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Age-related top-down and bottom-up guidance on eye movements when searching in real-world scenes

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Abstract: Efficient selection of targets is crucial in everyday activities across the lifespan. Studies reporting age-related decline have, however, typically utilised arrays of simple, unrealistic objects. Using real-world scenes, we investigated how reliability of scene semantics (consistent vs. inconsistent targets), target template specificity (name vs. precise picture) and target perceptual salience influence oculomotor search behaviour in older vs. young viewers. Aging resulted in slower search considering initial saccade latency, time and number of fixations to locate the target, and verification of object-template matching. No group differences emerged in accuracy and in search facilitation due to a pictorial template or a semantically consistent target. Target high salience enhanced efficiency in both groups, with stronger effects in older viewers. Aging seems therefore to lead to an overall search speed reduction not due to specific deficits in utilisation of scene semantic guidance or in target recognition, and possibly reduced by enhancing target perceptual guidance.