first target fixation in the presence of the irrelevant colour singleton, indicating attentional capture during visual sampling. Higher PTSD symptom severity was associated with a general increase in RTs, the number of fixations, and verification time (time between the first target fixation and response). Variability across manual and saccadic indices also increased as a function of PTSD symptom severity. These data support a decrease in the inhibition of the irrelevant singleton during visual sampling in individuals with PTSD. Increases in PTSD severity are also associated with a decrease in the speed and selectivity of visual sampling during search. These findings support a reduction in the efficacy of attentional mechanisms that mediate the proactive control of selective attention during the guidance and verification stages of visual search.
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319

Testing the interaction between fine and coarse scales with moving plaids

Omar Bachtoula[1], Ignacio Serrano-Pedraza[1]
[1]Universidad Complutense de Madrid (ES)
An interaction between fine and coarse spatial scales occurs during motion processing. In this study, we wanted to determine the role of MT visual cortical area on this motion mechanism. We conducted two experiments using moving plaids of different spatial frequencies windowed by a 2D Gaussian function of different sizes, since MT visual area contains neurons that process the pattern motion direction of this kind of stimuli. We measured the proportion of correct responses for 4 durations (25, 50, 100, and 200 ms). In the first experiment, we tested 3 sizes (0.7, 2, and 4 deg), and different spatial frequency combinations (1m, 3m, 1s+3m, 1m+3s, 1m+3m, where m stands for moving and s for static). The moving components drifted at 4 deg/s. Results showed that the interaction between spatial frequencies depends on the components combined, on the size of the plaid, and on its duration on the screen. It strongly arises for 1s+3m and large sizes, and it's not present for the smallest size. Given than MT neurons show a non-homogeneity of the antagonistic surround, in the second experiment, we tested the effect of the window shape on the interaction between spatial scales. We tested two oval windows, one vertical (Sx=0.35, Sy=1.4 deg) and one horizontal (Sx=1.4, Sy=0.35 deg) using plaids with the same durations, drifting speed, and the complex spatial-frequency combinations from the previous experiment. Results revealed that the interaction between spatial scales only occurs, for the condition 1s+3m, when the window is elongated in the direction of motion, and intensifies as duration decreases. These findings suggest that MT visual cortical area is a plausible origin of the interaction between spatial scales in motion perception and show that the activity of this motion mechanism depends on the size, shape, and duration of the stimulus.
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320

Age-Related Visual Search: Distractor Impact on Reaction Times and Accuracy

Mohammad Ahsan Khodami[1], Luca Battaglini[1]
[1]University of Pauda (IT)
Visual processing speed and inhibitory control are critical cognitive abilities that influence our ability to navigate complex visual environments. However, these abilities are known to decline with age, potentially leading to difficulties in tasks that require efficient processing of relevant information while suppressing distracting stimuli. This study investigated the effects of age, target presence, and distractor interference on visual search performance using a novel experimental paradigm that systematically manipulated these factors. Younger and older adults completed a series of visual search trials, where they had to indicate the presence or absence of a target stimulus within displays containing varying distractors. Reaction times and accuracy were recorded, providing insights into the efficiency of visual processing and inhibitory control mechanisms. The results revealed significant age-related differences in reaction times and accuracy, with older adults exhibiting longer response times and reduced accuracy than their younger counterparts. Moreover, increasing distractor levels led to a more pronounced decline in performance for older adults, particularly when the target was present. The ANOVA analyses revealed significant main effects of age, target presence, distractor level, and intricate interactions between these factors. These findings highlight the critical role of inhibitory control in inefficient visual processing and suggest that age-related declines in this cognitive function may contribute to the observed performance differences between younger and older adults in visually complex environments. The study has important implications for understanding age-related changes in visual attention and perception and informing the design of user interfaces and visual displays that account for the unique needs of older individuals.

321

Investigating semantic properties of objects in scenes using fine-grained crowd-sourced and computational methods

Marek Pedziwiatr[1], Sophie Heer[2], Peter Bex[3], Antoine Coutrot[4], Melissa Le-Hoa Võ[5], Isabelle Mareschal[2]
[1]Jagiellonian University in Krakow (PL), [2]Queen Mary University of London (UK), [3]Northeastern University (US), [4]LIRIS, CNRS, University of Lyon (FR), [5]Goethe University Frankfurt (DE)
For most man-made environments, it is straightforward to tell what objects are likely to appear in them and what are not. In the studies investigating the effects of these regularities on human perception, these objects are referred to as, respectively, semantically consistent and inconsistent with a given scene context. While this distinction is useful, its dichotomous nature hampers the investigation of the effects of graded object-context consistency (e.g. a wristwatch and a kettle might be consistent with the context of a kitchen table to different degrees). There are several ways to quantify the semantic consistency in a continuous (and not dichotomous) fashion and thereby overcome this limitation. Here, we tested them. Participants viewed scenes with objects that were – according to previous studies – either semantically consistent or inconsistent with these scenes and rated on a six-point scale either the semantic consistency of these objects or the frequency with which they appear in the given contexts. In one experiment, a single group viewed scenes with