The appearance of tiny objects: How Snellen’s symbols look like below, at and above threshold

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Introduction

Visual acuity (VA) refers to the visual system’s ability to resolve spatial detail. Commonly, it is evaluated with identification tasks (e.g., with a chart of letter optotypes).

Here, we investigate the appearance of Snellen symbols (Snellen, 1862).

Methods

Participants

- 21 naive observers (Mague = 22 ± 2), with normal or corrected-to-normal visual acuity

Experimental Design

- 10 Symbols x 4 sizes x 2 repeats
- Foveal presentation
- Unlimited presentation time

*Sizes set at 0.5, 0.67, 1.0 and 1.5 times the visual acuity threshold for each participant, determined before with the FrACT (Bach, 2007)

Task

- Depict the stimulus you see on top in the 5x5 square grid below.

Results and Discussion

Snellen symbol's discrimination

Discussion:

Results show how stimuli appear beyond typical categorizations. Appearance below threshold is characterized by a loss of structure. Individual differences and stimulus specificity may need to be taken into account to determine transformation functions.