MIND

Why a Quick Look Can Be Better than a Deep Study

When searching for an object in a field of many others, often the first place we look is where it is

By Nikhil Swaminathan on January 12, 2007

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Perhaps all the time spent furiously hunting for the red- and white-stripe-

wearing hider Waldo could have been avoided if his eventual spotter just glanced and pointed to the page. At least that is what is indicated by the findings of a new study conducted by researchers at University College London, which appears in the January 9 issue of *Current Biology*. Psychologist Li Zhaoping presented 10 subjects with a matrix of more than 650 lines leaning at a 45-degree angle, like slashes, with one object somewhere in the array reversed, like a backslash. The participants had to determine within seconds whether "the odd one out" resided on the left- or right-hand side of the screen in front of them. The subjects chose most accurately when they had little to no time to scrutinize the matrix.

"This finding seems counterintuitive," Zhaoping says. "You would expect people to make more accurate decisions when given the time to look properly. Instead they performed better when given almost no time to think."

Zhaoping and her colleague Nathalie Guyader used eye-tracking technology to follow the subjects' gazes as the their eyes darted around the array before them. In one trial, as soon as a participant's eye wandered onto the nonconforming line, the researchers hid the array and then prompted the viewer for an answer. Zhaoping says that most participants thought they were just blindly guessing which of the sides the backward line appeared in but they were nearly 95 percent accurate in choosing the correct region. On the other hand, when the researchers gave them more than 500 milliseconds to peruse the picture, allowing them to turn on higher level mental functions, the subjects' accuracy dropped to about 70 percent.

"A lot of times the eye darting around is actually the lower level function," Zhaoping explains. "Before your gaze actually lands on the target, you're seeing the target in your peripheral vision, and with your peripheral vision it hasn't really engaged your full attention yet and that's why you were darting around looking for it." Once a person's gaze lands on the target his or her brain begins to try to determine if it is the actual one. "Obviously the extra scrutiny, which is the extra mental recruitment," she notes, "is bad for them."

To our conscious minds, a rotated object is the same as the original object.

Zhaoping expounds on the dilemma of involving higher order brain

functions in some tasks, such as copying a portrait with a pen and paper. "It's better that you don't think that it's somebody's face," she says. "If you think, 'Oh the nose should curve this way and the jaw should curve that way,' that actually interferes with you trying to reproduce the shade of a patch or curves. The contours and the shadings are actually lower level tasks that do not require you to recognize the shape of something." She also notes that this processing paradigm may be the reason why supermarket cashiers are asked to turn the signature on a credit card upside down when comparing it with the signature on a bill.

Wieske van Zoest, a researcher at the Brain and Attention Research Lab at the University of British Columbia, notes that Zhaoping's findings are similar to work she has done on the processing of simple features." We have shown that when people are intentionally looking for something salient, the obvious benefit of a salient target does not exist when people take a long time to respond," she says.

Jeremy Wolfe, head of the Visual Attention Lab at Harvard's Brigham and Women's Hospital, says Zhaoping's study reminds him of the brainteasers that appear in children's magazines and on IQ tests in which a shape is hidden within a picture. "I think that what this paper really shows is that very early on in processing you've got access to that information that then gets hidden by that larger context," he explains. "It points toward different stages in [the] visual process where different bits of information become available at different times."

ABOUT THE AUTHOR(S)

Nikhil Swaminathan