Methods:

1. *Participants*. 5 healthy participants with normal vision at the ages 21-28 participated in all different parts of the experiment. 3 females, 2 right-handed with right dominant eye, 3 right-handed with left dominant eye. All participants were given full and detailed explanation about the eye tracker device and the behavioral task, and were paid for their participation. Informed consents were obtained from all the participants, in accordance with the approved Declaration of Helsinki for this project.
2. *Experimental Setup*. The experiment took place in a dark and quiet room where the participants sat in front of a high-resolution, fast response time computer screen (VPixx, 1920x1080, 120Hz) and their EyeM were recorded and used for manipulation in real-time using an eye-tracker device (EyeLink II). Throughout each trial only the dominant eye of the participant was opened and tracked (at 100Hz sampling rate) – the other eye was covered with a blindfold. The participants sat 1 meter away from the screen and placed their chin on a chinrest to prevent head movements.
3. *Experimental Design*. We tested the performance of participants in a five forced choice shapes recognition tasks. Images of 5 basic shapes were used: Square, rectangle, circle, triangle and a parallelogram (fig2). These images were pre-processed (see next sub-section, *Stimuli processing*) to yield two version of each, termed here “large” and “small”. Table 1 shows the 5 days experimental protocol, on each day participants performed two tunneled vision sessions of different shapes sizes (first four days) or four natural vision sessions (last fifth day). Each trial lasted up to 30 seconds, there were at least two repetitions of each shape in each session (about 10 trials), and hence each session lasted about 10 minutes.

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| --- | --- | --- | --- | --- |
| Day 1 | Day 2 | Day 3 | Day 4 | Day 5 |
| Large + Small (tunneled) | Large + Small (tunneled) | Large + Small (tunneled) | Small + Small (tunneled) | Large + Small (natural) X 2 |

*Tunneled vision sessions*. Participants had to identify a shape that was “hidden” on the screen. At any moment only a “window” around their current gaze position was exposed. See next section, *Stimuli processing,* for ‘Large’ and ‘Small’ preparation steps. *Natural vision sessions.* Participants had to identify the same shapes, naturally viewing them with no constrains.

1. *Stimuli processing*. The following steps were made in order to constrain the visual bandwidth in a similar quantitative manner. Two kinds of constrains were created (‘Large’ and ‘Small’). Shapes width was initially 25 pixels, and the following resizing step was done keeping the amount of ‘informative pixels’ constant, yielding a final-sized pixelated image. Shapes were resized to either 720 or 60 pixels each, which are 10.80 and 0.90 visual angles, respectively. The widths of the exposed windows were 2.90 or 0.24 visual angels, keeping a constant ratio between the image and the window in both conditions. Finally, a last processing step of smoothing the pixelated image was taken.
2. *Eye movement processing*. A velocity based algorithm developed by Amos Arieli (based on previous algorithm introduced by Engbert and Kliegl, 2003 and improved by Bonneh et al., 2010) was used for detecting all saccades and drift. We used the following threshold parameters for saccades detection: 8 and 16 deg/sec minimal and maximal velocity respectively, 0.3 deg minimal amplitude. Each detected saccade was manually examined to verify the quality of saccadic detection. Fixation periods between saccades were labeled drift only if they exceeded 3 samples, a 30ms minimum duration.
3. *More detailed on the different analysis made for each figure?? (or those details are written in the captions?)*[[LEAVE IT TO SEE WHAT IS MISSING IN THE CAPTIONS]]