Large trials in Israel and Sweden have demonstrated a very favorable cost-benefit ratio in screening children for amblyopia. Song, Levi, and Pelli (in prep.) have shown that the foveal vision of strabismic amblyopes is well-modeled by the crowding of normal peripheral vision. That finding on adults indicates that two improvements to existing charts would greatly increase their diagnostic sensitivity to strabismic amblyopia in children, with no loss of specificity. First, the flankers should be letter-like, not bars (Fig. 1). Second, the flankers should be closer to the target letter, i.e. more tightly spaced (Fig. 2). Atkinson’s Cambridge Crowding Cards are exemplary in this respect, having the tightest spacing of all available charts. Crowding Cards are useful for normal foveal vision, for which one finds the spacing threshold is limited by overlap masking, surrounding the target with nearly contiguous bars (“contours”) or letters has the same effect, which you may witness by comparing these three eyes charts. All three targets in each row have the same size, dropping the spacing factor of \( s = 1.4 \) from row to row. The left column has letter flankers, the middle column has bar flankers, and the right column is unfilled. The conclusions of this demo depend only on the separation of the two populations, increasing the power of the test.

As a normal observer, looking directly at each target, you will find that both kinds of flanker are effective, raising threshold in each row above that for unfilled acuity (right column), and that the letters and bars are equally effective. That is, for a given gap between target and flanker, you have the same flanked acuity (same row) with letter and bar flankers. This is overlap masking.

**FIGURE 2. Spacing should be tight.** Two charts with different spacing factors (top and bottom): light \( S = 1.1 \) (which are recommended) and a loose \( S = 2 \) (which is typical of the commercially available two times spacing factor of the dox chart or simulated). On the right, the flankers have the same flanked acuity (same row) with letter and bar flankers. This is overlap masking.