



Table 1: Example stimuli for number and density experiment. Elements were presented in one hemifield. There are stationary flankers, which have zero direction content and zero displacement.

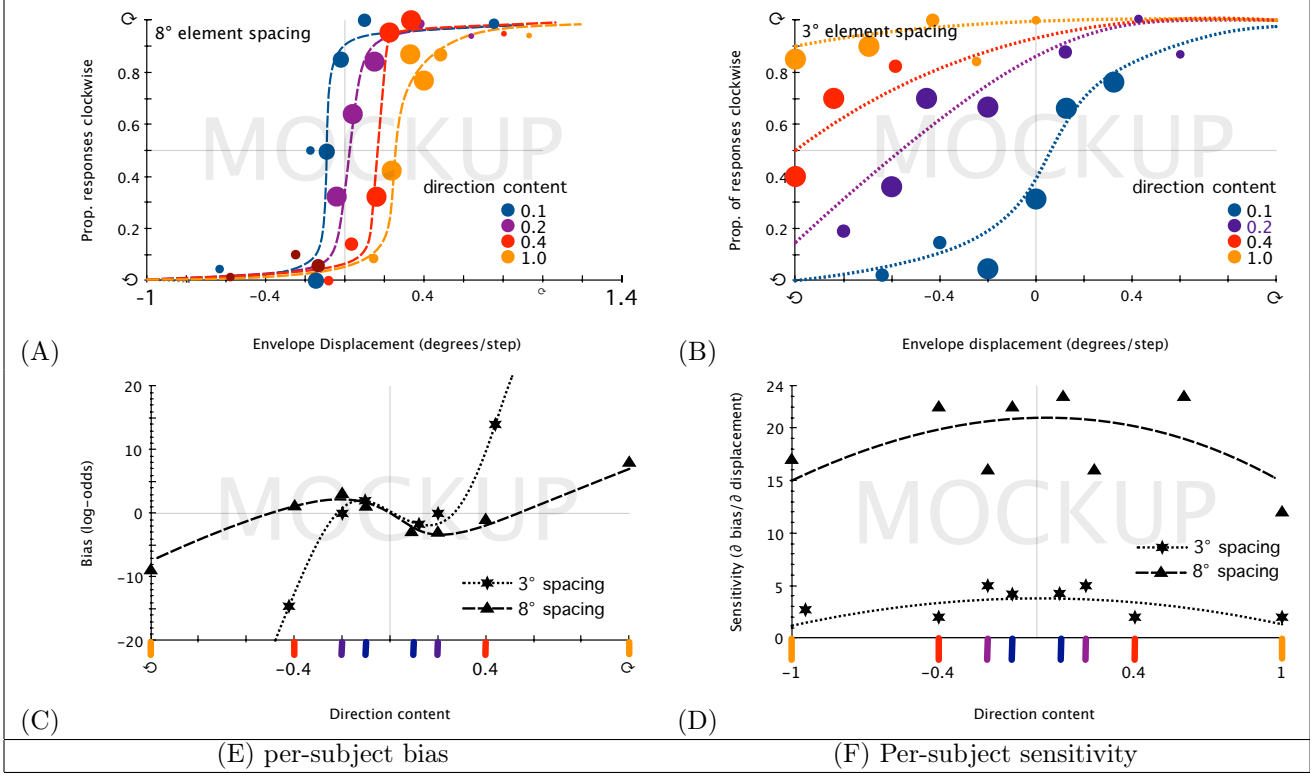


Figure 1: Effects of direction content. Data was collected at four levels of direction content. (A) Example data. Colors code different levels of direction content. In these figures, clockwise and counterclockwise direction contents are folded together. At left, data collected at wide spacing. At right, data collected with narrow spacing. Narrow spacing results in a shallower slope to the psychometric function, while wide spacing results in a steeper slope. At the same time, narrower spacing reveals a greater influence of direction content on subjects' responses. (B) Averaged bias and threshold over all subjects, plotted as a function of direction content. Line pattern and symbol shape correspond to spacing; colored tick marks reference direction content from part A. (C) Curves indicate model fits. (D) Data for bias and spacing is averaged across subjects, with curves indicating model fits.

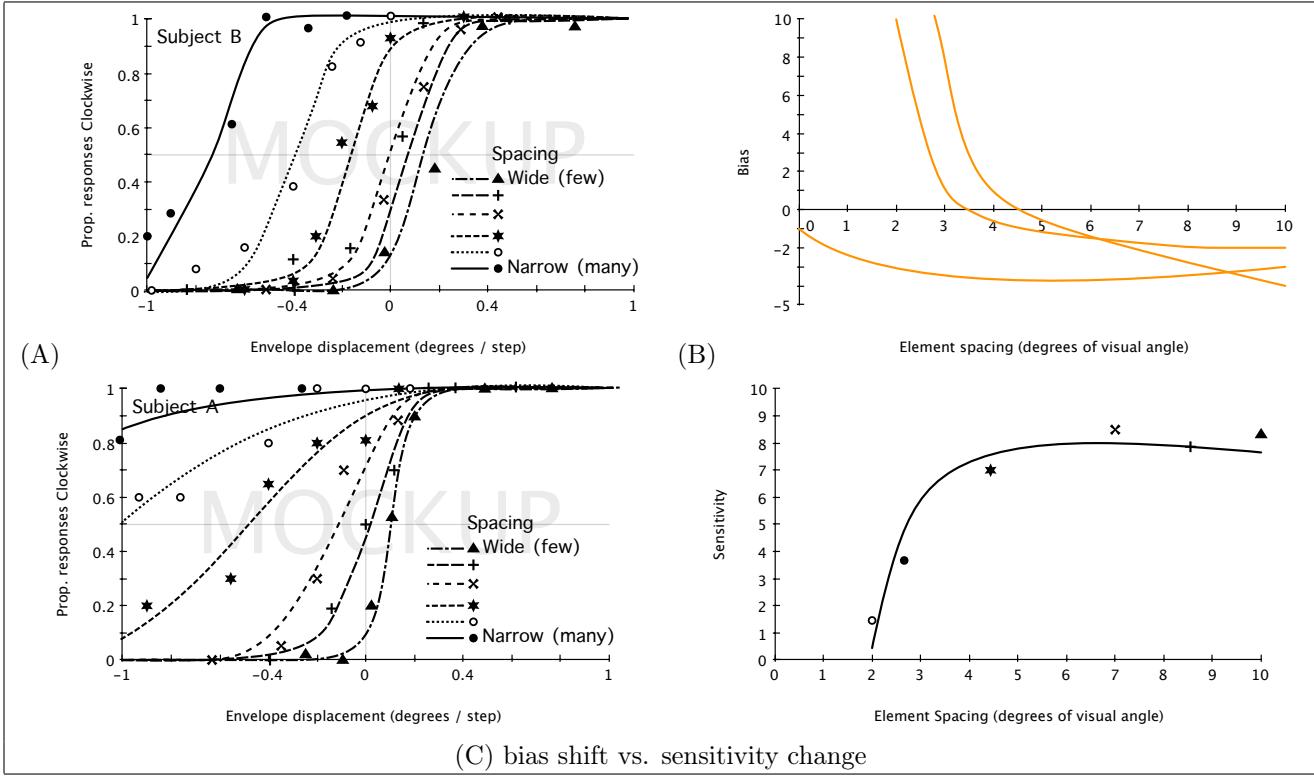


Figure 2: Spacing manipulation. Direction content was held constant (randomized between clockwise and counterclockwise). (A) Example data for three subjects, showing a variety of effects. For [Subject A], spacing appears to shift the psychometric function. For JB, spacing appears to flatten the psychometric function without shifting the point of subjective equality. For [Subject B], a combination of the effects is evident. (B) Row 1: Bias as a function of element spacing for N subjects. (C) The bias shift versus sensitivity change for each subject.

(A) Example stimulus	(B) Spacing and color values used
(C) Repeat ψ functions for PBM	Repeat ψ functions for NJ
(D) number vs. spacing plot for PBM	number vs. spacing plot for NJ
Swap PBM (do colors still code spacing)	Swap PBM (do colors still code spacing?)
(E) Spacing-coefficient versus number-coefficient	

Figure 3: Number and density experiment. (A) Example stimuli. Elements were presented in one hemifield. There are stationary flankers, which have zero direction content and zero displacement. (B) The combinations of element number (not including flankers) and element spacing used. (C) Example data, as in figure Figure 2, for two subjects. We selected a value of contrast and spacing that provided a good dynamic range in each subject's behavior (indicated as vertical line.) (D) These content and spacing values were tested using single-hemifield stimuli with varying number (as in A). Line pattern represents element spacing and symbol shape corresponds to element number. Element spacing explains most of the variation in PBM's responses but does not explain NJ's responses. The same data replotted with color and x-axis swapped. Element number explains most of NJ's variation but not PBM's.

Figure 4: Establishment of model (A) Calculation of motion energy (B) Cartoon explaining model with Gabors, etc. (C) model parameter fits (compare to shiftiness versus steepiness etc.)