A Fitts' law study of click and dwell interaction by gaze, head and mouse with a head-mounted display

Gaze and head tracking, or pointing, in head-mounted displays enables new input modalities for point-select tasks. We conducted a Fitts' law experiment with 41 subjects comparing head pointing and gaze pointing using a 300 ms dwell (<i>n</i> = 22) or click (<i>n</i> = 19) activation, with mouse input providing a baseline for both conditions. Gaze and head pointing were equally fast but slower than the mouse; dwell activation was faster than click activation. Throughput was highest for the mouse (2.75 bits/s), followed by head pointing (2.04 bits/s) and gaze pointing (1.85 bits/s). With dwell activation, however, throughput for gaze and head pointing were almost identical, as was the effective target width (≈ 55 pixels; about 2°) for all three input methods. Subjective feedback rated the physical workload less for gaze pointing than head pointing.

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