

People have powerful appeal in photos

19 October 2011



Krista Wilkinson and Janice Light used eye-tracking technology to obtain precise recordings of peoples' gazes. Credit: Paul Hazi

(Medical Xpress) -- College students looking at photographs spent more time gazing at the people in the pictures than the surrounding elements, even when those people were quite small or not centrally located, according to Penn State researchers. These findings could help the researchers develop better visual-scene displays (VSDs) -- computer-generated images that help people with disabilities learn to communicate.

According to Krista Wilkinson, professor of communication sciences and disorders and the study's lead author, traditional communication displays show a grid of abstract images to the viewer. Individuals -- often children with intellectual and [developmental disabilities](#), such as [Down syndrome](#) or [autism spectrum disorders](#) -- are encouraged to communicate their ideas by pointing to one or more of the images in the grid.

"But," said Wilkinson, "this approach isn't effective because children don't learn their early words in isolation."

"Instead," added Janice Light, distinguished professor of communication sciences and disorders, and the other author of the paper that

appeared in a recent issue of the Journal of Speech, Language and Hearing Research, "people formulate ideas in the context of the events and the people in their lives."

They explain that a child might learn the word "dog" from hearing it in a variety of experiential contexts. Thus, children learn about and hear the label for dogs as they see dogs in the park, pat them at their relatives' houses and get kisses from them.

"These predictable routines," said Light, "may be critical in facilitating [language development](#) because they provide contextual support for the acquisition of new concepts and words."

It seems reasonable to consider that VSDs featuring events, like a child receiving a kiss from a dog while mom looks on, might be effective in aiding people with disabilities learn to communicate.

Wilkinson and Light recruited 19 college students to observe eight photographs in which a human figure appeared near one or more items that might be expected to compete for visual attention, such as a Christmas tree or a table loaded with food. They used eye-tracking technology to obtain precise recordings of the participants' gazes.

The team used college students rather than children with disabilities because they wanted to obtain a baseline dataset, to see if their expectations might apply to individuals with fully developed language and fully developed cognitive, visual and attentional processing.

"So little is known about the allocation of visual attention to humans in photographs for any population," said Wilkinson. "We felt it was necessary to begin by mapping out basic patterns of visual attention in nondisabled participants as a precursor to considering the potential impact of development and disability on these patterns."

The researchers' primary criterion for selecting the photographs was that the main human figure or

figures did not occupy a substantial proportion of the photographic space, but occupied between 1.3 percent and 18.3 percent of the space. In most photographs, the humans were far smaller than many other elements. A second criterion was that the photographs contain at least one other element that, based on subjective judgment, might compete for visual attention. For instance, one of the photographs showed a child sitting near a fully decorated holiday tree, with a dog and a cat lying on the floor nearby.

Wilkinson and Light then presented the photos to the students in a slideshow display on a computer monitor. Each of the photos was displayed for approximately seven seconds with a three-second interval in between. During the slideshow, the team recorded the students' exact gazing points using a sophisticated eye-tracking system.

They found that the participants fixated on the humans within the photographs more rapidly and for longer than expected based on their size, regardless of the other elements in the scene.

"The human figure in each photograph attracted attention from a majority of the participants," said Wilkinson, who added that the other types of elements that attracted attention from a majority of viewers were the animate figures that were not the subjects of the photograph, such as animals and bystanders.

"Our study suggests that humans may be key elements that capture and maintain visual attention, even in scenes with many other potential competitors," said Wilkinson. "Research has shown that babies prefer to look at human faces over other stimuli. Our study underscores the powerful draw of human figures on [visual attention](#) across different and distinct contexts, even in adults and even in the presence of attractive and interesting distracters."

In their next study, Wilkinson and Light plan to use the same photos to examine how children respond to the presence of humans in images.

from <https://medicalxpress.com/news/2011-10-people-powerful-appeal-photos.html>

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