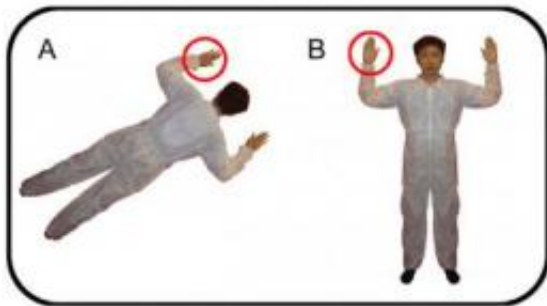


Ability to literally imagine oneself in another's shoes may be tied to empathy

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This photo shows example stimuli from the perspective-taking task. Panel A. Back-facing condition; no perspective transformation is required. Panel B. Front-facing condition; requires imagined self-other transformation. Credit: Katharine N. Thakkar

New research from Vanderbilt University indicates the way our brain handles how we move through space -- including being able to imagine literally stepping into someone else's shoes -- may be related to how and why we experience empathy toward others.

The research was recently published in the online scientific journal *PLoS ONE*.

Empathy involves, in part, the ability to simulate the internal states of others. The authors hypothesized that our ability to manipulate, rotate and simulate mental representations of the physical world, including our

own bodies, would contribute significantly to our ability to empathize.

"Our language is full of spatial metaphors, particularly when we attempt to explain or understand how other people think or feel. We often talk about putting ourselves in others' shoes, seeing something from someone else's point of view, or figuratively looking over someone's shoulder," Sohee Park, report co-author and professor of psychology, said.

"Although future work is needed to elucidate the nature of the [relationship](#) between empathy, spatial abilities and their potentially overlapping neural underpinnings, this work provides initial evidence that empathy might be, in part, spatially represented."

"We use spatial manipulations of mental representations all the time as we move through the physical world. As a result, we have readily available cognitive resources to deploy in our attempts to understand what we see. This may extend to our understanding of others' mental states," Katharine N. Thakkar, a psychology graduate student at Vanderbilt and the report's lead author, said. "Separate lines of neuroimaging research have noted involvement of the same brain area, the parietal cortex, during tasks involving visuo-spatial processes and empathy."

To test their [hypothesis](#) that empathy and spatial processes are linked, the researchers designed an experiment in which subjects had to imagine themselves in the position of another person and make a judgment about where this other person's arm was pointing. The task required the subject to mentally transform their body position to that of the other person.

"We expected that the efficiency with which people could imagine these transformations would be associated with empathy," Thakkar said.

"Because we were interested in linking spatial ability with empathy, we also included a very simple task of spatial attention called the line bisection task. This test involves looking at a horizontal line and marking

the midpoint. Although this task is very simple, it appears to be a powerful way to assess subtle biases in spatial attention."

The researchers compared performance on the test with how empathetic the subjects reported themselves to be. They found that higher self-reported empathy was associated with paying more attention to the right side of space. Previous research has found that the left side of the face is more emotionally expressive than the right side. Since the left side of the face would be on the right side of the observer, it is possible that attending more to the expressive side of people's faces would allow one to better understand and respond to their mental state. These findings could also point to a role of the left hemisphere in empathy.

The researchers also found that in the female subjects only, the more empathetic people rated themselves, the longer they took to imagine themselves in the position of the person on the screen. Previous work has shown that women generally report more empathy than men and perform worse on tests of visuo-spatial abilities.

"Although it is somewhat counterintuitive that taking more time to imagine another's physical perspective was associated with more reported [empathy](#), people who were slower at the task might have been engaging more resources to imagine another's mental state, or may be using a slower and less automatic strategy on the task," Park said.

More information: The full article is available at:
<http://tinyurl.com/lw6qmv>.

Source: Vanderbilt University ([news](#) : [web](#))

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