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Developmental Factors in Visual Search: A Test of the Inhibition Deficit Hypothesis in a Feature Integration Task

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Many differences in cognitive functioning have been noted between younger and older adults. One of the most robust findings is that the elderly are more easily distracted by irrelevant information, possibly due to normal degeneration of the frontal lobes. This is known as the inhibition-deficit hypothesis, and may be useful in explaining older adults' deficits in visual search tasks, such as those designed by Treisman. Treisman's Feature Integration Theory suggests that there are two ways to process information: parallel processing, an automatic process that does not require directed attention, and serial processing, which does. Recent studies have suggested that the elderly may be deficient in serial search tasks. This study will attempt to provide evidence for the role of inhibitory processes (and therefore frontal lobe involvement) in serial, but not parallel search. One way to do this is to determine whether frontal lobe development can predict performance on serial search tasks. The frontal lobes of young children are not fully developed, whereas the elderly's frontal lobes are the first to degenerate in old age. Thus, preschool children, college age students, and elderly adults participated in the experiment. Reaction times (RT) were measured during parallel and serial processing tasks. Subjects searched for a single fixed target in one of three display types requiring serial, parallel or both types of searches. It is expected that flat RT slopes will be found for parallel processing trials for all ages, while a bell curve should be found for the serial processing trials. It is therefore predicted that young children's performance on serial search tasks should be the lowest, followed by the elderly, and that young adults should show the best performance on these tasks.