There were X series and each series comprised 120? trials. A trial consisted in 0.5? sec movie in which 4? gratings of XX spatial frequency receding at 60 frames per second appeared in each of the four quadrants (see Fig XX). For the first 7? ms of each trial a 50%? mask covered a grating in only one quadrant, appearing as a brief flash at the onset of each new trial. Participants were not aware that the order of these ‘flashes’ was controlled to include alternating random sections (comprising 1-X trials) and longer ordered sections in which a 4-trial pattern (including minimally three quadrants) was repeated X times (e.g., 2-1-3-4 or 4-3-1-4). No consecutive quadrant-repeats were allowed across either random or ordered sections of the series, while sub-patterns (e.g. 1-2-1-2) were additionally prohibited in ordered sections.

In order to test whether participants made predictions in ordered sections, the series was paused 1-2 times per series showing the 4-gratings (without flash mask), and participants were asked to move a red circle surrounding a grating to the quadrant where they expected the next grating would appear. ??The tests were scheduled to appear after 2-4 repetitions of the patterns in ordered series??

Participants task was to monitor gratings for a white gaussian dot that would appear with % frequency in each series. Before each series, participants saw a X-sec cue in which one arm of the fixation cross turned red to indicate the quadrant they should attend for that series. Participants were instructed to covertly attend this quadrant while keeping their gaze at center. 1-3? gaussian dots (diameter XX) would appear with 80% probability in this quadrant and 20% probability in any other quadrant. Participants had to indicate they had seen these dots in between 0.5-1.0 seconds (1-2 trials) for a response to be considered correct.

In

Series in which the gaze left center (x-deg leniency) during the series were discarded.