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Evidence for Parallel Processing in the Identification of Shape and Color During Visual Search

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Abstract: In his 1998 review paper, Wolfe failed to find evidence of bimodal distributions in over 2,400 pairs of visual search slopes (the relationship between search time and the number of distractors) and concluded that “any effort to divide tasks into serial and parallel search on the basis of search slope alone will be futile.” Additionally, search slope alone confounds the serial/parallel distinction with cognitive workload. Systems Factorial Technology (SFT; Townsend & Nozawa, 1995) is specifically formulated for measuring architecture and workload without confusing the two. In this study, participants searched for a target (a red circle) in a field of uniform distractors that differed from the target in shape, color, or both. Search times were evaluated using the Capacity Coefficient and Survivor Interaction Contrast (SIC) from SFT. Results provide strong evidence against serial processing while suggesting either independent parallel or coactive processing of shape and color.