

## Supplementary Material

### 1. Variable Definition

**Supplementary Table S1**

*Description of the variables of interest, extracted from the visual search task*

Index type	Variable	Formula	Definition
Effect Size	L0D-G0D	$= \frac{mRT_{L0D} - mRT_{G0D}}{\sqrt{\frac{sdRT_{L0D}^2 + sdRT_{G0D}^2}{2}}}$	Global Advantage Index (GAI) Effect size (Cohen's d) between the condition Local-0Distractor and Global-0Distractor (based on the RTs for correct responses to target-present trials only, in the absence of distractors) within each participant. Higher score reflects the higher global advantage effect.
Effect Size	L5D-L0D	$= \frac{mRT_{L5D} - mRT_{L0D}}{\sqrt{\frac{sdRT_{L5D}^2 + sdRT_{L0D}^2}{2}}}$	Distractor-Interference Index for Local processing (DII <sub>L</sub> ) Effect size (Cohen's d) between the condition Local-5Distractors and Local-0Distractor (based on the correct RTs to target-present trials only) within each participant. Higher score reflects higher interference of the number of distractors on the identification of local targets.
Effect Size	G5D-G0D	$= \frac{mRT_{G5D} - mRT_{G0D}}{\sqrt{\frac{sdRT_{G5D}^2 + sdRT_{G0D}^2}{2}}}$	Distractor-Interference Index for Global processing (DII <sub>G</sub> ) Effect size (Cohen's d) between the condition Global-5Distractors and Global-0Distractor (based on the RTs for correct responses to target-present trials only) within each participant. Higher score reflects higher interference of the number of distractors on the identification of global targets.
Efficiency Score	L0D	$= \frac{ACC_{L0D}}{mRT_{L0D}} * 1000$	Efficiency ratio to detect a local target in the 0-Distractor condition. Higher value reflects higher efficiency (i.e., as reflected by higher accuracy and faster RTs) to identify the target at the local level, in the absence of any distractors.
Efficiency Score	L5D	$= \frac{ACC_{L5D}}{mRT_{L5D}} * 1000$	Efficiency ratio to detect a local target in the 5-Distractors condition. Higher value reflects higher efficiency (i.e., as reflected by higher accuracy and faster RTs) to identify the target at the local level, in the presence of 5 distractors.
Efficiency Score	G0D	$= \frac{ACC_{G0D}}{mRT_{G0D}} * 1000$	Efficiency ratio to detect a global target in the 0-Distractor condition. Higher value reflects higher efficiency (i.e., as reflected by higher accuracy and faster RTs) to identify the target at the global level, in the absence of any distractors.

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Efficiency Score	G5D	$= \frac{ACC_{G5D}}{mRT_{G5D}} * 1000$	Efficiency ratio to detect a global target in the 5-Distractors condition. Higher value reflects higher efficiency (i.e., as reflected by higher accuracy and faster RTs) to identify the target at the global level, in the presence of 5 distractors.
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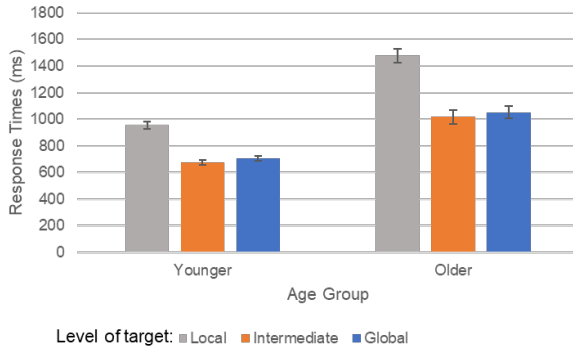
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*Note.* Abbreviation: ACC: accuracy in %, mRT: mean reaction times for correct responses.

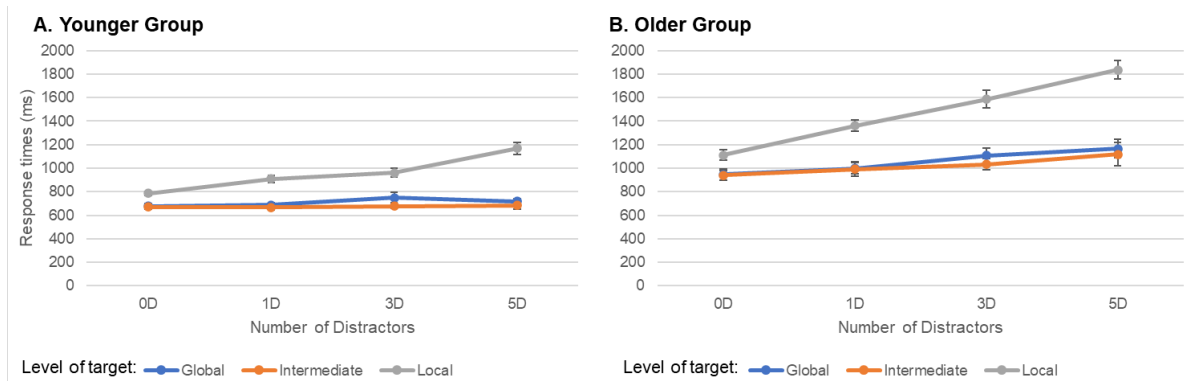
## 2. Accuracy Data

Younger and older groups were highly accurate and did not significantly differ in accuracy rates for any of the conditions (present-target:  $97.1\% \pm 2.4\%$  and  $97.3\% \pm 3.8\%$  (mean  $\pm$  sd),  $p=0.8$ ; absent-target:  $98.9\% \pm 1.7\%$  and  $98.2\% \pm 3.8\%$  for younger and older adults, respectively,  $p=0.2$ ).

## 3. Response times for present-target trials

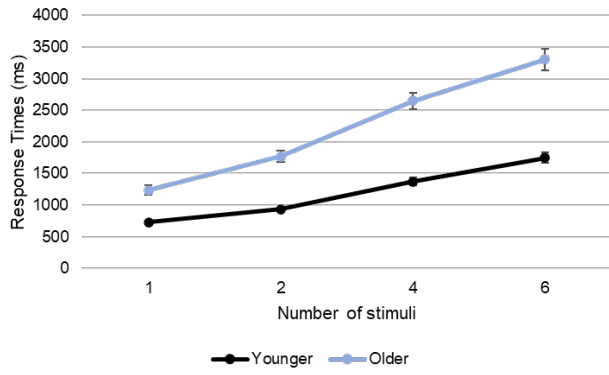


**Supplementary Figure S1: Interaction between the age group and the attentional level of the target occurrence in present-target trials. Error bars indicate standard errors of the means.**



**Supplementary Figure S2: Response times by attentional level and number of distractors in present-target trials, in each age group. Error bars indicate standard errors of the mean.**

## 4. Response times for absent-target trials



**Supplementary Figure S3: Response times by number of stimuli in absent-target trials, in each age group.** Error bars indicate standard errors of the mean.