

Imagination Can Influence Perception

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Imagining something with our mind's eye is a task we engage in frequently, whether we're daydreaming, conjuring up the face of a childhood friend, or trying to figure out exactly where we might have parked the car. But how can we tell whether our own mental images are accurate or vivid when we have no direct comparison? That is, how do we come to know and judge the contents of our own minds?

Mental imagery is typically thought to be a private phenomenon, which makes it difficult to test people's metacognition of – or knowledge about – their own mental imagery. But a novel study, to be published in a forthcoming issue of *Psychological Science*, a journal of the Association for Psychological Science, capitalizes on the visual phenomenon of binocular rivalry as a way to test this kind of metacognition.

The study's authors, Joel Pearson of the University of New South Wales, Rosanne Rademaker of Maastricht University, and Frank Tong of Vanderbilt University, wanted to find out if people have accurate knowledge about their own imagery performance. Participants were asked to imagine a particular pattern – a green circle with vertical lines or a red circle with horizontal lines – and rate how vivid the circle was for them and the amount of effort it took to imagine the circle.

To test the accuracy of the vividness and effort ratings, participants were presented with a binocular rivalry display so that participants' left and right eyes were exposed to different patterns. As a result of binocular rivalry, one pattern becomes more dominant, and participants report seeing only this dominant pattern. Pearson and his co-authors theorized that if participants have accurate knowledge about their own mental imagery, then the imagined patterns that participants reported as being most vivid should emerge as the dominant patterns during the binocular rivalry display.

Results of the study confirmed the authors' suspicions, suggesting that imagined experiences are not merely epiphenomenal – that is, our evaluations of mental imagery bear a direct relationship to our performance on perceptual and cognitive tasks in the real world. The authors used control conditions in order to rule out the influence of other factors, like whether participants might have paid attention to one pattern more than the other or simply chose one pattern more than another. Results from these control conditions indicated that neither attention nor decisional bias could account for the findings from the binocular rivalry condition.

According to Pearson, “our ability to consciously experience the world around us has been dubbed one of the most amazing yet enigmatic processes under scientific investigation today.” But, he argues, “if we stop for a moment and think about it, our ability to imagine the world around us in the absence of stimulation from that world is perhaps even more amazing.” With mental imagery, we can ‘see’ how things might have been or could be in the future. It is perhaps not surprising, then, that strong mental imagery is associated with creativity.

Mental imagery is also critical when organizing our lives on a day-to-day basis. Being able to imagine objects and scenarios is “one of the fundamental abilities that allows us to successfully think about and plan future events,” says Pearson. Mental imagery “allows us to, in a sense, run through a dress rehearsal in our mind’s eye.”

It’s clear that mental imagery contributes to our everyday functioning. There are some instances, however, when incredibly vivid mental imagery may not be a good thing, such as in the case of visual hallucinations. According to Pearson, future research on our experiences of mental imagery will not only help to reveal the inner workings of this fundamental ability, but it may also help in research and treatment in cases of hallucination, when mental imagery becomes disruptive.