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Spatial alignment facilitates visual comparison in diagonal structures

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Abstract

To grasp visual relationships, such as those presented in figures or diagrams, viewers must often compare the spatial relationships between visual structures (e.g., the slopes of two lines, sequences of DNA strands). Past work has found that this visual comparison process is optimized when visuals are placed directly, such that the relational correspondences are obvious (e.g., horizontal spatial structures placed vertically), and weakened when relational correspondences are impeded (e.g., horizontal spatial structures placed horizontally) (Matlen et al. 2020). However, this principle of spatial alignment has yet to be tested with other spatial structures beyond horizontal and vertical structures. Here, we tested this principle using diagonal spatial structures. The results bore out the spatial alignment principle – participants were faster and more accurate when diagonal structures were in direct relative to impeded placements. These findings have important implications for theories of comparison as well as for design and instruction.