

AB011. Reliance on central vs. peripheral vision for visual search in younger and older adults

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Background: It has been suggested that older adults show a reduced attentional field compared to younger adults. This may be attributed to a poorer utilization of peripheral vision (i.e., peripheral attentional allocation) and a higher reliance on central vision compared to younger adults. To test this, we examined the importance of central, peri-foveal and near periphery information in younger and older adults by comparing their visual search performance while their central vision was blocked, in the presence of different sized artificial central scotomas. We tested participants in two versions of visual search, pop-out and serial search, because they require a different use of central and peripheral attention. Pop-out search relies on processing of the entire visual scene (i.e., global processing) whereas serial search

requires processing of each feature serially (i.e., local processing).

Methods: Thirteen healthy younger ($M=21.8$, $SD=1.5$) and 15 older adults ($M=69.1$ years, $SD=7.3$) performed a pop-out and a serial version of a visual search task in the presence of different sized gaze-contingent artificial central scotomas (no scotoma, 3° diameter, 5° and 7°). Participants were asked to indicate as quickly as possible whether a target was present or not among distractors whose number varied (16, 32 or 64 objects).

Results: We found evidence for a greater decline in peripheral processing in older adults compared to younger in pop-out but not in serial search. For the pop-out condition with no scotoma, we found that the further the target in the periphery, the longer the search time, and that this increase was proportionally greater for older adults compared to younger adults. Further, increases in scotoma size were associated with a greater increase in reaction times for older adults compared to younger participants. For the serial condition, both groups showed similar increases in reaction times with target distance from center and scotoma size. We surmise that this may be due to task difficulty in serial search; central vision is necessary for both groups.

Conclusions: In conclusion, these findings suggest that, in global processing, older adults distribute more resources towards central vision compared to younger adults.

Keywords: Visual search; spatial attention; peripheral; central; aging

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