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Reconstructing Visual Events from Fragmented Scenes

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Abstract

The human cognitive system resolves ambiguity when presented with spatially fragmented input. Sequential structures in visual narratives help understanding information-extraction across fragmented and undefined temporal order. In this study, 100 participants viewed and rated 54 comic strips (9 comic strips rearranged into 6 layout structures) based on their understandability, enjoyability, and navigation difficulties. Using mixed-effects models, we observed non-intuitive layouts such as ‘Blocked’ and white-space overusing ‘Separated’ layouts have consistently shown higher response latency ($p < 0.001$ and $p = 0.008$), more viewing times ($p < 0.001$), more regressive eye movements, and rerouting gaze as compared to standard ‘Grid’ formats: suggesting higher processing costs. However, the subjective ratings show another aspect of cognitive processing: factors such as ‘enjoyability’ shows less association with processing costs, suggesting a dissociation between cognitive efficiency and satisfaction. This further suggests that ‘cognitive inefficiencies’ are not mere disruptions but also a pathway to restructure compensatory strategies while reconstructing events from fragmented information.