Abstract

The present study establishes a method for examining visual attention deployment in a stereoscopic workbench, which can be applied with participants being experts in their field. By using a well validated test known from perceptual psychology, namely the Stroop Test, and a target detection task overt and covert visual attention is recorded. Furthermore, purpose of the study is to identify regions in the display that show different degrees of attention deployment, check time-dependent influences of target appearance and finally cross-check performance in both tasks for trade-off effects. The Stroop Test was the participants' primary focus, while the target detections revealed the allocation of visual attention. Subsequent to tests of visual faculty was an exposure to the tasks in training trials. Then, three experimental trials were shown. They comprised 27 targets at 27 positions, respectively and 108 Stroop Test stimuli. The trials differed in the positions of the Stroop Test which was shown in one of three positions per trial. The display space was segmented into three blocks per dimension (three vertical, three lateral and three depth segments). For the sake of research efficiency each Stroop Test position (T) was located in one of the blocks of each dimension: (T1) peripheral-right / upper segment / background plane, (T2) central / middle segment / middle plane, (T3) peripheral-left / bottom segment / foreground plane. Since the target detection rate served as a measure for the deployment of visual attention, there was one target per block in every trial (3 vertical*3 lateral*3 in depth). 24 experimental subjects were assigned to one task combination respectively. Participants underwent two tests to check for visual dysfunctions. Six of the initially thirty participants had to be excluded from the study after first undergoing a test on their colour vision, followed by a test on their binocular visual faculties. Results show that the combination of the two tasks is applicable for examining the deployment of visual attention. Furthermore, the deployment of visual attention changes with the location of the primary focus of participants. Target detection is higher within the direct surroundings of the Stroop Test. Results also revealed an upwards bias and support the assumption of the existence of an attentional gradient in all three dimensions. The time of target appearance influences target detection, whereby the concrete time depends on the Stroop Test's position. The performance in the Stroop Test was high, although there is evidence for a trade-off between the two tasks.