

A "SAMENESS" OPERATION IN VISUAL SEARCH Jeremy M Wolfe,
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In searching for a target among distractor items, subjects are generally faster to respond "yes" on target-present trials than "no" on blank trials. This is the case even when all distractor items are identical suggesting that Ss cannot determine that all items are the same as rapidly as they can determine that one item is different. Are Ss ever able to perform a "sameness" operation on multiple items or are a set of items judged to be the same only as a default, if no different item is detected? We have found a simple search task that Ss do appear to solve by use of a "sameness" operation. In this task, the distracting items were red lines of orientation X and green lines of orientation Y. Orientations X and Y varied randomly from trial to trial but were constrained to be more than 20 deg apart. The target, if present, was a red line of orientation Y. Ss were not informed of target orientation. Rather, the S's task was to determine if there was an item of odd orientation in the red subset of items or if all red items had the same orientation. Set size varied from 4 to 16 items. Change in reaction time (RT) as a function of set size was consistent with a serial self-terminating search through the red subset when a target was present. However, when no target was present, RTs were faster and the slope of the RT x set size function was shallower than on target-present tasks. Apparently, Ss could determine that all red items were the same more efficiently than they could confirm the presence of an "odd-man-out" target. In a second experiment, irrelevant variation was introduced into the set of red items. One red item was drawn smaller and with different texture. RTs for blank trials remained more efficient than those for target trials suggesting that Ss could determine that all red items had the same orientation even if all red items were not identical on other dimensions. RTs for this find-the-odd-red-item task are slower than those in standard conjunction experiments (e.g. find the vertical, red item). This suggests that the "sameness" operation is not seen in most search tasks because other, faster strategies are available.