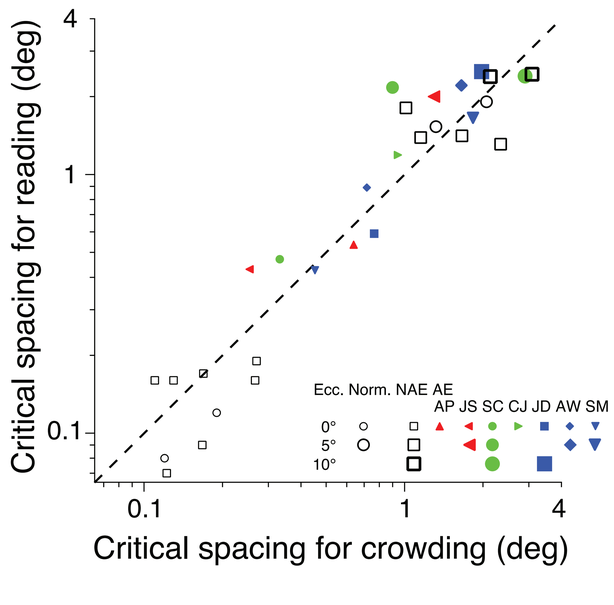
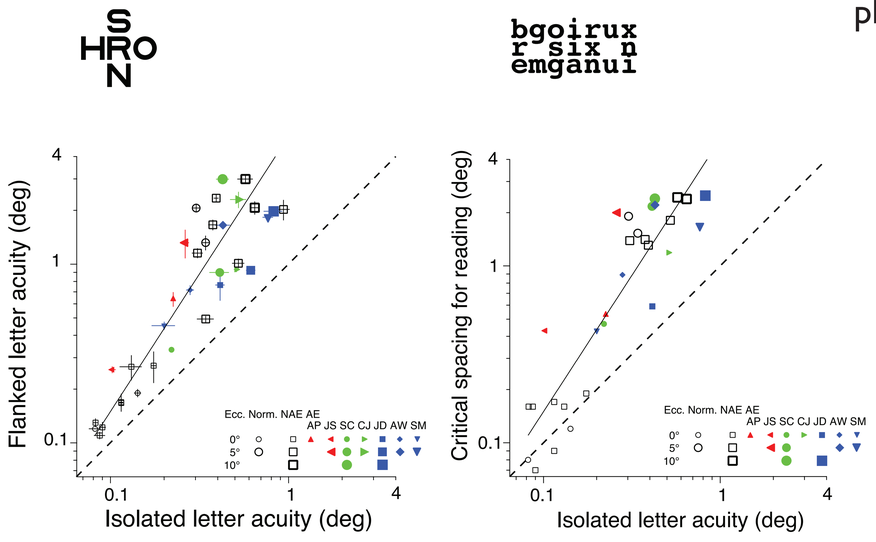
Summary: For amblyopic (AE), non-amblyopic (NAE), and normal eyes, we measured the threshold ("critical") size for identifying an unflanked letter (acuity), a flanked letter (crowding), and a stream of words (reading).

Our main result is plotted as a scatter diagram on the right. We find equal critical spacing for words (reading) and identifying a letter (crowding) for all eyes at every eccentricity. This shows that amblyopic and normal reading are limited by crowding.



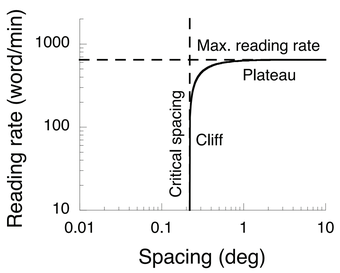


Flankers raise threshold. Crowding isn't limited by acuity.

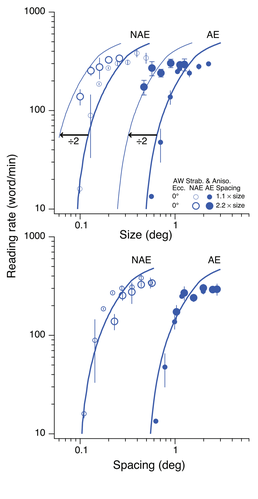


Reading isn't limited by acuity.

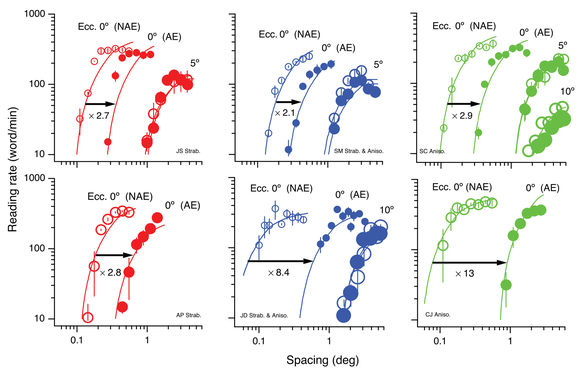
Reading rate as a function of spacing has a cliff (critical spacing) and a plateau (maximum rate).



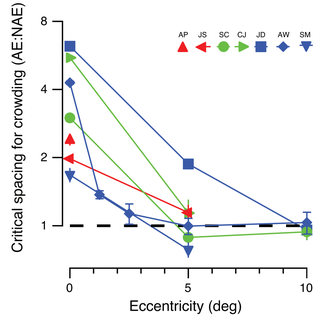
Doubling the spacing of the text shows that spacing matters and size doesn't.



Amblyopia increases the critical spacing for reading (the cliff) threefold, without affecting the maximum reading rate (the plateau).



Amblyopia increases the critical spacing threefold in the fovea but has no effect in the periphery.



Appearing soon in the *Journal of Vision* special issue on "Crowding" http://journalofvision.org/7/2/