

Face Facts: People Don't Stand Out In A Crowd

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Why is it difficult to pick out even a familiar face in a crowd? We all experience this, but the phenomenon has been poorly understood until now. The results of a recent study may have implications for individuals with face-recognition disorders and visual-attention related ailments -- and eventually could help scientists develop an artificial visual system that approaches the sophistication of human visual perception.

"Crowding" is a failure to recognize an individual object in a cluttered environment. It may be due to one of the shortcuts our brains use to help us make sense of the vast amount of visual information we take in every second.

Dr. David Whitney and colleagues at the University of California, Davis, conducted five experiments to measure participants' recognition of a familiar face or house that was located in a crowded display of other faces or houses. They found that face recognition is more difficult when target faces are surrounded by upright faces (as seen in crowds). This effect was not present for images of houses, or when upside-down faces were used as targets. The results indicate that searching for a face in a crowd is difficult in part because images of upright faces interfere with each other.

This kind of crowding is well documented in simple features, such as slanted lines or edges. But faces are a complex stimulus. Many researchers believe the importance of faces in our lives lend them special status in the brain: they are processed not as a collection of these lines and edges, as many objects are, but holistically, as a single image. The authors in this study were the first to show that crowding also occurs for these high-level stimuli.

"Crowding may reveal one of the fundamental mechanisms the visual system uses to consolidate or filter a great deal of information into a very few meaningful chunks," explained Dr. Whitney. "If vision scientists and engineers are to develop an efficient and realistic artificial visual system, they will almost certainly benefit from using the human visual system as a model. An understanding of the visual system's heuristics, shortcuts and limitations -- such as crowding -- will likely prove essential in designing effective artificial vision."

The study is part of the recently completed Journal of Vision special issue titled "Crowding: Including illusory conjunctions, surround suppression, and attention".

Journal reference: Louie, E. G., Bressler, D. W., & Whitney, D. (2007). Holistic crowding: Selective interference between configural representations of faces in crowded scenes. *Journal of Vision*, 7(2):24, 1-11, <http://journalofvision.org/7/2/24/>, doi:10.1167/7.2.24.

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